

Supplemental Material

$J^P = 1^+$ Amplitudes

For coupled $\pi\omega\{^3S_1\}$, $\pi\omega\{^3D_1\}$ and $\pi\phi\{^3S_1\}$ amplitudes, in the following we present additional figures for the phase-shifts, mixing-angles, amplitude squared magnitudes and poles. In addition, we give the scattering parameters along with the statistical uncertainties and correlations followed by the pole singularities found across the Riemann sheets and give the momenta, couplings and branching fractions.

All amplitudes are of the form,

$$K_{\ell Ja, \ell' Jb} = \frac{(g_{\ell Ja}^{(0)} + g_{\ell Ja}^{(1)} s)(g_{\ell' Jb}^{(0)} + g_{\ell' Jb}^{(1)} s)}{m^2 - s} + \gamma_{\ell Ja, \ell' Jb}^{(0)} + \gamma_{\ell Ja, \ell' Jb}^{(1)} s + \gamma_{\ell Ja, \ell' Jb}^{(2)} s^2. \quad (0.1)$$

Amplitudes have names encoding the K -matrix parameterization as follows:

- **coupled_po_pp.3s1_3d1.pole+** – all begin with this which denotes that these parameterizations are, in general, coupled $\pi\omega\{^3S_1\}$, $\pi\omega\{^3D_1\}$ and $\pi\phi\{^3S_1\}$ and all contain a pole term as shown in Eq. 0.1.
- **G0_-** – this lists non-zero elements $\gamma_{\ell Ja, \ell' Jb}^{(0)}$.
- **G1_-** – this lists non-zero elements $\gamma_{\ell Ja, \ell' Jb}^{(1)}$.
- **G2_-** – this lists non-zero elements $\gamma_{\ell Ja, \ell' Jb}^{(2)}$.
- **gorder0_-** – this lists non-zero elements $g_{\ell Ja}^{(0)}$.
- **gorder1_-** – this lists non-zero elements $g_{\ell Ja}^{(1)}$.

The key for the specific elements are:

- **3s1** = $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}$ or $g_{\pi\omega\{^3S_1\}}$ as appropriate
- **3d1** = $\gamma_{\pi\omega\{^3D_1\}, \pi\omega\{^3D_1\}}$ or $g_{\pi\omega\{^3D_1\}}$ as appropriate
- **3S1** = $\gamma_{\pi\phi\{^3S_1\}, \pi\phi\{^3S_1\}}$ or $g_{\pi\phi\{^3S_1\}}$ as appropriate
- **3sd1** = $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}$
- **3sS1** = $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}$
- **3dS1** = $\gamma_{\pi\omega\{^3D_1\}, \pi\phi\{^3S_1\}}$

Regarding the phase space, we use three different prescriptions,

- **pole0_sub** – this denotes the Chew-Mandelstam phase space with $\text{Re}\{I_a(s = m^2) = 0\}$
- **threshold_sub** – this denotes the Chew-Mandelstam phase space with $\text{Re}\{I_a(s = s_a^{\text{thr}}) = 0\}$
- **irho** – this denotes $I_a(s) = -i\rho_a(s)$

As an illustrative example, we take the parameterization,

`coupled_pp.3s1_3d1.pole+G0_3s1_3S1+G1_3s1.gorder0_3s1_3d1_3S1.pole0_sub.`

The explicit K -matrix encoded in this name is,

$$\mathbf{K}(s) = \frac{1}{m^2 - s} \begin{pmatrix} g_{\pi\omega\{^3S_1\}}^2 & g_{\pi\omega\{^3S_1\}} g_{\pi\omega\{^3D_1\}} & g_{\pi\omega\{^3S_1\}} g_{\pi\phi\{^3S_1\}} \\ g_{\pi\omega\{^3S_1\}} g_{\pi\omega\{^3D_1\}} & g_{\pi\omega\{^3D_1\}}^2 & g_{\pi\omega\{^3D_1\}} g_{\pi\phi\{^3S_1\}} \\ g_{\pi\omega\{^3S_1\}} g_{\pi\phi\{^3S_1\}} & g_{\pi\omega\{^3D_1\}} g_{\pi\phi\{^3S_1\}} & g_{\pi\phi\{^3S_1\}}^2 \end{pmatrix} + \begin{pmatrix} \gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(0)} & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & \gamma_{\pi\phi\{^3S_1\}, \pi\phi\{^3S_1\}}^{(0)} \end{pmatrix} + \begin{pmatrix} \gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(1)} & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix} s \quad (0.2)$$

with the Chew-Mandelstam prescription where $\text{Re}\{I_a(s = m^2) = 0\}$.

In Section 1 we provide the amplitudes for the successful parameterizations in Table XVI, transcribed in Table 0.1 for convenience, and in Section 2 we provide the amplitudes for the parameterizations given in Table 0.2 that had unphysical poles, i.e. poles off the real axis on the physical sheet, as discussed in the paper.

Displayed for each parameterization are first the phase-shifts and mixing-angles (left), see Figure 9 in the paper, and magnitude squared amplitudes (right), see Figure 10 in the paper. Dashed curves reflect the statistical uncertainties on the scattering parameters. The next figure shows the pole singularities in a region of the complex plane relevant for the study. For successful parameterizations given in Section 1, only sheet II and III poles appeared in this region of the complex plane and these are indistinguishable in the figures. For unphysical parameterization given in Section 2, we find sheet I poles as well as indistinguishable sheet II and III poles. After the figures, the scattering parameters, statistical uncertainties and correlations between the parameters are given. Then, we present the results of the pole analysis and show the pole location, couplings to each channel and the corresponding branching fractions using the definition given in Eq. 29 in the paper.

Parameterization	Further Restrictions	Phase-space	N_{pars}	χ^2/N_{dof}
$K_{\ell Ja, \ell' Jb} = \frac{(g_{\ell Ja}^{(0)} + g_{\ell Ja}^{(1)}) (g_{\ell' Jb}^{(0)} + g_{\ell' Jb}^{(1)})}{m^2 - s} + \gamma_{\ell Ja, \ell' Jb}^{(0)} + \gamma_{\ell Ja, \ell' Jb}^{(1)} s$ where $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}^{(0,1)} = 0$, $\gamma_{\pi\phi\{^3S_1\}, \pi\phi\{^3S_1\}}^{(1)} = 0$, $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}^{(1)} = 0$, $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}^{(1)} = 0$, $\gamma_{\pi\omega\{^3D_1\}, \pi\phi\{^3S_1\}}^{(0,1)} = 0$, $g_{\pi\omega\{^3D_1\}}^{(1)} = 0$, $g_{\pi\phi\{^3S_1\}}^{(1)} = 0$, hence $19 - 9 = 10$ free real-parameters.	$g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(1)} = 0$ $g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(1)} = 0$ $g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}^{(0)} = 0$ $g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}^{(0)} = 0$ $g_{\pi\omega\{^3D_1\}}^{(0)} = g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(1)} = 0$ $g_{\pi\omega\{^3D_1\}}^{(0)} = g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}^{(1)} = 0$ $g_{\pi\omega\{^3S_1\}}^{(0)} = g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(1)} = 0$ $g_{\pi\omega\{^3D_1\}}^{(0)} = g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}^{(1)} = 0$	$I_a(s) = -i\rho_a(s)$ CM Re { $I_a(s = m^2) = 0$ } CM Re{ $I_a(s = s_a^{\text{thr}}) = 0$ }	5	1.18 1.19 1.19
		$I_a(s) = -i\rho_a(s)$		1.22
		CM Re{ $I_a(s = m^2) = 0$ }	6	1.22
		CM Re{ $I_a(s = s_a^{\text{thr}}) = 0$ }		1.22
		$I_a(s) = -i\rho_a(s)$		1.27
		CM Re{ $I_a(s = m^2) = 0$ }	7	1.27
		CM Re{ $I_a(s = s_a^{\text{thr}}) = 0$ }		1.27
		CM Re{ $I_a(s = m^2) = 0$ }	7	1.24
		CM Re{ $I_a(s = s_a^{\text{thr}}) = 0$ }		1.24
		CM Re{ $I_a(s = m^2) = 0$ }	6	1.20
		CM Re{ $I_a(s = s_a^{\text{thr}}) = 0$ }		1.20
		$I_a(s) = -i\rho_a(s)$		1.35
		CM Re{ $I_a(s = m^2) = 0$ }	6	1.35
		CM Re{ $I_a(s = s_a^{\text{thr}}) = 0$ }		1.32
		$I_a(s) = -i\rho_a(s)$		1.35
		CM Re{ $I_a(s = m^2) = 0$ }	6	1.35
		$I_a(s) = -i\rho_a(s)$		1.31
		CM Re{ $I_a(s = m^2) = 0$ }	5	1.31
		CM Re{ $I_a(s = s_a^{\text{thr}}) = 0$ }		1.28

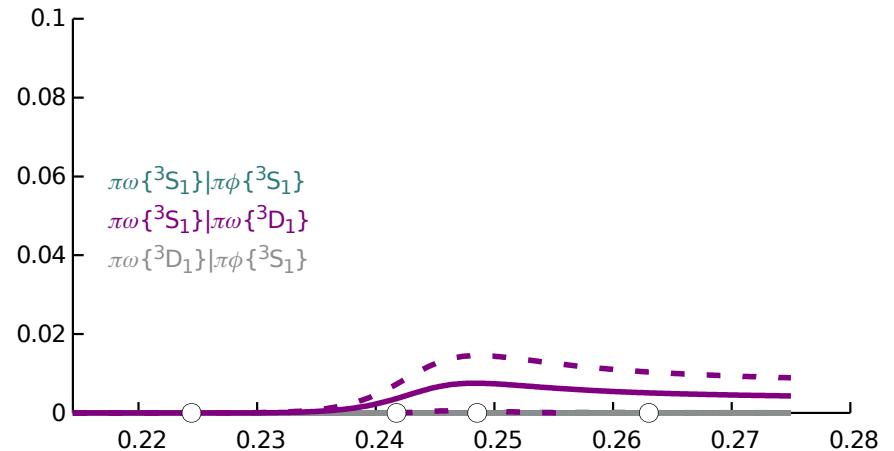
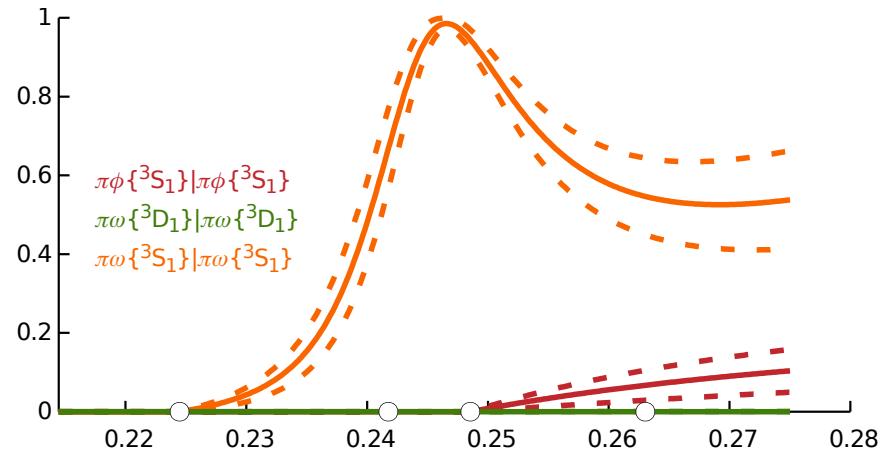
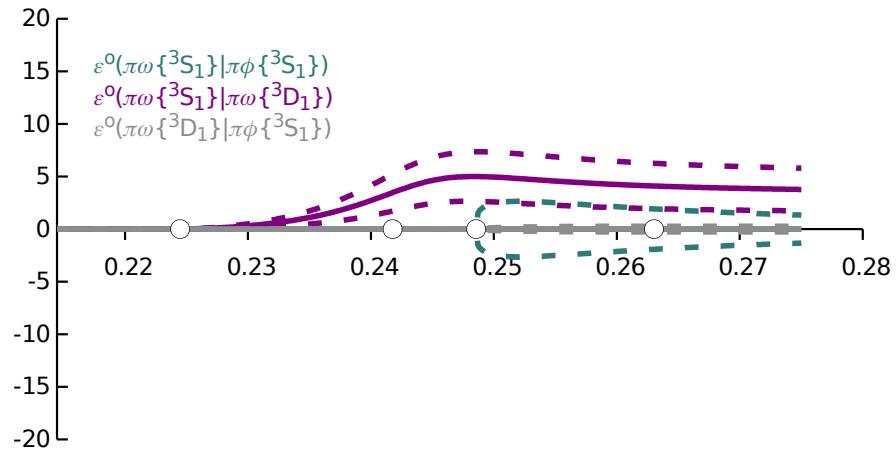
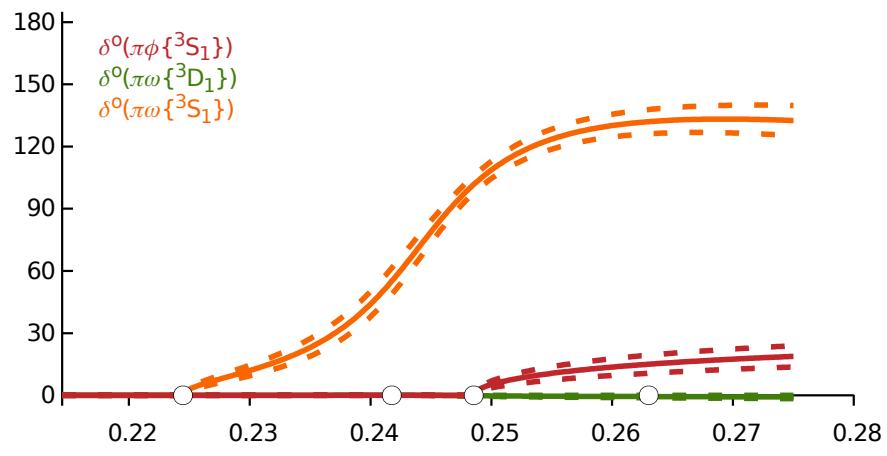
Table 0.1: Transcribed from Table XVI in the paper. Parameterizations of coupled $\pi\omega\{^3S_1\}$, $\pi\omega\{^3D_1\}$ and $\pi\phi\{^3S_1\}$ scattering amplitudes. Fits used 36 energy levels below $\pi\pi\pi\pi$ threshold as described in the paper. Displayed in bold is the reference amplitude of Eq. 22. ‘CM’ denotes that the Chew-Mandelstam prescription was employed with subtraction at energy m or at threshold s_a^{thr} where $s_a^{\text{thr}} = (m_1^{(a)} + m_2^{(a)})^2$. Otherwise, we set $I_a(s) = -i\rho_a(s)$.

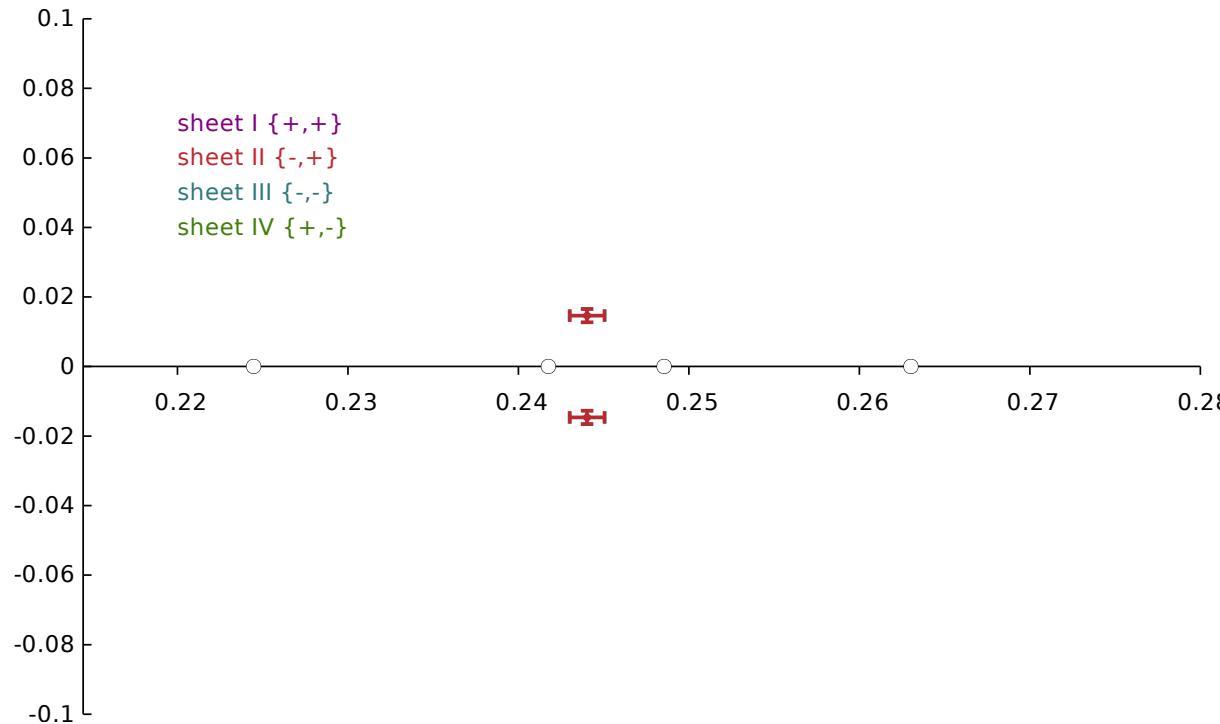
Parameterization	Further Restrictions	Phase-space	N_{pars}	χ^2/N_{dof}
$K_{\ell Ja, \ell' Jb} = \frac{(g_{\ell Ja}^{(0)} + g_{\ell Ja}^{(1)} s)(g_{\ell' Jb}^{(0)} + g_{\ell' Jb}^{(1)} s)}{m^2 - s}$ + $\gamma_{\ell Ja, \ell' Jb}^{(0)} + \gamma_{\ell Ja, \ell' Jb}^{(1)} s + \gamma_{\ell Ja, \ell' Jb}^{(2)} s^2$ where $\gamma_{\pi\omega\{^3S_1\}, \pi\phi\{^3S_1\}}^{(0,1,2)} = 0$, $\gamma_{\pi\omega\{^3D_1\}, \pi\phi\{^3S_1\}}^{(0,1,2)} = 0$, $\gamma_{\pi\omega\{^3D_1\}, \pi\omega\{^3D_1\}}^{(0,1,2)} = 0$, $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}^{(1,2)} = 0$, $\gamma_{\pi\phi\{^3S_1\}, \pi\phi\{^3S_1\}}^{(1,2)} = 0$, $g_{\pi\omega\{^3D_1\}}^{(1)} = 0$, $g_{\pi\phi\{^3S_1\}}^{(1)} = 0$, hence $25 - 15 = 10$ free real-parameters.	$g_{\pi\omega\{^3D_1\}}^{(0)} = g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(2)} = 0$ ----- $g_{\pi\omega\{^3D_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(2)} = 0$ ----- $g_{\pi\omega\{^3S_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(2)} = 0$ ----- $g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(2)} = 0$ ----- $g_{\pi\omega\{^3D_1\}}^{(0)} = g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ ----- $g_{\pi\omega\{^3D_1\}}^{(0)} = g_{\pi\phi\{^3S_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(2)} = 0$ ----- $g_{\pi\phi\{^3S_1\}}^{(0)} = g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(2)} = 0$ ----- $g_{\pi\omega\{^3S_1\}}^{(1)} = 0$ $g_{\pi\omega\{^3S_1\}, \pi\omega\{^3D_1\}}^{(0)} = 0$ $\gamma_{\pi\omega\{^3S_1\}, \pi\omega\{^3S_1\}}^{(2)} = 0$	$I_a(s) = -i\rho_a(s)$ CM Re{ $I_a(s = m^2) = 0$ } CM Re{ $I_a(s = s_a^{\text{thr}}) = 0$ }	6	1.11

Table 0.2: As Table 0.1 but for amplitudes that resulted in poles on the physical sheet off the real axis and were subsequently rejected as discussed in the paper.

1 Successful Parameterizations

1.1 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1+G1_3s1.gorder0_3s1_3d1_3S1.pole0_sub





parameter values

```

minimised with chisq/nDoF = 36.05 / (36 - 7) = 1.24
=====
JP1+_g_pi:omega/3^D_1_pole0 | 0.93996 +/- 0.49168 | 1.00 0.73 -0.01 -0.16 0.02 -0.06 0.05
JP1+_g_pi:omega/3^S_1_pole0 | 0.10010 +/- 0.0074569 | 1.00 -0.02 -0.34 0.15 -0.05 -0.02
JP1+_g_pi:phi/3^S_1_pole0 | -3.0312e-06 +/- 0.0093502 | 1.00 0.01 -0.01 -0.02 -0.05
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^S_1_order | 1.2164 +/- 0.54645 | 1.00 -0.94 0.01 0.00
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^S_1_order | -28.554 +/- 9.9992 | 1.00 0.08 -0.02
JP1+_gamma_pi:phi/3^S_1|pi:phi/3^S_1_order0 | 0.86558 +/- 0.24054 | 1.00 -0.23
JP1+_m_pole0 | 0.24658 +/- 0.00066388 | 1.00
=====
```

pole singularities

```

pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24403 +/- 0.0010114)
+ (i/2)*(+0.014632 +/- 0.0018828) [-0.45]

s_pole = (0.059496 +/- 0.00049994)
+ i*(+0.0035707 +/- 0.00045298) [-0.45]

pi:omega | pi:phi |
=====|=====
k_re= -0.0454 +/- 0.0011 | k_re= 0.0138 +/- 0.0012 |
k_im= -0.0088 +/- 0.0012 | k_im= 0.0256 +/- 0.0019 |
```

1 Successful Parameterizations

```

corr= [-0.45] | corr= [ 0.15] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0924 +/- 0.0061 | |g|= 0.0003 +/- 0.0053 | |g|= 0.0081 +/- 0.0040 |
arg(g)/pi= 0.0781 +/- 0.0209 |arg(g)/pi= -0.4343 +/- 11.1606 |arg(g)/pi= 0.1446 +/- 0.0215 |
-----
g_re= 0.0896 +/- 0.0062 | g_re= -0.0000 +/- 0.0086 | g_re= 0.0073 +/- 0.0034 |
g_im= 0.0224 +/- 0.0060 | g_im= 0.0000 +/- 0.0012 | g_im= 0.0036 +/- 0.0021 |
corr= [-0.04] | corr= [ 1.00] | corr= [ 0.97] |
-----
Br = 0.8775 +/- 0.0284 | Br = 0.0000 +/- 0.0000 | Br = 0.0068 +/- 0.0062 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24403 +/- 0.0010114)
+ (i/2)*(-0.014632 +/- 0.0018828) [ 0.45]

s_pole = (0.059496 +/- 0.00049994)
+ i*(-0.0035707 +/- 0.00045298) [ 0.45]

pi:omega | pi:phi |
=====
k_re= 0.0454 +/- 0.0011 | k_re= -0.0138 +/- 0.0012 |
k_im= -0.0088 +/- 0.0012 | k_im= 0.0256 +/- 0.0019 |
corr= [ 0.45] | corr= [-0.15] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0924 +/- 0.0061 | |g|= 0.0003 +/- 0.0053 | |g|= 0.0081 +/- 0.0040 |
arg(g)/pi= -0.0781 +/- 0.0209 |arg(g)/pi= 0.4343 +/- 11.1606 |arg(g)/pi= -0.1446 +/- 0.0215 |
-----
g_re= 0.0896 +/- 0.0062 | g_re= -0.0000 +/- 0.0086 | g_re= 0.0073 +/- 0.0034 |
g_im= -0.0224 +/- 0.0060 | g_im= 0.0000 +/- 0.0012 | g_im= -0.0036 +/- 0.0021 |
corr= [ 0.04] | corr= [-1.00] | corr= [-0.97] |
-----
Br = 0.8775 +/- 0.0284 | Br = 0.0000 +/- 0.0000 | Br = 0.0068 +/- 0.0062 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24403 +/- 0.0010398)
+ (i/2)*(+0.014632 +/- 0.001965) [-0.46]

s_pole = (0.059495 +/- 0.00051426)
+ i*(+0.0035706 +/- 0.00047269) [-0.46]

pi:omega | pi:phi |
=====
k_re= -0.0454 +/- 0.0011 | k_re= -0.0138 +/- 0.0013 |
k_im= -0.0088 +/- 0.0012 | k_im= -0.0256 +/- 0.0020 |
corr= [-0.46] | corr= [ 0.17] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0924 +/- 0.0064 | |g|= 0.0005 +/- 0.0078 | |g|= 0.0081 +/- 0.0041 |
arg(g)/pi= 0.0781 +/- 0.0212 |arg(g)/pi= 0.4562 +/- 11.1675 |arg(g)/pi= 0.1446 +/- 0.0224 |
-----
g_re= 0.0896 +/- 0.0065 | g_re= -0.0000 +/- 0.0130 | g_re= 0.0073 +/- 0.0035 |
g_im= 0.0224 +/- 0.0061 | g_im= 0.0000 +/- 0.0014 | g_im= 0.0036 +/- 0.0022 |
corr= [-0.03] | corr= [-1.00] | corr= [ 0.97] |

```

1 Successful Parameterizations

```

-----|-----|-----|
Br = 0.8775 +/- 0.0286 | Br = 0.0000 +/- 0.0000 | Br = 0.0068 +/- 0.0063 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24403 +/- 0.0010398)  

+ (i/2)*(-0.014632 +/- 0.001965) [ 0.46]  

s_pole = (0.059495 +/- 0.00051426)  

+ i*(-0.0035706 +/- 0.00047269) [ 0.46]

pi:omega | pi:phi |
=====|=====
k_re= 0.0454 +/- 0.0011 | k_re= 0.0138 +/- 0.0013 |
k_im= -0.0088 +/- 0.0012 | k_im= -0.0256 +/- 0.0020 |
corr= [ 0.46] | corr= [-0.17] |

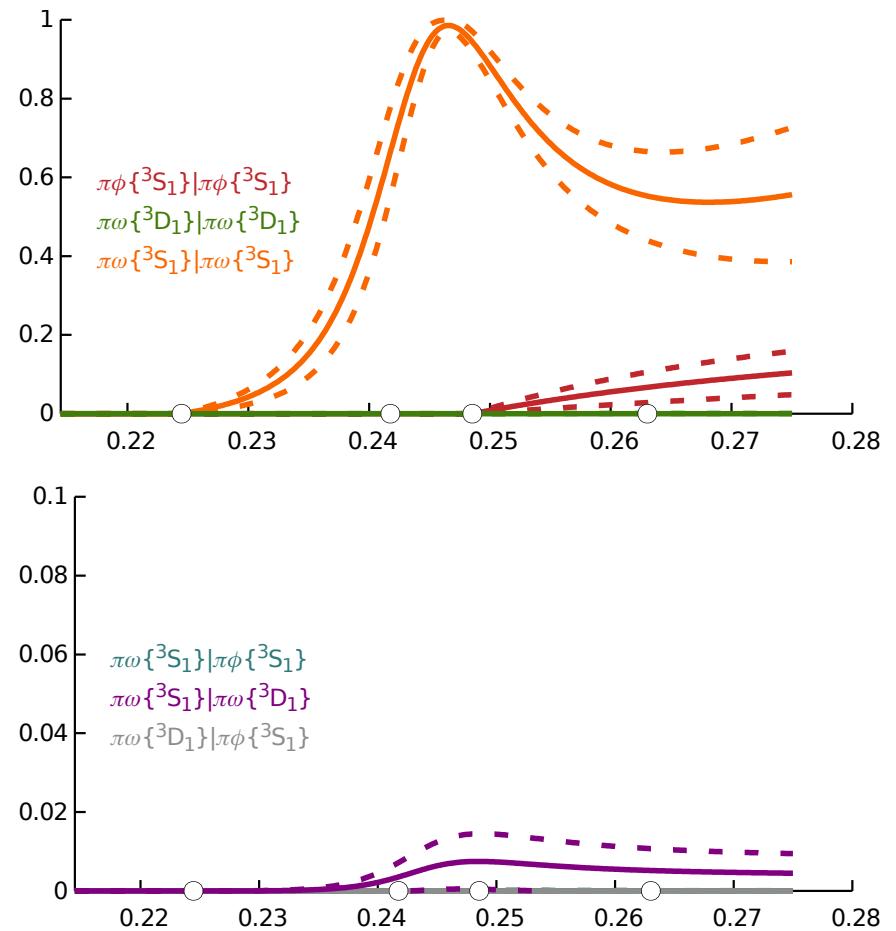
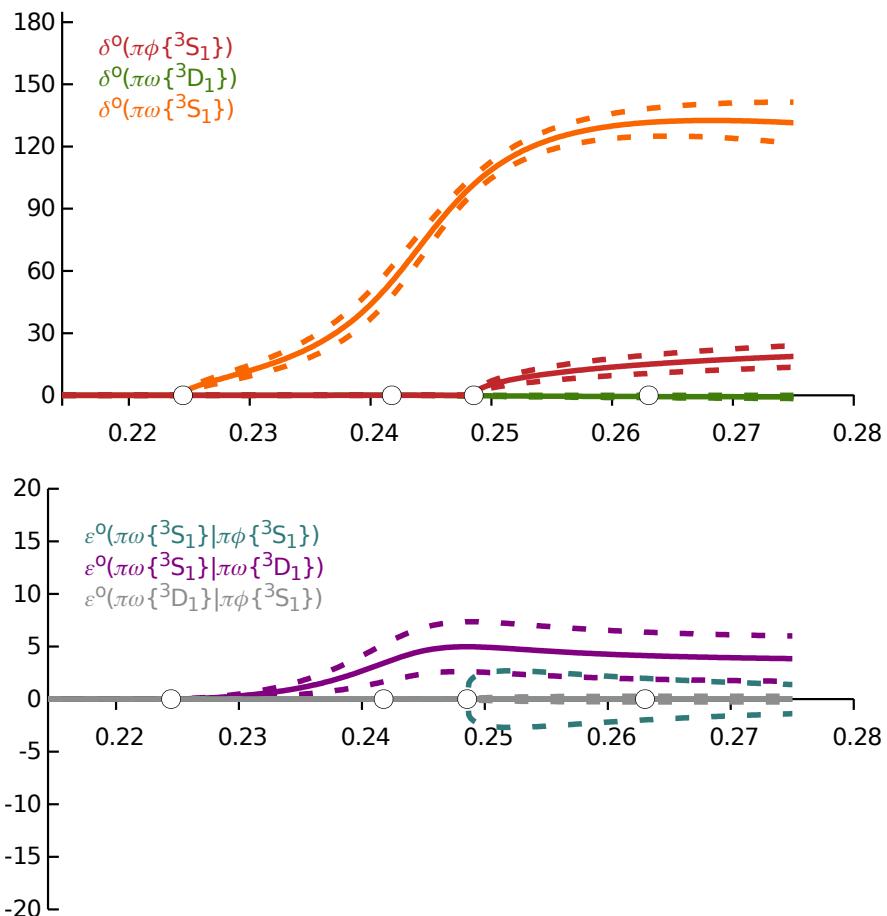
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0924 +/- 0.0064 | |g|= 0.0005 +/- 0.0078 | |g|= 0.0081 +/- 0.0041 |
arg(g)/pi= -0.0781 +/- 0.0212 | arg(g)/pi= -0.4560 +/- 11.1715 | arg(g)/pi= -0.1446 +/- 0.0224 |

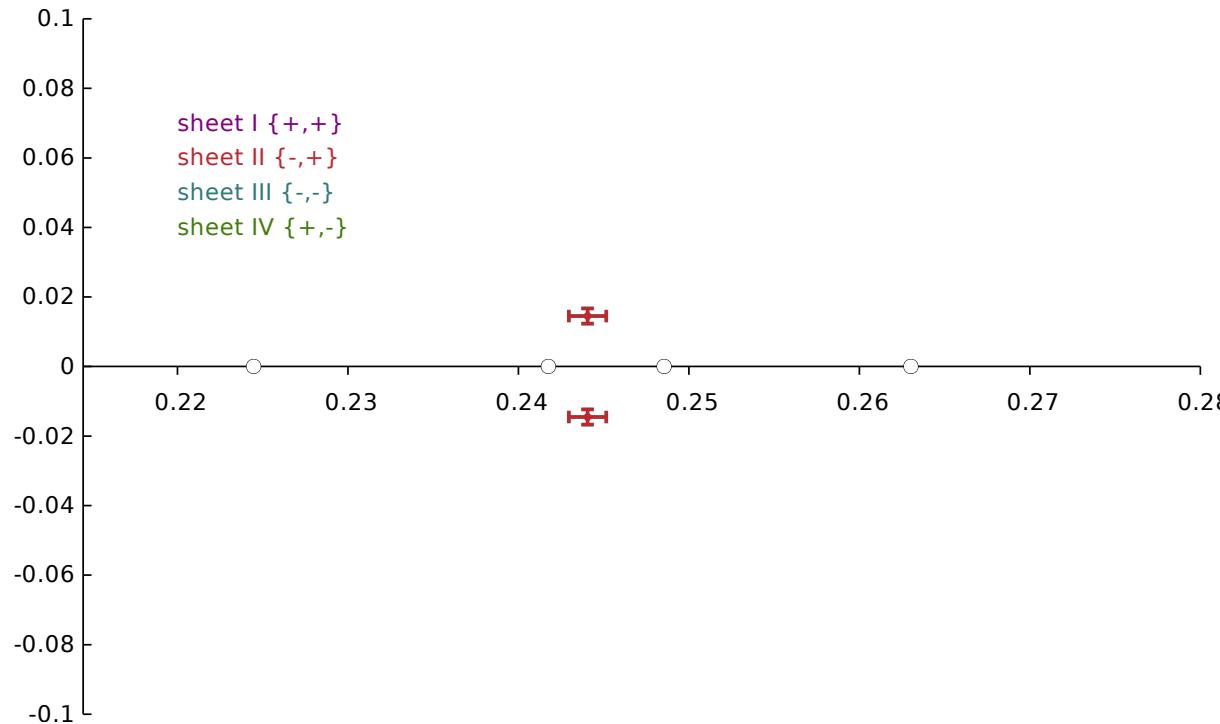
g_re= 0.0896 +/- 0.0065 | g_re= -0.0000 +/- 0.0130 | g_re= 0.0073 +/- 0.0035 |
g_im= -0.0224 +/- 0.0061 | g_im= -0.0000 +/- 0.0014 | g_im= -0.0036 +/- 0.0022 |
corr= [ 0.03] | corr= [ 1.00] | corr= [-0.97] |

-----|-----|-----|
Br = 0.8775 +/- 0.0286 | Br = 0.0000 +/- 0.0000 | Br = 0.0068 +/- 0.0063 |

```

1.2 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1+G1_3s1.gorder0_3s1_3d1_3S1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 36.02 / (36 - 7) = 1.24
```

JP1+_g_pi:omega/3^D_1_pole0	0.93053 +/- 0.49566	1.00 0.67 -0.00 -0.20 0.12 -0.02 -0.36
JP1+_g_pi:omega/3^S_1_pole0	0.095180 +/- 0.007314	1.00 -0.01 -0.55 0.51 0.08 -0.58
JP1+_g_pi:phi/3^S_1_pole0	-1.7589e-05 +/- 0.010383	1.00 0.00 -0.00 0.00 -0.02
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	1.2269 +/- 0.90034	1.00 -0.98 -0.05 0.28
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-27.519 +/- 15.828	1.00 0.09 -0.25
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.95117 +/- 0.29844	1.00 -0.28
JP1+_m_pole0	0.24464 +/- 0.00074184	1.00

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24406 +/- 0.0010928)
              + (i/2)*(+0.014521 +/- 0.0021623) [-0.50]

s_pole = (0.059513 +/- 0.00054139)
          + i*(+0.0035441 +/- 0.00052002) [-0.49]

      pi:omega |           pi:phi |
=====|=====
k_re= -0.0455 +/- 0.0012 |   k_re= 0.0137 +/- 0.0013 |
k_im= -0.0087 +/- 0.0014 |   k_im= 0.0255 +/- 0.0022 |
```

```

corr= [-0.48] | corr= [ 0.24] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0919 +/- 0.0079 | |g|= 0.0003 +/- 0.0053 | |g|= 0.0080 +/- 0.0040 |
arg(g)/pi= 0.0776 +/- 0.0215 | arg(g)/pi= -0.4356 +/- 11.1637 | arg(g)/pi= 0.1463 +/- 0.0250 |
-----|-----|-----
g_re= 0.0892 +/- 0.0079 | g_re= -0.0000 +/- 0.0085 | g_re= 0.0072 +/- 0.0034 |
g_im= 0.0222 +/- 0.0061 | g_im= 0.0000 +/- 0.0013 | g_im= 0.0036 +/- 0.0022 |
corr= [ 0.02] | corr= [ 1.00] | corr= [ 0.96] |
-----|-----|-----
Br = 0.8755 +/- 0.0409 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0061 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24406 +/- 0.0010928)  

+ (i/2)*(-0.014521 +/- 0.0021623) [ 0.50]

s_pole = (0.059513 +/- 0.00054139)  

+ i*(-0.0035441 +/- 0.00052002) [ 0.49]

pi:omega | pi:phi |
=====|=====
k_re= 0.0455 +/- 0.0012 | k_re= -0.0137 +/- 0.0013 |
k_im= -0.0087 +/- 0.0014 | k_im= 0.0255 +/- 0.0022 |
corr= [ 0.48] | corr= [-0.24] |
-----|-----

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0919 +/- 0.0079 | |g|= 0.0003 +/- 0.0053 | |g|= 0.0080 +/- 0.0040 |
arg(g)/pi= -0.0776 +/- 0.0215 | arg(g)/pi= 0.4356 +/- 11.1637 | arg(g)/pi= -0.1463 +/- 0.0250 |
-----|-----|-----
g_re= 0.0892 +/- 0.0079 | g_re= -0.0000 +/- 0.0085 | g_re= 0.0072 +/- 0.0034 |
g_im= -0.0222 +/- 0.0061 | g_im= 0.0000 +/- 0.0013 | g_im= -0.0036 +/- 0.0022 |
corr= [-0.02] | corr= [-1.00] | corr= [-0.96] |
-----|-----|-----
Br = 0.8755 +/- 0.0409 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0061 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24406 +/- 0.0011037)  

+ (i/2)*(+0.014522 +/- 0.0022478) [-0.49]

s_pole = (0.059511 +/- 0.00054696)  

+ i*(+0.0035442 +/- 0.00054088) [-0.49]

pi:omega | pi:phi |
=====|=====
k_re= -0.0454 +/- 0.0012 | k_re= -0.0137 +/- 0.0014 |
k_im= -0.0087 +/- 0.0014 | k_im= -0.0255 +/- 0.0022 |
corr= [-0.47] | corr= [ 0.26] |
-----|-----|-----

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0919 +/- 0.0082 | |g|= 0.0005 +/- 0.0079 | |g|= 0.0080 +/- 0.0041 |
arg(g)/pi= 0.0777 +/- 0.0221 | arg(g)/pi= 0.4673 +/- 11.1697 | arg(g)/pi= 0.1463 +/- 0.0259 |
-----|-----|-----
g_re= 0.0892 +/- 0.0083 | g_re= -0.0000 +/- 0.0130 | g_re= 0.0072 +/- 0.0035 |
g_im= 0.0222 +/- 0.0063 | g_im= 0.0000 +/- 0.0013 | g_im= 0.0036 +/- 0.0022 |
corr= [ 0.02] | corr= [-1.00] | corr= [ 0.97] |
-----|-----|-----

```

1 Successful Parameterizations

```

-----|-----|-----|
Br = 0.8754 +/- 0.0415 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0062 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24406 +/- 0.0011037)  

+ (i/2)*(-0.014522 +/- 0.0022478) [ 0.49]  

s_pole = (0.059511 +/- 0.00054696)  

+ i*(-0.0035442 +/- 0.00054088) [ 0.49]  

pi:omega | pi:phi |  

=====|=====|  

k_re= 0.0454 +/- 0.0012 | k_re= 0.0137 +/- 0.0014 |  

k_im= -0.0087 +/- 0.0014 | k_im= -0.0255 +/- 0.0022 |  

corr= [ 0.47] | corr= [-0.26] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |  

=====|=====|=====|  

|g|= 0.0919 +/- 0.0082 | |g|= 0.0005 +/- 0.0079 | |g|= 0.0080 +/- 0.0041 |  

arg(g)/pi= -0.0777 +/- 0.0221 | arg(g)/pi= -0.4673 +/- 11.1697 | arg(g)/pi= -0.1463 +/- 0.0259 |  

g_re= 0.0892 +/- 0.0083 | g_re= -0.0000 +/- 0.0130 | g_re= 0.0072 +/- 0.0035 |  

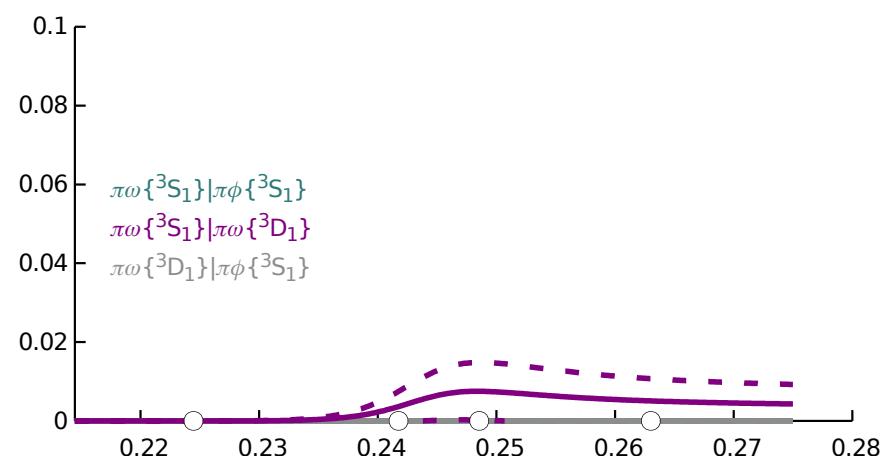
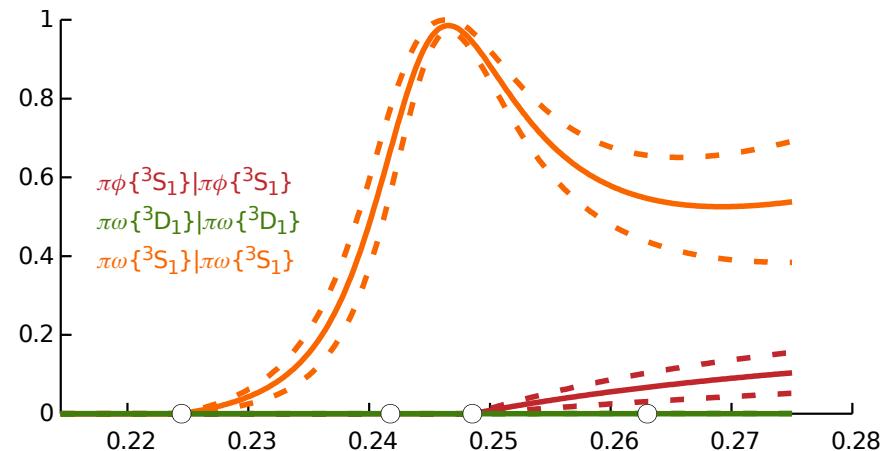
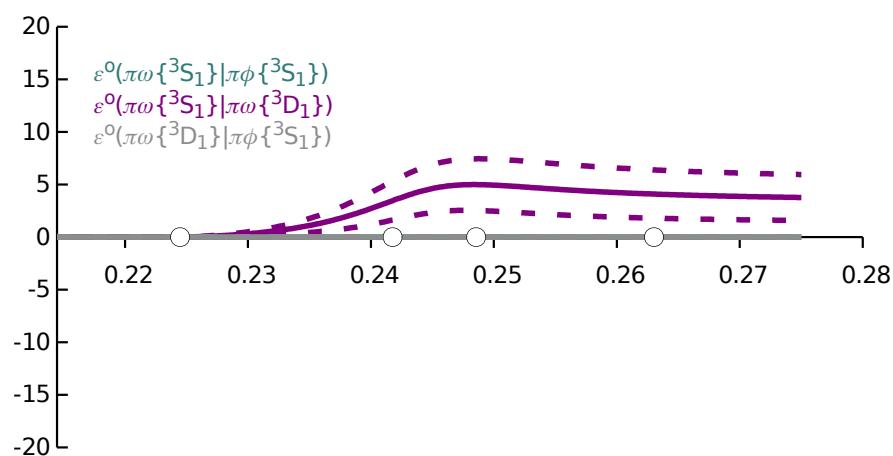
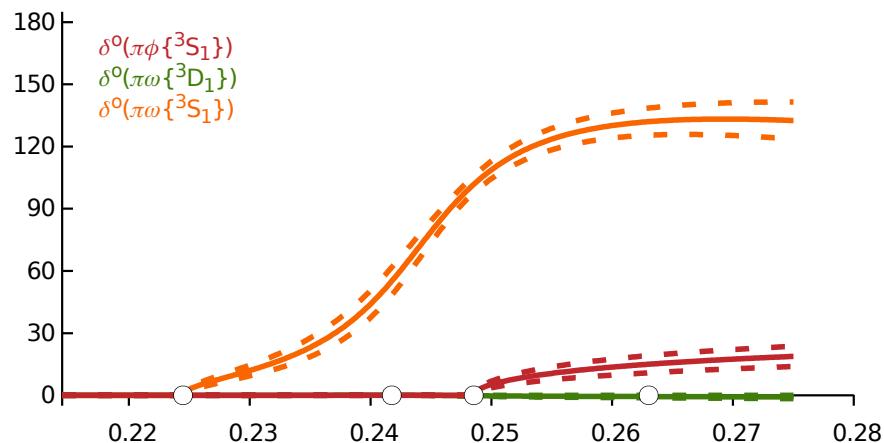
g_im= -0.0222 +/- 0.0063 | g_im= -0.0000 +/- 0.0013 | g_im= -0.0036 +/- 0.0022 |  

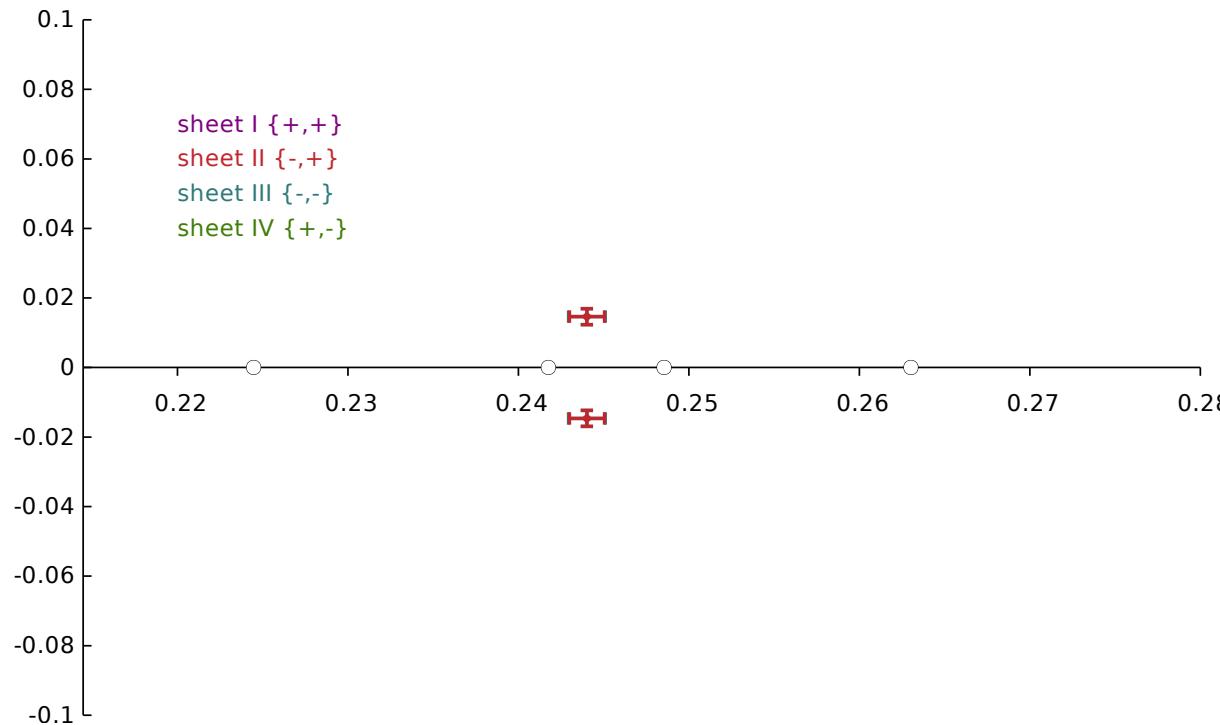
corr= [-0.02] | corr= [ 1.00] | corr= [-0.97] |  

-----|-----|-----|
Br = 0.8754 +/- 0.0415 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0062 |

```

1.3 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1+G1_3s1.gorder0_3s1_3d1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 36.05 / (36 - 6) = 1.20
```

JP1+_g_pi:omega/3^D_1_pole0	0.93910 +/- 0.49929	1.00 0.74 -0.19 0.08 -0.06 0.04
JP1+_g_pi:omega/3^S_1_pole0	0.10010 +/- 0.0078404	1.00 -0.42 0.29 -0.05 -0.03
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	1.2152 +/- 0.79759	1.00 -0.97 -0.02 0.01
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-28.539 +/- 14.557	1.00 0.08 -0.02
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.86503 +/- 0.24108	1.00 -0.24
JP1+_m_pole0	0.24658 +/- 0.00066445	1.00

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
*** not found on > 5% cfgs ***
sqrt(s)_pole = (0.24402 +/- 0.0010312)
+ (i/2)*(+0.01462 +/- 0.0022835) [-0.51]

s_pole = (0.059493 +/- 0.00051191)
+ i*(+0.0035677 +/- 0.00054974) [-0.51]
```

pi:omega	pi:phi
k_re= -0.0454 +/- 0.0011	k_re= 0.0137 +/- 0.0014
k_im= -0.0088 +/- 0.0014	k_im= 0.0256 +/- 0.0021
corr= [-0.47]	corr= [0.34]

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0923 +/- 0.0080 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0081 +/- 0.0042 |
arg(g)/pi= 0.0782 +/- 0.0225 |arg(g)/pi= 0.4218 +/- 0.0225 |arg(g)/pi= 0.1445 +/- 0.0263 |
-----|-----|-----
g_re= 0.0896 +/- 0.0081 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0073 +/- 0.0036 |
g_im= 0.0225 +/- 0.0064 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0023 |
corr= [-0.01] | corr= [ 0.20] | corr= [ 0.97] |
-----|-----|-----
Br = 0.8767 +/- 0.0365 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0063 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

*** not found on > 5% cfgs ***  

sqrt(s)_pole = (0.24402 +/- 0.0010312)  

+ (i/2)*(-0.01462 +/- 0.0022835) [ 0.51]  

s_pole = (0.059493 +/- 0.00051191)  

+ i*(-0.0035677 +/- 0.00054974) [ 0.51]

pi:omega | pi:phi |
=====|=====
k_re= 0.0454 +/- 0.0011 | k_re= -0.0137 +/- 0.0014 |
k_im= -0.0088 +/- 0.0014 | k_im= 0.0256 +/- 0.0021 |
corr= [ 0.47] | corr= [-0.34] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0923 +/- 0.0080 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0081 +/- 0.0042 |
arg(g)/pi= -0.0782 +/- 0.0225 |arg(g)/pi= 0.5782 +/- 0.0225 |arg(g)/pi= -0.1445 +/- 0.0263 |
-----|-----|-----
g_re= 0.0896 +/- 0.0081 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0073 +/- 0.0036 |
g_im= -0.0225 +/- 0.0064 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0036 +/- 0.0023 |
corr= [ 0.01] | corr= [-0.20] | corr= [-0.97] |
-----|-----|-----
Br = 0.8767 +/- 0.0365 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0063 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24402 +/- 0.0010745)  

+ (i/2)*(+0.014628 +/- 0.00231) [-0.52]  

s_pole = (0.059492 +/- 0.00053335)  

+ i*(+0.0035696 +/- 0.00055571) [-0.52]

pi:omega | pi:phi |
=====|=====
k_re= -0.0454 +/- 0.0012 | k_re= -0.0137 +/- 0.0014 |
k_im= -0.0088 +/- 0.0015 | k_im= -0.0256 +/- 0.0022 |
corr= [-0.48] | corr= [ 0.33] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0924 +/- 0.0081 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0081 +/- 0.0043 |
arg(g)/pi= 0.0782 +/- 0.0222 |arg(g)/pi= 0.4218 +/- 0.0222 |arg(g)/pi= 0.1446 +/- 0.0268 |
-----|-----|-----
g_re= 0.0896 +/- 0.0081 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0073 +/- 0.0037 |
g_im= 0.0225 +/- 0.0065 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0023 |
corr= [ 0.06] | corr= [ 0.15] | corr= [ 0.97] |
-----|-----|-----

```

1 Successful Parameterizations

```
Br = 0.8768 +/- 0.0372 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0065 |
```

--
pi:omega[-] pi:phi[-] lower half-plane

```
sqrt(s)_pole = (0.24402 +/- 0.0010745)  
+ (i/2)*(-0.014628 +/- 0.00231) [ 0.52]
```

```
s_pole = (0.059492 +/- 0.00053335)  
+ i*(-0.0035696 +/- 0.00055571) [ 0.52]
```

pi:omega	pi:phi
----------	--------

k_re= 0.0454 +/- 0.0012	k_re= 0.0137 +/- 0.0014
k_im= -0.0088 +/- 0.0015	k_im= -0.0256 +/- 0.0022
corr= [0.48]	corr= [-0.33]

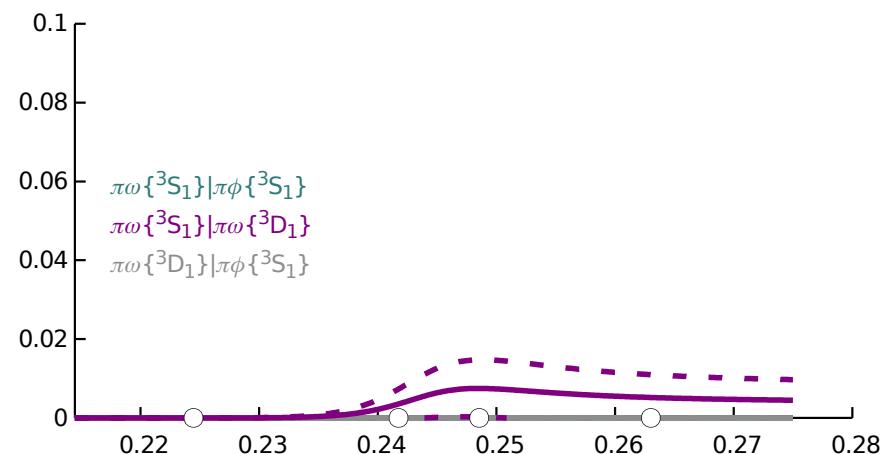
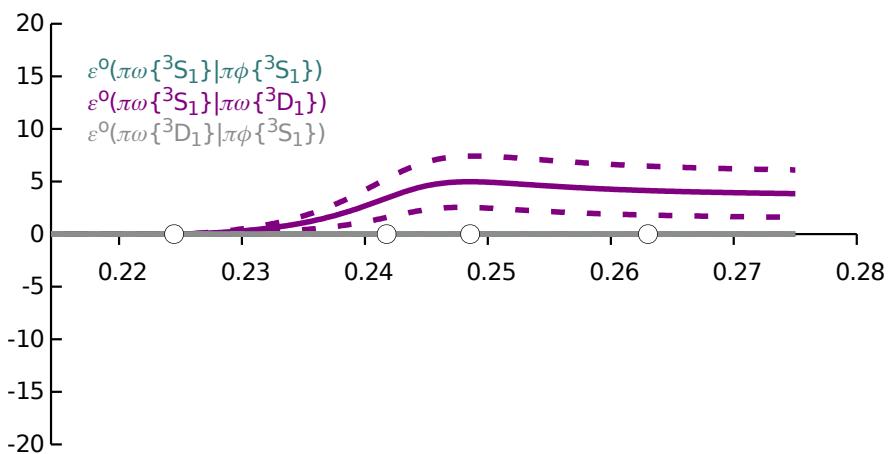
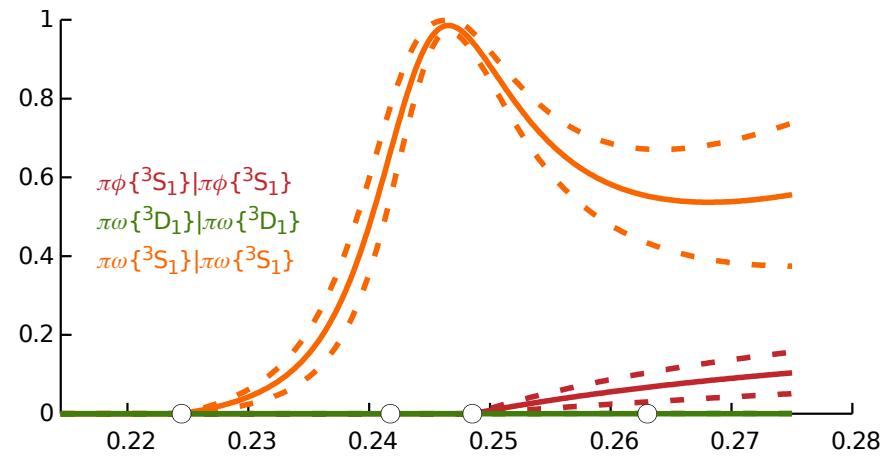
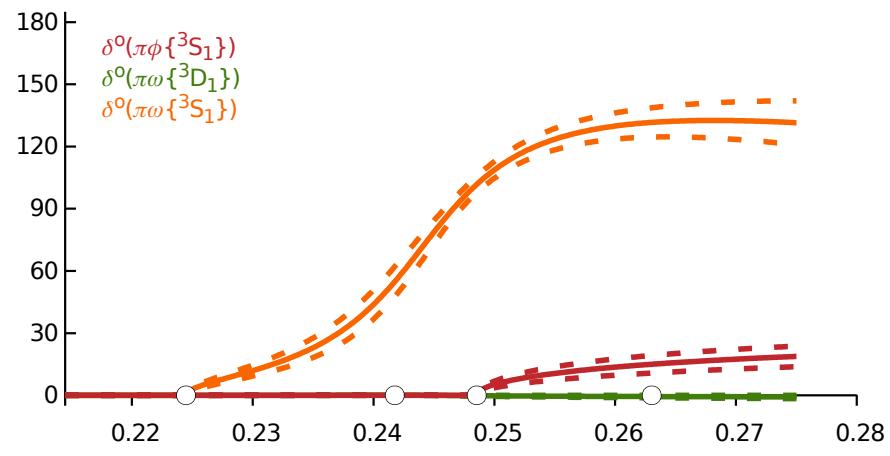
pi:omega/3^S_1(*)	pi:phi/3^S_1	pi:omega/3^D_1
-------------------	--------------	----------------

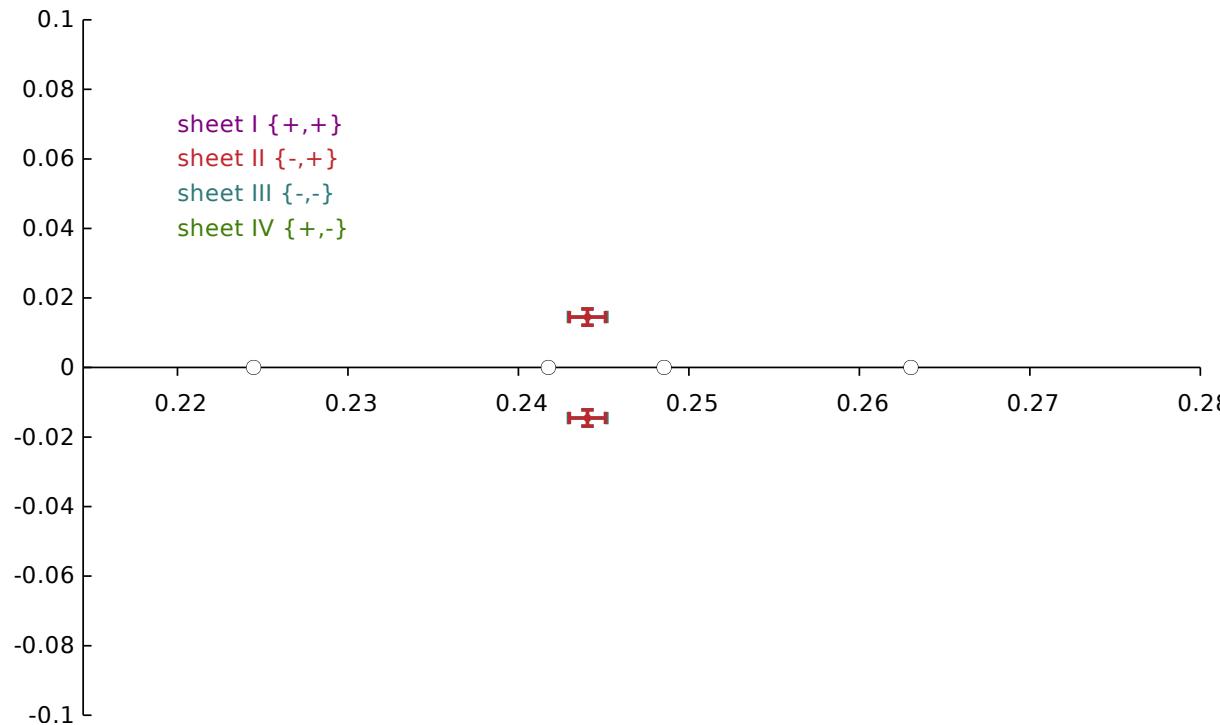
g = 0.0924 +/- 0.0081	g = 0.0000 +/- 0.0000	g = 0.0081 +/- 0.0043
arg(g)/pi= -0.0782 +/- 0.0222	arg(g)/pi= 0.5782 +/- 0.0222	arg(g)/pi= -0.1446 +/- 0.0268

g_re= 0.0896 +/- 0.0081	g_re= -0.0000 +/- 0.0000	g_re= 0.0073 +/- 0.0037
g_im= -0.0225 +/- 0.0065	g_im= 0.0000 +/- 0.0000	g_im= -0.0036 +/- 0.0023
corr= [-0.06]	corr= [-0.15]	corr= [-0.97]

```
Br = 0.8768 +/- 0.0372 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0065 |
```

1.4 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1+G1_3s1.gorder0_3s1_3d1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 36.02 / (36 - 6) = 1.20
```

JP1+_g_pi:omega/3^D_1_pole0	0.93062 +/- 0.49566	1.00 0.67 -0.20 0.12 -0.02 -0.36
JP1+_g_pi:omega/3^S_1_pole0	0.095182 +/- 0.0073138	1.00 -0.55 0.51 0.08 -0.58
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	1.2267 +/- 0.90033	1.00 -0.98 -0.05 0.28
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-27.515 +/- 15.828	1.00 0.09 -0.25
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.95120 +/- 0.29845	1.00 -0.28
JP1+_m_pole0	0.24464 +/- 0.00074165	1.00

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
*** not found on > 5% cfgs ***
sqrt(s)_pole = (0.24405 +/- 0.001056)
+ (i/2)*(+0.014516 +/- 0.0023185) [-0.52]

s_pole = (0.059509 +/- 0.00052444)
+ i*(+0.0035426 +/- 0.00055797) [-0.53]
```

pi:omega	pi:phi
k_re= -0.0454 +/- 0.0011	k_re= 0.0137 +/- 0.0014
k_im= -0.0087 +/- 0.0015	k_im= 0.0255 +/- 0.0022
corr= [-0.49]	corr= [0.35]

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0919 +/- 0.0086 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0041 |
arg(g)/pi= 0.0778 +/- 0.0227 | arg(g)/pi= 0.4222 +/- 0.0227 | arg(g)/pi= 0.1462 +/- 0.0266 |
-----|-----|-----
g_re= 0.0891 +/- 0.0087 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0072 +/- 0.0035 |
g_im= 0.0222 +/- 0.0063 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0023 |
corr= [-0.02] | corr= [ 0.27] | corr= [ 0.97] |
-----|-----|-----
Br = 0.8740 +/- 0.0424 | Br = 0.0000 +/- 0.0000 | Br = 0.0066 +/- 0.0061 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

*** not found on > 5% cfgs ***  

sqrt(s)_pole = (0.24405 +/- 0.001056)  

+ (i/2)*(-0.014516 +/- 0.0023185) [ 0.52]  

s_pole = (0.059509 +/- 0.00052444)  

+ i*(-0.0035426 +/- 0.00055797) [ 0.53]

pi:omega | pi:phi |
=====|=====
k_re= 0.0454 +/- 0.0011 | k_re= -0.0137 +/- 0.0014 |
k_im= -0.0087 +/- 0.0015 | k_im= 0.0255 +/- 0.0022 |
corr= [ 0.49] | corr= [-0.35] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0919 +/- 0.0086 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0041 |
arg(g)/pi= -0.0778 +/- 0.0227 | arg(g)/pi= 0.5778 +/- 0.0227 | arg(g)/pi= -0.1462 +/- 0.0266 |
-----|-----|-----
g_re= 0.0891 +/- 0.0087 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0072 +/- 0.0035 |
g_im= -0.0222 +/- 0.0063 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0036 +/- 0.0023 |
corr= [ 0.02] | corr= [-0.27] | corr= [-0.97] |
-----|-----|-----
Br = 0.8740 +/- 0.0424 | Br = 0.0000 +/- 0.0000 | Br = 0.0066 +/- 0.0061 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24406 +/- 0.0011281)  

+ (i/2)*(+0.014523 +/- 0.0024019) [-0.54]  

s_pole = (0.059511 +/- 0.00056028)  

+ i*(+0.0035443 +/- 0.00057749) [-0.54]

pi:omega | pi:phi |
=====|=====
k_re= -0.0454 +/- 0.0012 | k_re= -0.0137 +/- 0.0014 |
k_im= -0.0087 +/- 0.0015 | k_im= -0.0255 +/- 0.0023 |
corr= [-0.51] | corr= [ 0.33] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0919 +/- 0.0088 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0042 |
arg(g)/pi= 0.0777 +/- 0.0224 | arg(g)/pi= 0.4223 +/- 0.0224 | arg(g)/pi= 0.1463 +/- 0.0278 |
-----|-----|-----
g_re= 0.0892 +/- 0.0088 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0072 +/- 0.0036 |
g_im= 0.0222 +/- 0.0064 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0024 |
corr= [ 0.06] | corr= [ 0.23] | corr= [ 0.97] |
-----|-----|-----

```

1 Successful Parameterizations

```
Br = 0.8742 +/- 0.0434 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0064 |
```

--
pi:omega[-] pi:phi[-] lower half-plane

```
sqrt(s)_pole = (0.24406 +/- 0.0011281)  
+ (i/2)*(-0.014523 +/- 0.0024019) [ 0.54]
```

```
s_pole = (0.059511 +/- 0.00056028)  
+ i*(-0.0035443 +/- 0.00057749) [ 0.54]
```

pi:omega	pi:phi
----------	--------

k_re= 0.0454 +/- 0.0012	k_re= 0.0137 +/- 0.0014
k_im= -0.0087 +/- 0.0015	k_im= -0.0255 +/- 0.0023
corr= [0.51]	corr= [-0.33]

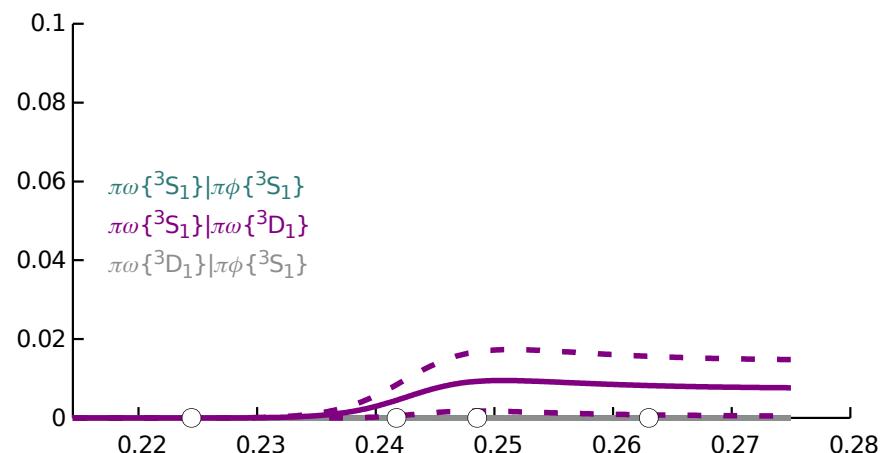
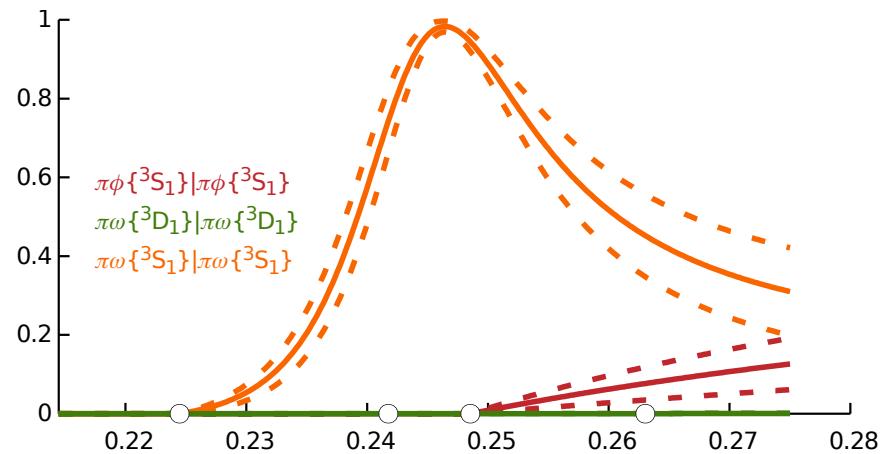
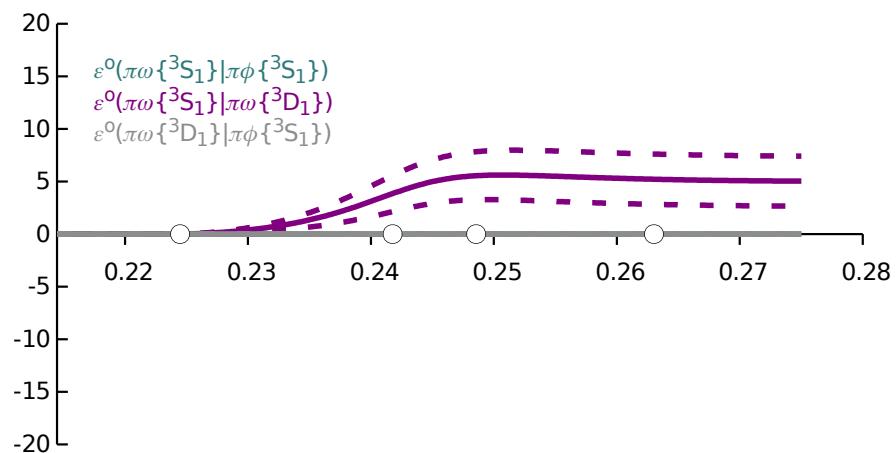
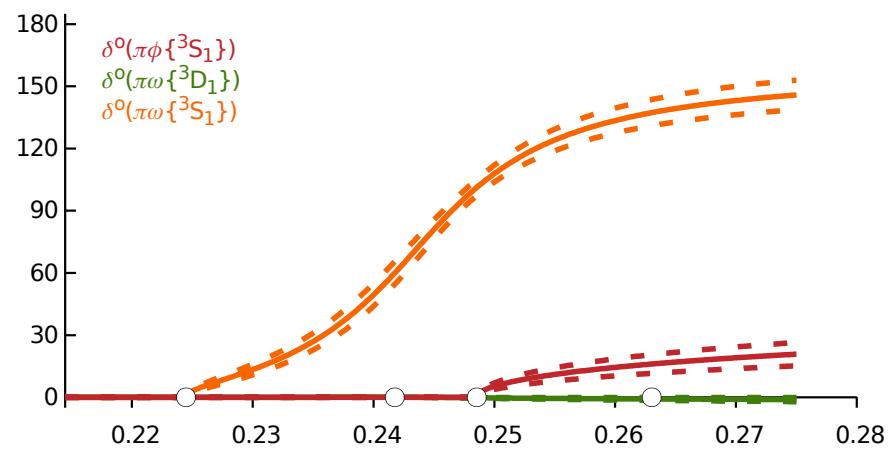
pi:omega/3^S_1(*)	pi:phi/3^S_1	pi:omega/3^D_1
-------------------	--------------	----------------

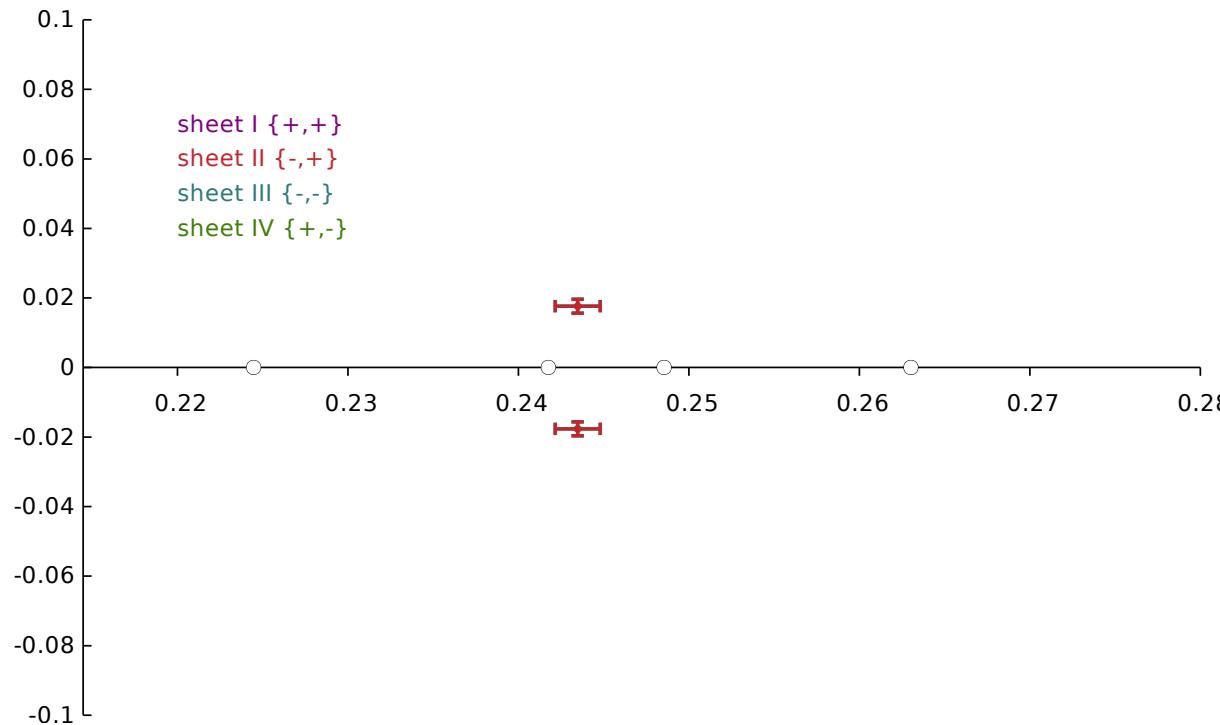
g = 0.0919 +/- 0.0088	g = 0.0000 +/- 0.0000	g = 0.0080 +/- 0.0042
arg(g)/pi= -0.0777 +/- 0.0224	arg(g)/pi= 0.5777 +/- 0.0224	arg(g)/pi= -0.1463 +/- 0.0278

g_re= 0.0892 +/- 0.0088	g_re= -0.0000 +/- 0.0000	g_re= 0.0072 +/- 0.0036
g_im= -0.0222 +/- 0.0064	g_im= 0.0000 +/- 0.0000	g_im= -0.0036 +/- 0.0024
corr= [-0.06]	corr= [-0.23]	corr= [-0.97]

```
Br = 0.8742 +/- 0.0434 | Br = 0.0000 +/- 0.0000 | Br = 0.0067 +/- 0.0064 |
```

1.5 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1.gorder0_3s1_3d1.irho





parameter values

```

minimised with chisq/nDoF = 36.73 / (36 - 5) = 1.18
=====
JP1+_g_pi:omega/3^D_1_pole0_order0 | 1.1391 +/- 0.50529 | 1.00 0.71 -0.41 -0.06 0.05
JP1+_g_pi:omega/3^S_1_pole0_order0 | 0.11142 +/- 0.0081806 | 1.00 -0.57 -0.05 -0.05
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^S_1_order0 | -0.40171 +/- 0.22802 | 1.00 0.21 -0.01
JP1+_gamma_pi:phi/3^S_1|pi:phi/3^S_1_order0 | 0.97026 +/- 0.28629 | 1.00 -0.31
JP1+_m_pole0 | 0.24647 +/- 0.00070097 | 1.00
=====
```

pole singularities

```

pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24348 +/- 0.0013168)
+ (i/2)*(+0.017627 +/- 0.0020049) [-0.50]

s_pole = (0.059203 +/- 0.0006502)
+ i*(+0.0042917 +/- 0.00047698) [-0.48]

pi:omega | pi:phi |
=====
k_re= -0.0451 +/- 0.0014 | k_re= 0.0153 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= 0.0276 +/- 0.0022 |
corr= [-0.55] | corr= [-0.06] |
```

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1060 +/- 0.0062 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0097 +/- 0.0042 |
arg(g)/pi= 0.0775 +/- 0.0268 | arg(g)/pi= 0.4225 +/- 0.0268 | arg(g)/pi= 0.1790 +/- 0.0251 |
=====
g_re= 0.1029 +/- 0.0061 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0082 +/- 0.0033 |
g_im= 0.0256 +/- 0.0090 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0052 +/- 0.0028 |
corr= [-0.07] | corr= [-0.28] | corr= [ 0.97] |
=====
Br = 0.9502 +/- 0.0231 | Br = 0.0000 +/- 0.0000 | Br = 0.0079 +/- 0.0064 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24348 +/- 0.0013168)
+ (i/2)*(-0.017627 +/- 0.0020049) [ 0.50]  

s_pole = (0.059203 +/- 0.0006502)
+ i*(-0.0042917 +/- 0.00047698) [ 0.48]

pi:omega | pi:phi |
=====
k_re= 0.0451 +/- 0.0014 | k_re= -0.0153 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= 0.0276 +/- 0.0022 |
corr= [ 0.55] | corr= [ 0.06] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1060 +/- 0.0062 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0097 +/- 0.0042 |
arg(g)/pi= -0.0775 +/- 0.0268 | arg(g)/pi= 0.5775 +/- 0.0268 | arg(g)/pi= -0.1790 +/- 0.0251 |
=====
g_re= 0.1029 +/- 0.0061 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0082 +/- 0.0033 |
g_im= -0.0256 +/- 0.0090 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0052 +/- 0.0028 |
corr= [ 0.07] | corr= [ 0.28] | corr= [-0.97] |
=====
Br = 0.9502 +/- 0.0231 | Br = 0.0000 +/- 0.0000 | Br = 0.0079 +/- 0.0064 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24348 +/- 0.00132)
+ (i/2)*(+0.017627 +/- 0.0020158) [-0.50]  

s_pole = (0.059203 +/- 0.00065185)
+ i*(+0.0042918 +/- 0.0004796) [-0.48]

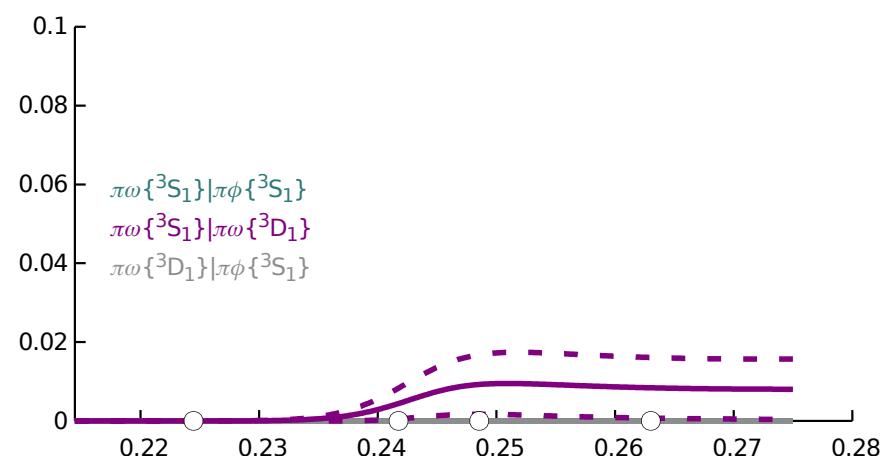
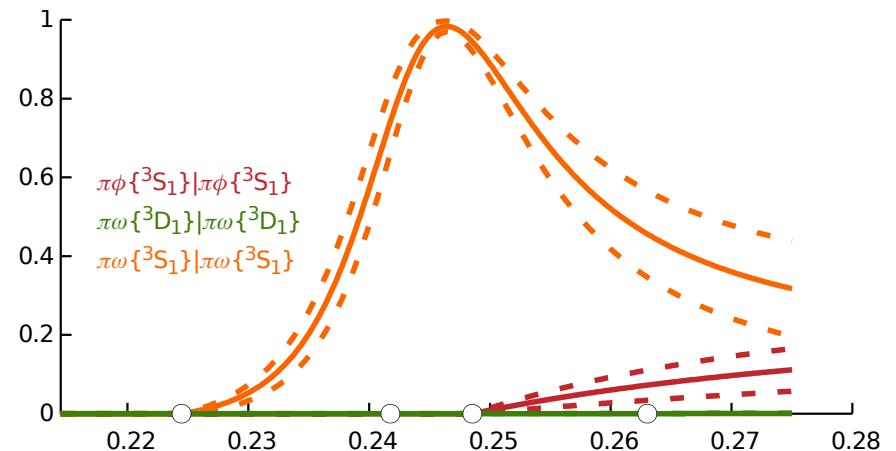
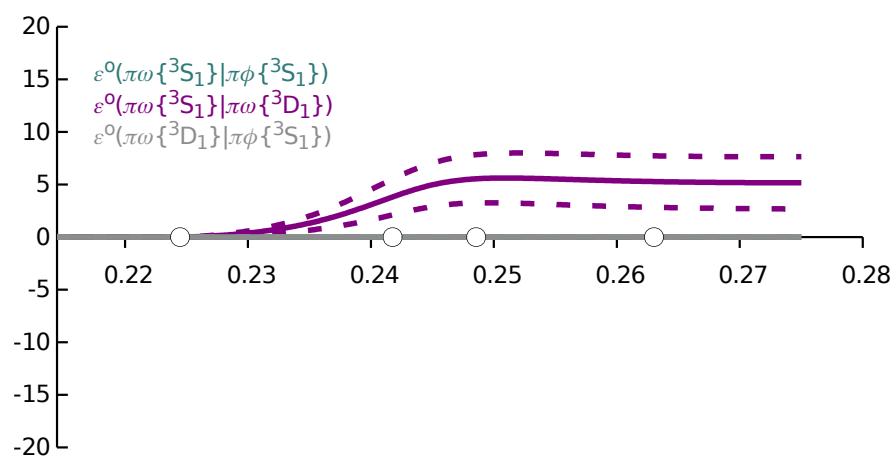
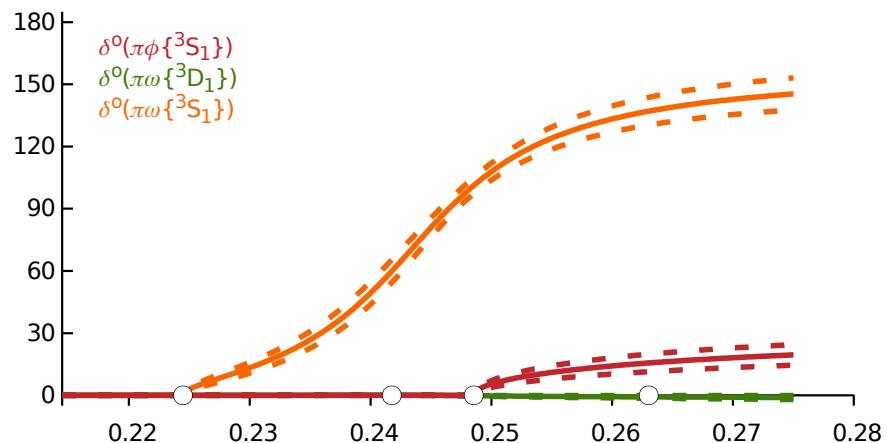
pi:omega | pi:phi |
=====
k_re= -0.0451 +/- 0.0014 | k_re= -0.0153 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= -0.0276 +/- 0.0022 |
corr= [-0.55] | corr= [-0.06] |

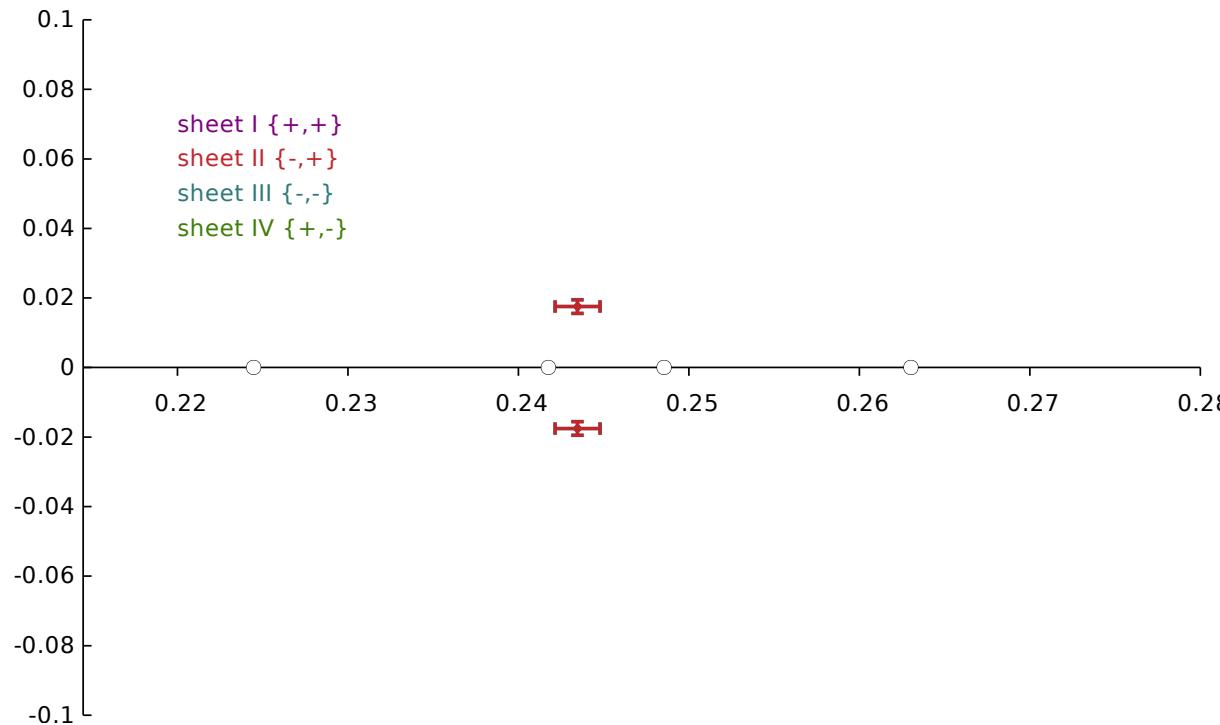
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1061 +/- 0.0062 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0097 +/- 0.0043 |
arg(g)/pi= 0.0775 +/- 0.0269 | arg(g)/pi= 0.4225 +/- 0.0269 | arg(g)/pi= 0.1791 +/- 0.0252 |
=====
g_re= 0.1029 +/- 0.0061 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0082 +/- 0.0033 |
g_im= 0.0256 +/- 0.0090 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0052 +/- 0.0028 |
corr= [-0.08] | corr= [-0.27] | corr= [ 0.97] |
=====
Br = 0.9502 +/- 0.0232 | Br = 0.0000 +/- 0.0000 | Br = 0.0079 +/- 0.0064 |

```

```
--  
pi:omega[-] pi:phi[-] lower half-plane  
  
sqrt(s)_pole = (0.24348 +/- 0.00132)  
+ (i/2)*(-0.017627 +/- 0.0020158) [ 0.50]  
  
s_pole = (0.059203 +/- 0.00065185)  
+ i*(-0.0042918 +/- 0.0004796) [ 0.48]  
  
pi:omega | pi:phi |  
=====|=====|  
k_re= 0.0451 +/- 0.0014 | k_re= 0.0153 +/- 0.0012 |  
k_im= -0.0106 +/- 0.0013 | k_im= -0.0276 +/- 0.0022 |  
corr= [ 0.55] | corr= [ 0.06] |  
  
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |  
=====|=====|=====|  
|g|= 0.1061 +/- 0.0062 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0097 +/- 0.0043 |  
arg(g)/pi= -0.0775 +/- 0.0269 | arg(g)/pi= 0.5775 +/- 0.0269 | arg(g)/pi= -0.1791 +/- 0.0252 |  
-----|-----|-----|  
g_re= 0.1029 +/- 0.0061 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0082 +/- 0.0033 |  
g_im= -0.0256 +/- 0.0090 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0052 +/- 0.0028 |  
corr= [ 0.08] | corr= [ 0.27] | corr= [-0.97] |  
-----|-----|-----|  
Br = 0.9502 +/- 0.0232 | Br = 0.0000 +/- 0.0000 | Br = 0.0079 +/- 0.0064 |
```

1.6 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1.gorder0_3s1_3d1.pole0_sub





parameter values

```

minimised with chisq/nDoF = 36.76 / (36 - 5) = 1.19
=====
JP1+_g_pi:omega/3^D_1_pole0_order0 | 1.0778 +/- 0.47432 | 1.00 0.70 -0.39 -0.06 0.05
JP1+_g_pi:omega/3^S_1_pole0_order0 | 0.10573 +/- 0.0070454 | 1.00 -0.54 -0.06 -0.05
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^S_1_order0 | -0.34601 +/- 0.19317 | 1.00 0.22 -0.01
JP1+_gamma_pi:phi/3^S_1|pi:phi/3^S_1_order0 | 0.89837 +/- 0.24036 | 1.00 -0.23
JP1+_m_pole0 | 0.24647 +/- 0.00069632 | 1.00
=====
```

pole singularities

```

pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24347 +/- 0.0013132)
+ (i/2)*(+0.017524 +/- 0.0019625) [-0.48]

s_pole = (0.059202 +/- 0.0006479)
+ i*(+0.0042666 +/- 0.00046717) [-0.46]

pi:omega | pi:phi |
=====
k_re= -0.0451 +/- 0.0014 | k_re= 0.0152 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= 0.0276 +/- 0.0022 |
corr= [-0.53] | corr= [-0.09] |
```

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1056 +/- 0.0061 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0096 +/- 0.0042 |
arg(g)/pi= 0.0782 +/- 0.0272 | arg(g)/pi= 0.4218 +/- 0.0272 | arg(g)/pi= 0.1813 +/- 0.0257 |
=====
g_re= 0.1024 +/- 0.0062 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0081 +/- 0.0032 |
g_im= 0.0257 +/- 0.0089 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0052 +/- 0.0027 |
corr= [-0.15] | corr= [-0.23] | corr= [ 0.97] |
=====
Br = 0.9469 +/- 0.0243 | Br = 0.0000 +/- 0.0000 | Br = 0.0078 +/- 0.0062 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24347 +/- 0.0013132)
+ (i/2)*(-0.017524 +/- 0.0019625) [ 0.48]  

s_pole = (0.059202 +/- 0.0006479)
+ i*(-0.0042666 +/- 0.00046717) [ 0.46]  

=====
pi:omega | pi:phi |
=====
k_re= 0.0451 +/- 0.0014 | k_re= -0.0152 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= 0.0276 +/- 0.0022 |
corr= [ 0.53] | corr= [ 0.09] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1056 +/- 0.0061 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0096 +/- 0.0042 |
arg(g)/pi= -0.0782 +/- 0.0272 | arg(g)/pi= 0.5782 +/- 0.0272 | arg(g)/pi= -0.1813 +/- 0.0257 |
=====
g_re= 0.1024 +/- 0.0062 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0081 +/- 0.0032 |
g_im= -0.0257 +/- 0.0089 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0052 +/- 0.0027 |
corr= [ 0.15] | corr= [ 0.23] | corr= [-0.97] |
=====
Br = 0.9469 +/- 0.0243 | Br = 0.0000 +/- 0.0000 | Br = 0.0078 +/- 0.0062 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24347 +/- 0.0013258)
+ (i/2)*(+0.017524 +/- 0.0019962) [-0.48]  

s_pole = (0.059201 +/- 0.00065408)
+ i*(+0.0042665 +/- 0.00047541) [-0.46]  

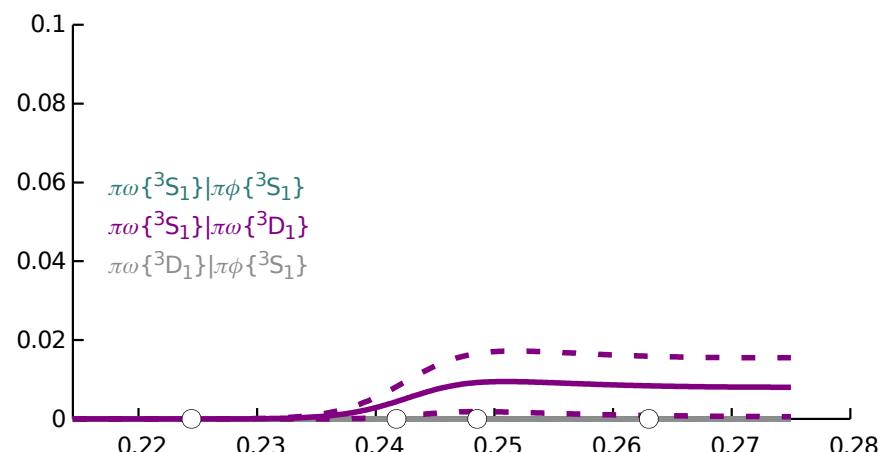
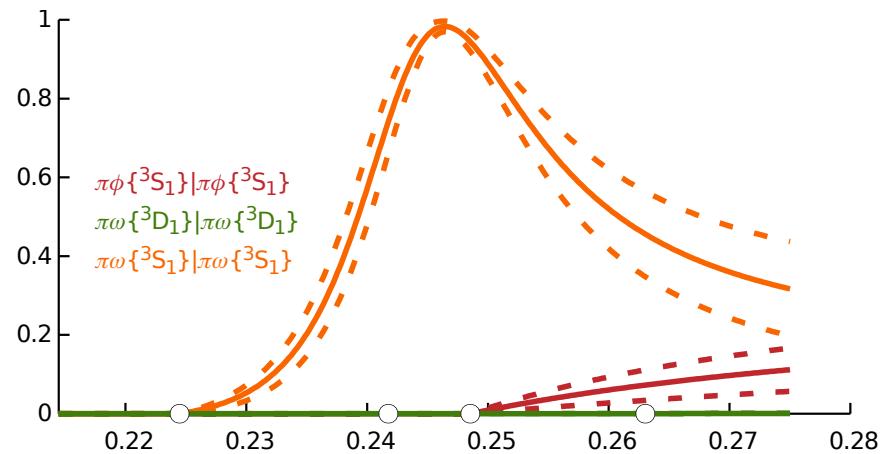
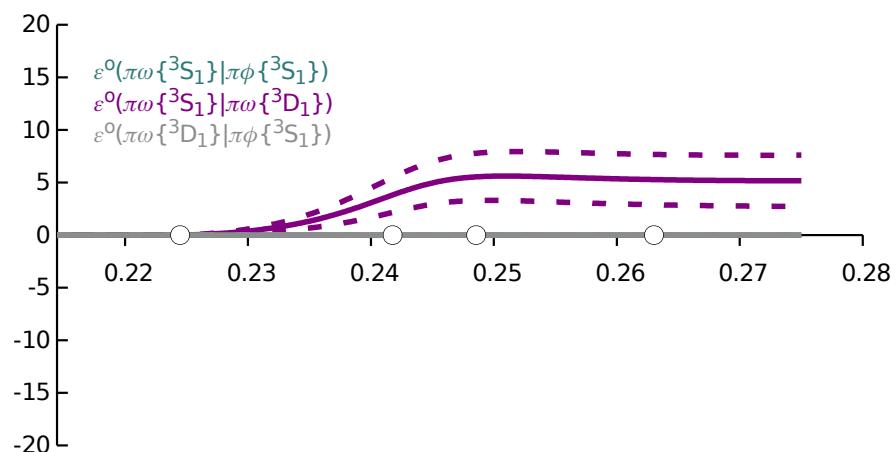
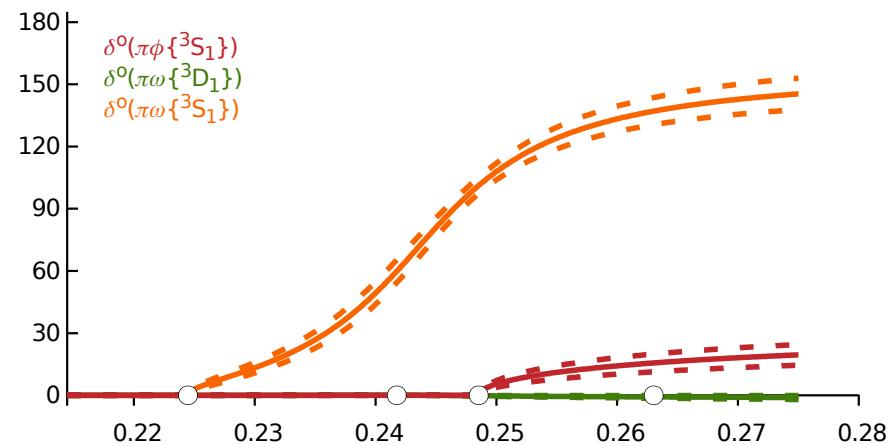
=====
pi:omega | pi:phi |
=====
k_re= -0.0451 +/- 0.0014 | k_re= -0.0152 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= -0.0276 +/- 0.0022 |
corr= [-0.53] | corr= [-0.08] |

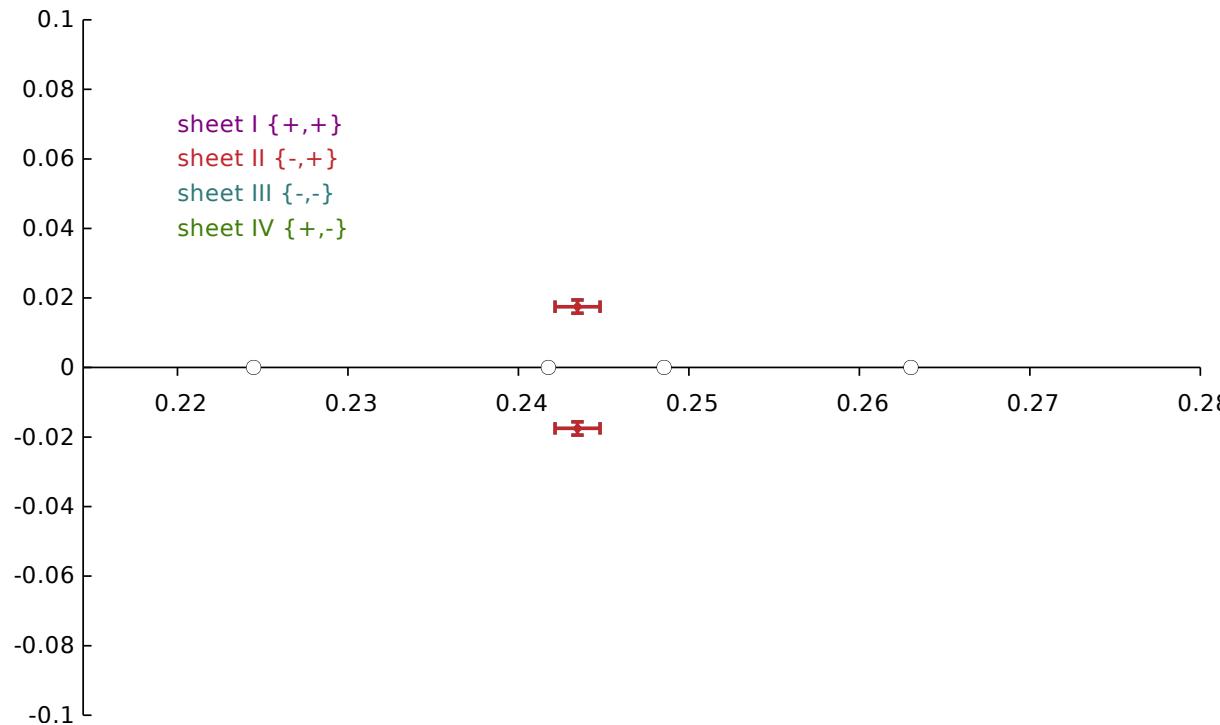
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1056 +/- 0.0062 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0096 +/- 0.0042 |
arg(g)/pi= 0.0782 +/- 0.0275 | arg(g)/pi= 0.4218 +/- 0.0275 | arg(g)/pi= 0.1813 +/- 0.0260 |
=====
g_re= 0.1024 +/- 0.0063 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0081 +/- 0.0033 |
g_im= 0.0257 +/- 0.0090 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0052 +/- 0.0028 |
corr= [-0.15] | corr= [-0.23] | corr= [ 0.97] |
=====
Br = 0.9469 +/- 0.0244 | Br = 0.0000 +/- 0.0000 | Br = 0.0078 +/- 0.0063

```

```
--  
pi:omega[-] pi:phi[-] lower half-plane  
  
sqrt(s)_pole = (0.24347 +/- 0.0013258)  
+ (i/2)*(-0.017524 +/- 0.0019962) [ 0.48]  
  
s_pole = (0.059201 +/- 0.00065408)  
+ i*(-0.0042665 +/- 0.00047541) [ 0.46]  
  
pi:omega | pi:phi |  
=====|=====|  
k_re= 0.0451 +/- 0.0014 | k_re= 0.0152 +/- 0.0012 |  
k_im= -0.0106 +/- 0.0013 | k_im= -0.0276 +/- 0.0022 |  
corr= [ 0.53] | corr= [ 0.08] |  
  
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |  
=====|=====|=====|  
|g|= 0.1056 +/- 0.0062 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0096 +/- 0.0042 |  
arg(g)/pi= -0.0782 +/- 0.0275 | arg(g)/pi= 0.5782 +/- 0.0275 | arg(g)/pi= -0.1813 +/- 0.0260 |  
-----|-----|-----|  
g_re= 0.1024 +/- 0.0063 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0081 +/- 0.0033 |  
g_im= -0.0257 +/- 0.0090 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0052 +/- 0.0028 |  
corr= [ 0.15] | corr= [ 0.23] | corr= [-0.97] |  
-----|-----|-----|  
Br = 0.9469 +/- 0.0244 | Br = 0.0000 +/- 0.0000 | Br = 0.0078 +/- 0.0063 |
```

1.7 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1.gorder0_3s1_3d1.threshold_sub





parameter values

```

minimised with chisq/nDoF = 36.76 / (36 - 5) = 1.19
=====
JP1+_g_pi:omega/3^D_1_pole0_order0 | 1.0754 +/- 0.46101 | 1.00 0.65 -0.36 -0.05 -0.24
JP1+_g_pi:omega/3^S_1_pole0_order0 | 0.10211 +/- 0.0057448 | 1.00 -0.27 0.03 -0.47
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^S_1_order0 | -0.33282 +/- 0.18006 | 1.00 0.21 0.16
JP1+_gamma_pi:phi/3^S_1|pi:phi/3^S_1_order0 | 0.99592 +/- 0.30191 | 1.00 -0.27
JP1+_m_pole0 | 0.24427 +/- 0.0007151 | 1.00
=====
```

pole singularities

```

pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24347 +/- 0.0013163)
+ (i/2)*(+0.017521 +/- 0.001914) [-0.46]
s_pole = (0.059203 +/- 0.00064875)
+ i*(+0.004266 +/- 0.00045596) [-0.44]

pi:omega | pi:phi |
=====
k_re= -0.0451 +/- 0.0014 | k_re= 0.0152 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= 0.0275 +/- 0.0022 |
corr= [-0.52] | corr= [-0.13] |
```

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1056 +/- 0.0059 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0096 +/- 0.0041 |
arg(g)/pi= 0.0781 +/- 0.0271 | arg(g)/pi= 0.4219 +/- 0.0271 | arg(g)/pi= 0.1814 +/- 0.0252 |
=====
g_re= 0.1024 +/- 0.0061 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0081 +/- 0.0032 |
g_im= 0.0256 +/- 0.0089 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0052 +/- 0.0027 |
corr= [-0.17] | corr= [-0.22] | corr= [ 0.96] |
=====
Br = 0.9471 +/- 0.0243 | Br = 0.0000 +/- 0.0000 | Br = 0.0078 +/- 0.0062 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24347 +/- 0.0013163)
+ (i/2)*(-0.017521 +/- 0.001914) [ 0.46]  

s_pole = (0.059203 +/- 0.00064875)
+ i*(-0.004266 +/- 0.00045596) [ 0.44]

pi:omega | pi:phi |
=====
k_re= 0.0451 +/- 0.0014 | k_re= -0.0152 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= 0.0275 +/- 0.0022 |
corr= [ 0.52] | corr= [ 0.13] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1056 +/- 0.0059 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0096 +/- 0.0041 |
arg(g)/pi= -0.0781 +/- 0.0271 | arg(g)/pi= 0.5781 +/- 0.0271 | arg(g)/pi= -0.1814 +/- 0.0252 |
=====
g_re= 0.1024 +/- 0.0061 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0081 +/- 0.0032 |
g_im= -0.0256 +/- 0.0089 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0052 +/- 0.0027 |
corr= [ 0.17] | corr= [ 0.22] | corr= [-0.96] |
=====
Br = 0.9471 +/- 0.0243 | Br = 0.0000 +/- 0.0000 | Br = 0.0078 +/- 0.0062 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24347 +/- 0.001325)
+ (i/2)*(+0.017521 +/- 0.0019257) [-0.46]  

s_pole = (0.059203 +/- 0.00065316)
+ i*(+0.004266 +/- 0.0004586) [-0.44]

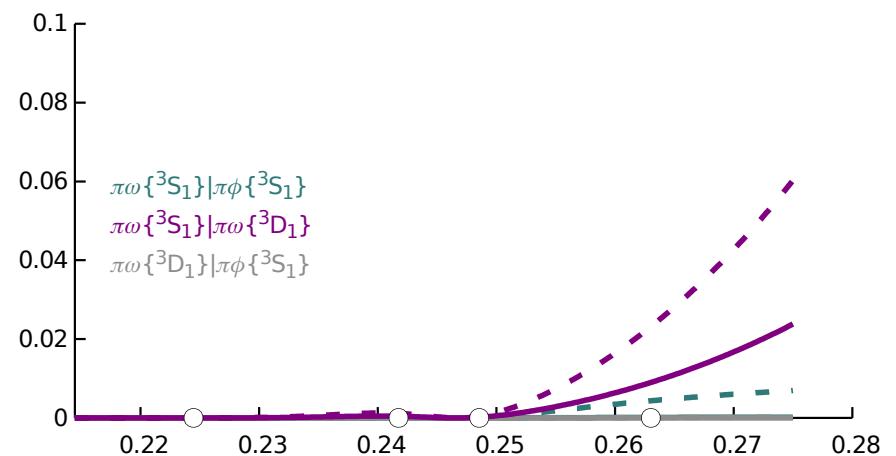
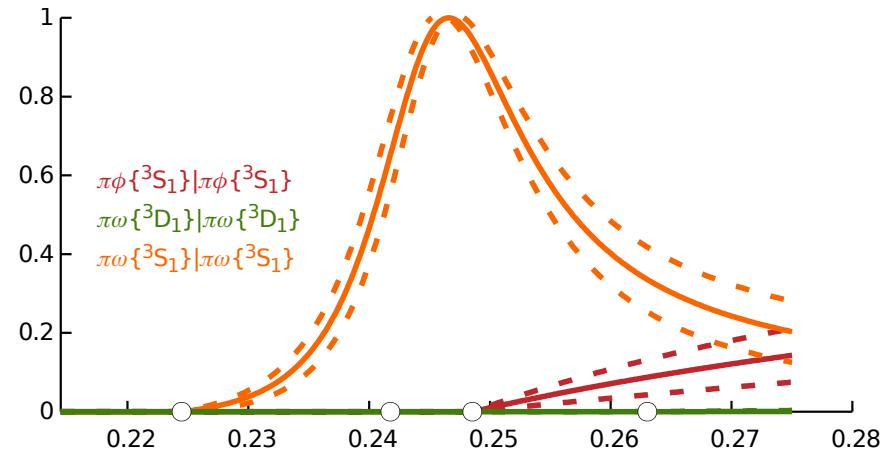
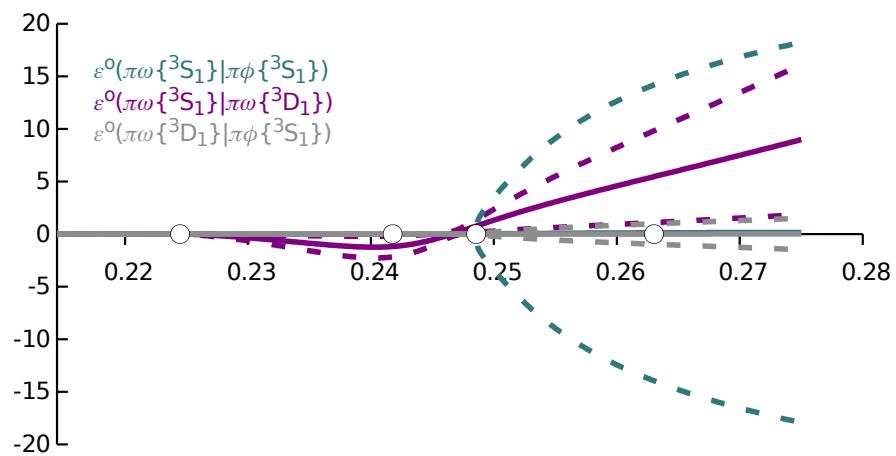
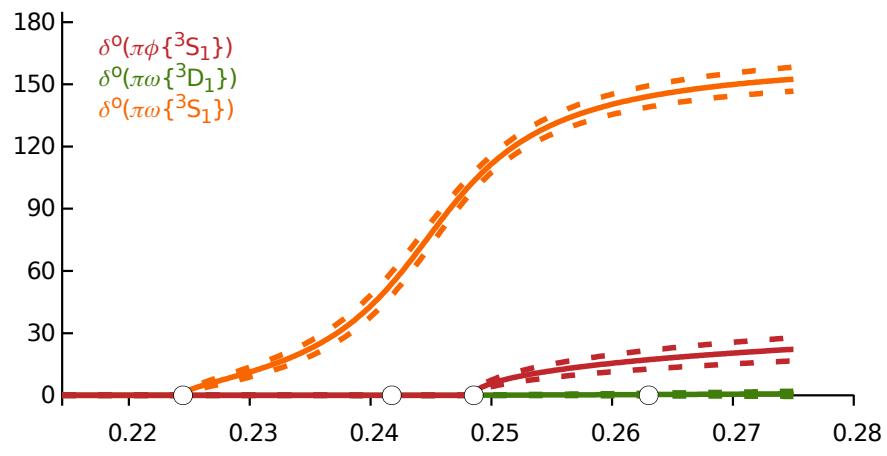
pi:omega | pi:phi |
=====
k_re= -0.0451 +/- 0.0015 | k_re= -0.0152 +/- 0.0012 |
k_im= -0.0106 +/- 0.0013 | k_im= -0.0275 +/- 0.0022 |
corr= [-0.53] | corr= [-0.13] |

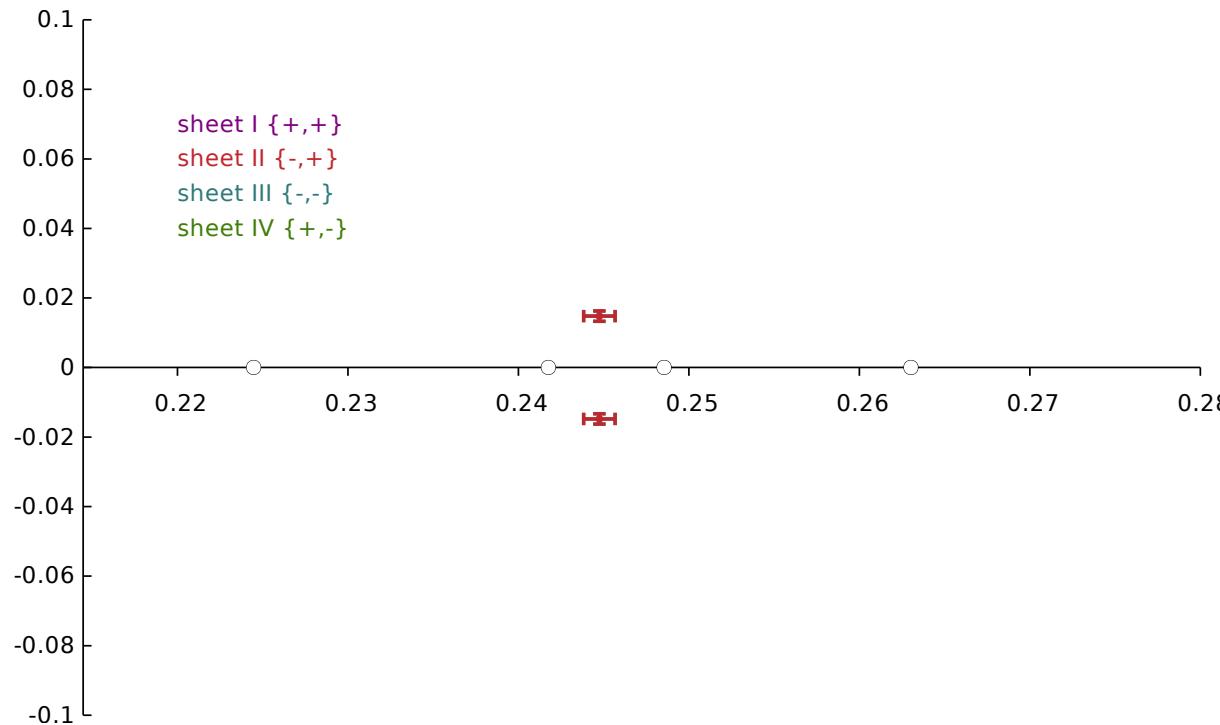
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1056 +/- 0.0060 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0096 +/- 0.0041 |
arg(g)/pi= 0.0781 +/- 0.0272 | arg(g)/pi= 0.4219 +/- 0.0272 | arg(g)/pi= 0.1814 +/- 0.0254 |
=====
g_re= 0.1024 +/- 0.0061 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0081 +/- 0.0032 |
g_im= 0.0256 +/- 0.0089 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0052 +/- 0.0027 |
corr= [-0.17] | corr= [-0.23] | corr= [ 0.96] |
=====
Br = 0.9471 +/- 0.0243 | Br = 0.0000 +/- 0.0000 | Br = 0.0078 +/- 0.0062

```

```
--  
pi:omega[-] pi:phi[-] lower half-plane  
  
sqrt(s)_pole = (0.24347 +/- 0.001325)  
+ (i/2)*(-0.017521 +/- 0.0019257) [ 0.46]  
  
s_pole = (0.059203 +/- 0.00065316)  
+ i*(-0.004266 +/- 0.0004586) [ 0.44]  
  
pi:omega | pi:phi |  
=====|=====|  
k_re= 0.0451 +/- 0.0015 | k_re= 0.0152 +/- 0.0012 |  
k_im= -0.0106 +/- 0.0013 | k_im= -0.0275 +/- 0.0022 |  
corr= [ 0.53] | corr= [ 0.13] |  
  
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |  
=====|=====|=====|  
|g|= 0.1056 +/- 0.0060 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0096 +/- 0.0041 |  
arg(g)/pi= -0.0781 +/- 0.0272 | arg(g)/pi= 0.5781 +/- 0.0272 | arg(g)/pi= -0.1814 +/- 0.0254 |  
-----|-----|-----|  
g_re= 0.1024 +/- 0.0061 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0081 +/- 0.0032 |  
g_im= -0.0256 +/- 0.0089 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0052 +/- 0.0027 |  
corr= [ 0.17] | corr= [ 0.23] | corr= [-0.96] |  
-----|-----|-----|  
Br = 0.9471 +/- 0.0243 | Br = 0.0000 +/- 0.0000 | Br = 0.0078 +/- 0.0062 |
```

1.8 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1_3sS1.gorder0_3s1.irho





parameter values

```
minimised with chisq/nDoF = 40.51 / (36 - 6) = 1.35
```

JP1+_g_pi:omega/3^S_1_pole0_order0		0.099752 +/- 0.0055513		1.00	-0.15	-0.37	-0.09
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0		-14.286 +/- 11.774		1.00	0.22	0.08	-0.15
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-0.27643 +/- 0.19795		1.00	0.34	0.13	-0.05
JP1+_gamma_pi:omega/3^S_1 pi:phi/3^S_1_order0		-0.0071941 +/- 0.82977		1.00	-0.07	0.01	
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		1.0420 +/- 0.29662		1.00	-0.28		
JP1+_m_pole0		0.24658 +/- 0.00066362		1.00			

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24475 +/- 0.00092308)
+ (i/2)*(+0.014784 +/- 0.0014851) [-0.37]
s_pole = (0.059849 +/- 0.00045604)
+ i*(+0.0036184 +/- 0.00035865) [-0.36]
```

pi:omega	pi:phi
k_re= -0.0463 +/- 0.0010	k_re= 0.0145 +/- 0.0011
k_im= -0.0088 +/- 0.0009	k_im= 0.0246 +/- 0.0017
corr= [-0.41]	corr= [-0.07]

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0975 +/- 0.0053 | |g|= 0.0009 +/- 0.0165 | |g|= 0.0048 +/- 0.0039 |
arg(g)/pi= 0.0568 +/- 0.0224 | arg(g)/pi= 0.2208 +/- 11.0295 | arg(g)/pi= 0.7257 +/- 0.0332 |
-----
g_re= 0.0959 +/- 0.0054 | g_re= -0.0001 +/- 0.0110 | g_re= -0.0031 +/- 0.0026 |
g_im= 0.0173 +/- 0.0068 | g_im= 0.0002 +/- 0.0231 | g_im= 0.0036 +/- 0.0030 |
corr= [-0.14] | corr= [-1.00] | corr= [-0.97] |
-----
Br = 0.9795 +/- 0.0211 | Br = 0.0000 +/- 0.0000 | Br = 0.0023 +/- 0.0038 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24475 +/- 0.00092308)
+ (i/2)*(-0.014784 +/- 0.0014851) [ 0.37]  

s_pole = (0.059849 +/- 0.00045604)
+ i*(-0.0036184 +/- 0.00035865) [ 0.36]

pi:omega | pi:phi |
=====
k_re= 0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0088 +/- 0.0009 | k_im= 0.0246 +/- 0.0017 |
corr= [ 0.41] | corr= [ 0.07] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0975 +/- 0.0053 | |g|= 0.0009 +/- 0.0165 | |g|= 0.0048 +/- 0.0039 |
arg(g)/pi= -0.0568 +/- 0.0224 | arg(g)/pi= -0.2208 +/- 11.0295 | arg(g)/pi= -0.7257 +/- 0.0332 |
-----
g_re= 0.0959 +/- 0.0054 | g_re= -0.0001 +/- 0.0110 | g_re= -0.0031 +/- 0.0026 |
g_im= -0.0173 +/- 0.0068 | g_im= -0.0002 +/- 0.0231 | g_im= -0.0036 +/- 0.0030 |
corr= [ 0.14] | corr= [ 1.00] | corr= [ 0.97] |
-----
Br = 0.9795 +/- 0.0211 | Br = 0.0000 +/- 0.0000 | Br = 0.0023 +/- 0.0038 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24475 +/- 0.0009231)
+ (i/2)*(+0.014785 +/- 0.0014946) [-0.37]  

s_pole = (0.05985 +/- 0.00045611)
+ i*(+0.0036186 +/- 0.00036092) [-0.36]

pi:omega | pi:phi |
=====
k_re= -0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0088 +/- 0.0009 | k_im= -0.0246 +/- 0.0017 |
corr= [-0.41] | corr= [-0.06] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0975 +/- 0.0053 | |g|= 0.0014 +/- 0.0248 | |g|= 0.0048 +/- 0.0039 |
arg(g)/pi= 0.0567 +/- 0.0221 | arg(g)/pi= 0.1330 +/- 11.0344 | arg(g)/pi= 0.7256 +/- 0.0330 |
-----
g_re= 0.0959 +/- 0.0054 | g_re= -0.0001 +/- 0.0066 | g_re= -0.0031 +/- 0.0026 |
g_im= 0.0173 +/- 0.0067 | g_im= 0.0003 +/- 0.0381 | g_im= 0.0036 +/- 0.0030 |
corr= [-0.13] | corr= [-1.00] | corr= [-0.97] |
-----
```

1 Successful Parameterizations

```
Br = 0.9795 +/- 0.0223 | Br = 0.0000 +/- 0.0000 | Br = 0.0023 +/- 0.0038 |
```

--
pi:omega[-] pi:phi[-] lower half-plane

```
sqrt(s)_pole = (0.24475 +/- 0.0009231)  
+ (i/2)*(-0.014785 +/- 0.0014946) [ 0.37]
```

```
s_pole = (0.05985 +/- 0.00045611)  
+ i*(-0.0036186 +/- 0.00036092) [ 0.36]
```

pi:omega	pi:phi
----------	--------

k_re= 0.0463 +/- 0.0010	k_re= 0.0145 +/- 0.0011
k_im= -0.0088 +/- 0.0009	k_im= -0.0246 +/- 0.0017
corr= [0.41]	corr= [0.06]

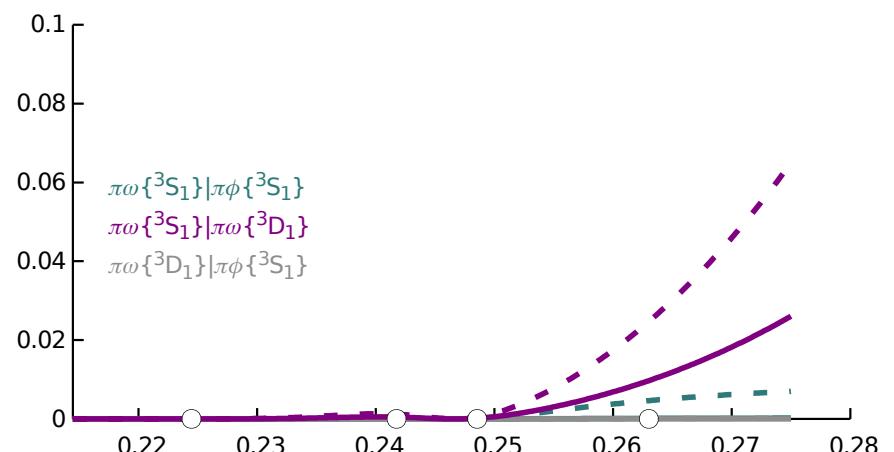
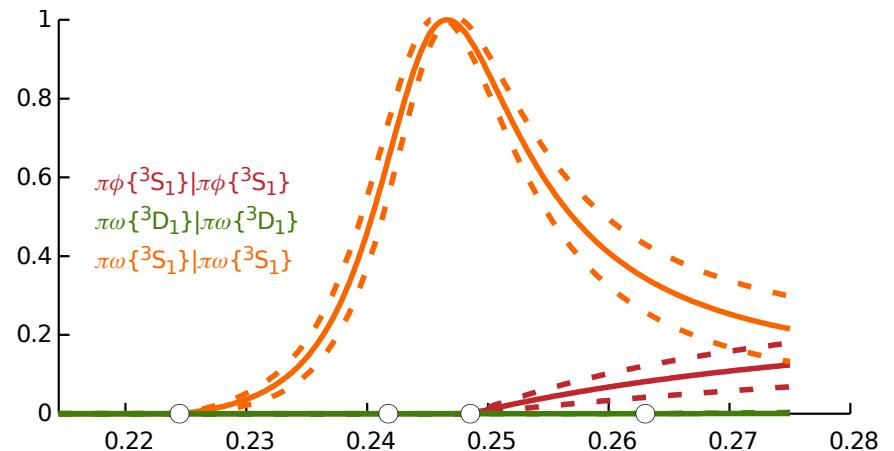
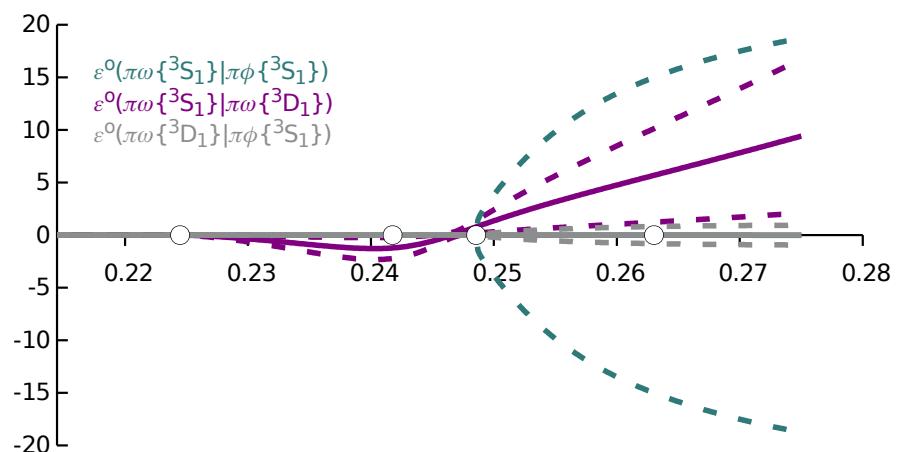
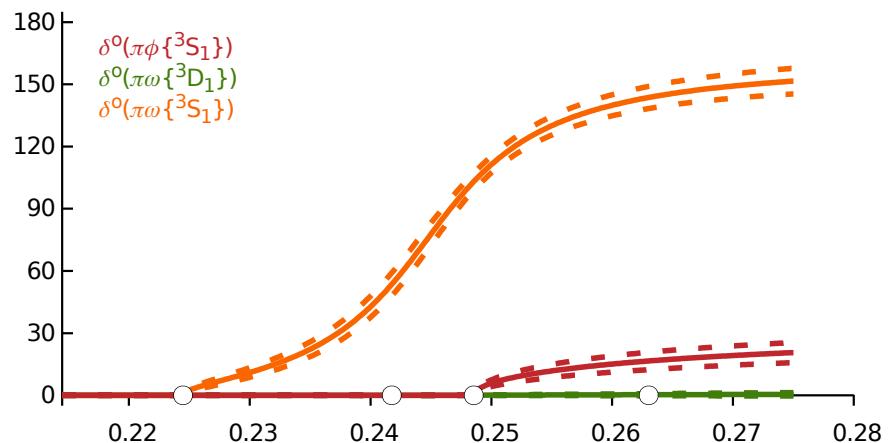
pi:omega/3^S_1(*)	pi:phi/3^S_1	pi:omega/3^D_1
-------------------	--------------	----------------

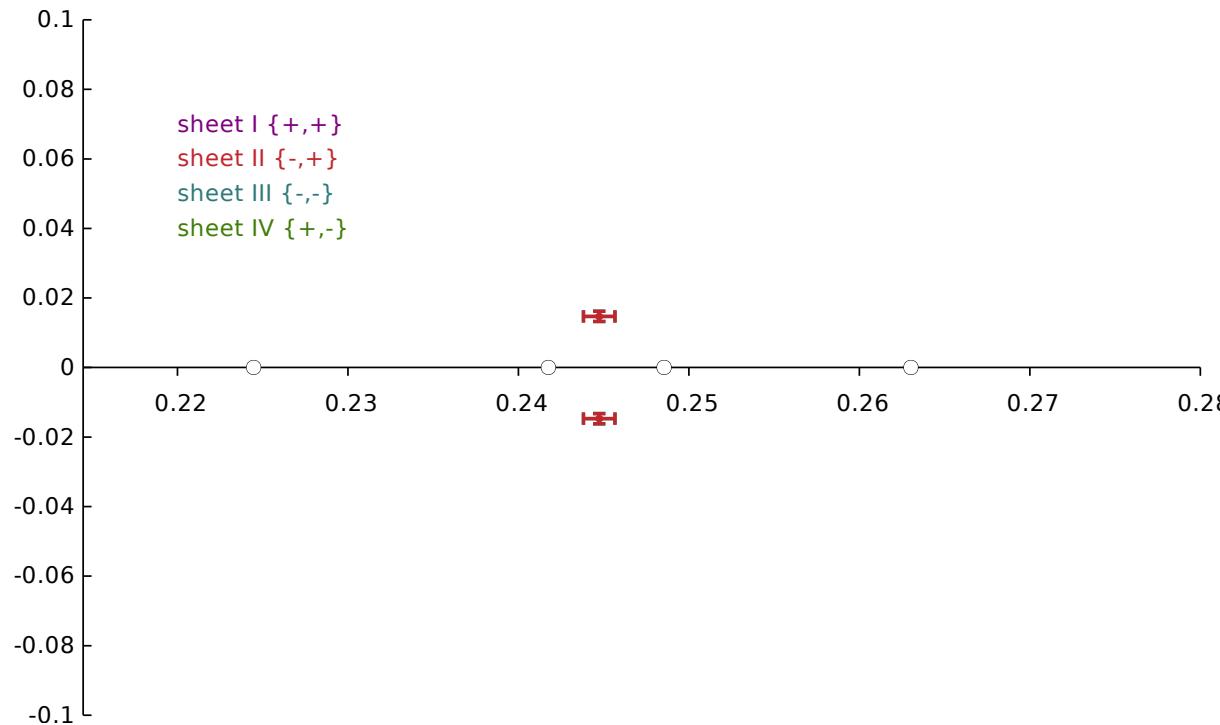
g = 0.0975 +/- 0.0053	g = 0.0014 +/- 0.0248	g = 0.0048 +/- 0.0039
arg(g)/pi= -0.0567 +/- 0.0221	arg(g)/pi= -0.1330 +/- 11.0344	arg(g)/pi= -0.7256 +/- 0.0330

g_re= 0.0959 +/- 0.0054	g_re= -0.0001 +/- 0.0066	g_re= -0.0031 +/- 0.0026
g_im= -0.0173 +/- 0.0067	g_im= -0.0003 +/- 0.0381	g_im= -0.0036 +/- 0.0030
corr= [0.13]	corr= [1.00]	corr= [0.97]

```
Br = 0.9795 +/- 0.0223 | Br = 0.0000 +/- 0.0000 | Br = 0.0023 +/- 0.0038 |
```

1.9 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1_3sS1.gorder0_3s1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 40.52 / (36 - 6) = 1.35
```

JP1+_g_pi:omega/3^S_1_pole0_order0		0.095708 +/- 0.0049913		1.00	-0.15	-0.40	-0.17	0.03	-0.15
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0		-13.591 +/- 11.01		1.00	0.23	0.09	-0.17	-0.19	
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-0.25813 +/- 0.17079		1.00	0.27	0.14	-0.05		
JP1+_gamma_pi:omega/3^S_1 pi:phi/3^S_1_order0		0.00043758 +/- 0.76398		1.00	-0.09	0.04			
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.95708 +/- 0.24737		1.00	-0.18				
JP1+_m_pole0		0.24661 +/- 0.00064102		1.00					

pole singularities

```
pi:omega[+] pi:phi[-] upper half-plane
sqrt(s)_pole = (0.19004 +/- 0.023799)
  + (i/2)*(+2.9847e-16 +/- 2.1628e-13) [ 0.00]
s_pole = (0.036115 +/- 0.0090388)
  + i*(+5.706e-17 +/- 4.1045e-14) [ 0.00]
```

pi:omega	pi:phi
k_re= 0.0000 +/- 0.0000	k_re= -0.0000 +/- 0.0000
k_im= 0.0532 +/- 0.0151	k_im= -0.0652 +/- 0.0073
corr= [0.00]	corr= [0.00]

```

pi:omega/3^S_1 | pi:phi/3^S_1(*) | pi:omega/3^D_1 |
=====
|g|= 0.0050 +/- 0.0893 | |g|= 0.1837 +/- 0.0024 | |g|= 0.0002 +/- 0.0039 |
arg(g)/pi= 0.0180 +/- 11.1612 | arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.0182 +/- 11.1468 |
-----
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.0001 +/- 0.1437 | g_im= 0.1837 +/- 0.0024 | g_im= -0.0000 +/- 0.0062 |
corr= [-1.00] | corr= [-1.00] | corr= [-0.77] |
-----
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.24474 +/- 0.00091894)  

+ (i/2)*(+0.014717 +/- 0.0014624) [-0.39]  

s_pole = (0.059842 +/- 0.00045409)  

+ i*(+0.0036017 +/- 0.00035286) [-0.38]

pi:omega | pi:phi |
=====
k_re= -0.0463 +/- 0.0010 | k_re= 0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0017 |
corr= [-0.43] | corr= [-0.07] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0971 +/- 0.0052 | |g|= 0.0010 +/- 0.0180 | |g|= 0.0049 +/- 0.0040 |
arg(g)/pi= 0.0587 +/- 0.0224 | arg(g)/pi= 0.1229 +/- 11.1696 | arg(g)/pi= 0.7288 +/- 0.0349 |
-----
g_re= 0.0955 +/- 0.0053 | g_re= 0.0000 +/- 0.0121 | g_re= -0.0032 +/- 0.0027 |
g_im= 0.0178 +/- 0.0067 | g_im= -0.0000 +/- 0.0263 | g_im= 0.0037 +/- 0.0030 |
corr= [-0.14] | corr= [-1.00] | corr= [-0.96] |
-----
Br = 0.9768 +/- 0.0210 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0040 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24474 +/- 0.00091894)  

+ (i/2)*(-0.014717 +/- 0.0014624) [ 0.39]  

s_pole = (0.059842 +/- 0.00045409)  

+ i*(-0.0036017 +/- 0.00035286) [ 0.38]

pi:omega | pi:phi |
=====
k_re= 0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0017 |
corr= [ 0.43] | corr= [ 0.07] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0971 +/- 0.0052 | |g|= 0.0010 +/- 0.0180 | |g|= 0.0049 +/- 0.0040 |
arg(g)/pi= -0.0587 +/- 0.0224 | arg(g)/pi= -0.1229 +/- 11.1696 | arg(g)/pi= -0.7288 +/- 0.0349 |
-----
g_re= 0.0955 +/- 0.0053 | g_re= 0.0000 +/- 0.0121 | g_re= -0.0032 +/- 0.0027 |
g_im= -0.0178 +/- 0.0067 | g_im= 0.0000 +/- 0.0263 | g_im= -0.0037 +/- 0.0030 |
corr= [ 0.14] | corr= [ 1.00] | corr= [ 0.96] |
-----
```

1 Successful Parameterizations

```

Br = 0.9768 +/- 0.0210 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0040 |

--pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.19018 +/- 0.023947)
+ (i/2)*(-8.609e-16 +/- 5.8586e-13) [ 0.00]

s_pole = (0.036168 +/- 0.0091031)
+ i*(-1.542e-16 +/- 1.1178e-13) [ 0.00]

pi:omega | pi:phi |
=====|=====
k_re= 0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0531 +/- 0.0152 | k_im= -0.0651 +/- 0.0074 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1 | pi:phi/3^S_1(*) | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0058 +/- 0.1022 | |g|= 0.1835 +/- 0.0058 | |g|= 0.0007 +/- 0.0130 |
arg(g)/pi= 0.0180 +/- 11.1613 | arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0181 +/- 11.1573 |

g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.0001 +/- 0.1651 | g_im= 0.1835 +/- 0.0058 | g_im= 0.0000 +/- 0.0211 |
corr= [-1.00] | corr= [-1.00] | corr= [-0.88] |

Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24474 +/- 0.00092395)
+ (i/2)*(+0.014717 +/- 0.0014822) [-0.39]

s_pole = (0.059843 +/- 0.00045663)
+ i*(+0.0036019 +/- 0.00035765) [-0.38]

pi:omega | pi:phi |
=====|=====
k_re= -0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= -0.0246 +/- 0.0017 |
corr= [-0.43] | corr= [-0.06] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0971 +/- 0.0053 | |g|= 0.0015 +/- 0.0272 | |g|= 0.0049 +/- 0.0040 |
arg(g)/pi= 0.0586 +/- 0.0224 | arg(g)/pi= 0.0257 +/- 11.1631 | arg(g)/pi= 0.7287 +/- 0.0351 |

g_re= 0.0955 +/- 0.0054 | g_re= 0.0000 +/- 0.0060 | g_re= -0.0032 +/- 0.0027 |
g_im= 0.0178 +/- 0.0068 | g_im= -0.0000 +/- 0.0433 | g_im= 0.0037 +/- 0.0030 |
corr= [-0.12] | corr= [-1.00] | corr= [-0.96] |

Br = 0.9766 +/- 0.0230 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0040 |

--pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24474 +/- 0.00092395)
+ (i/2)*(-0.014717 +/- 0.0014822) [ 0.39]

s_pole = (0.059843 +/- 0.00045663)
+ i*(-0.0036019 +/- 0.00035765) [ 0.38]

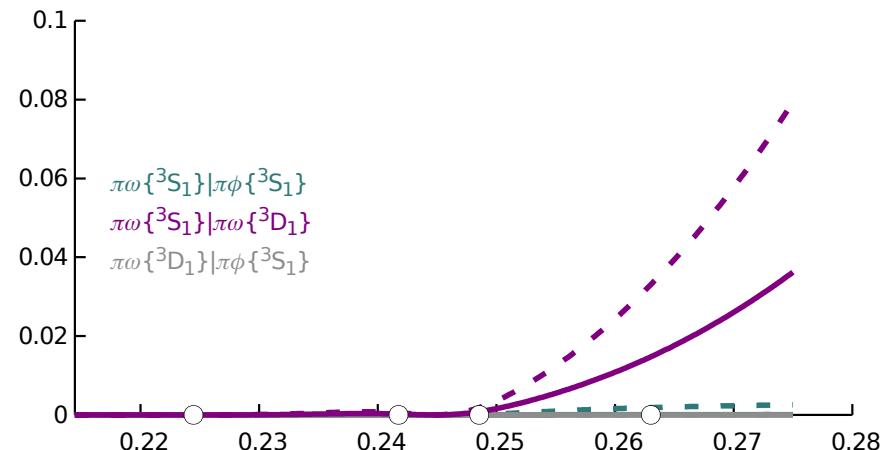
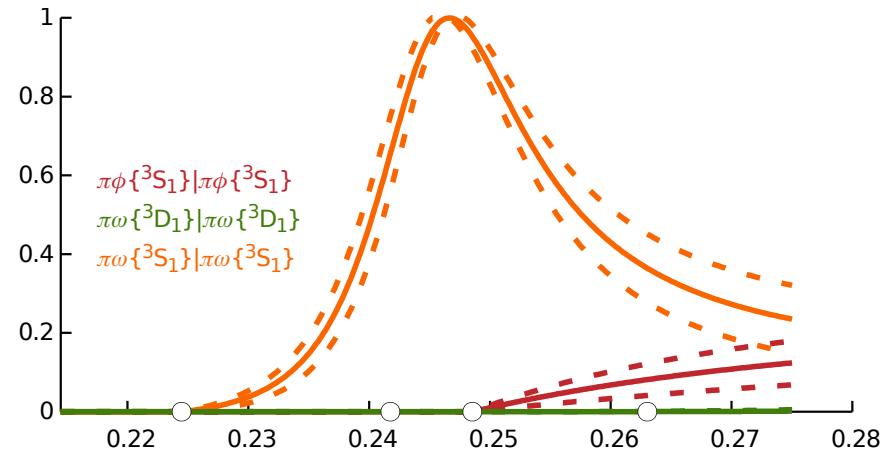
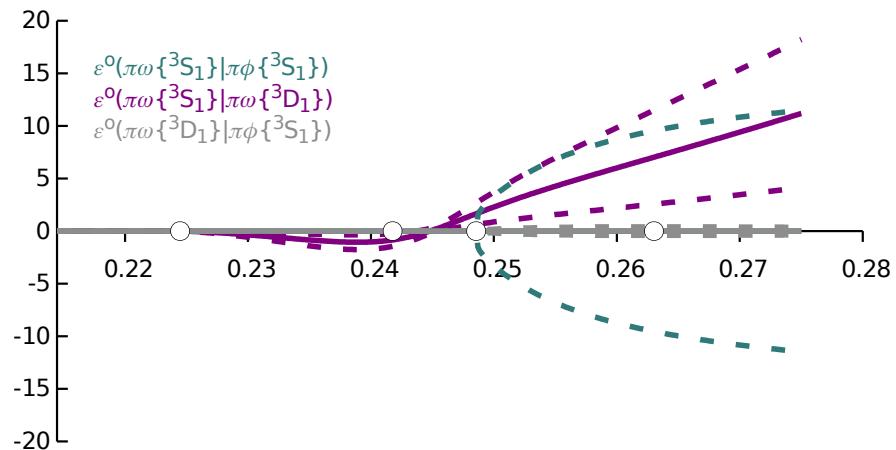
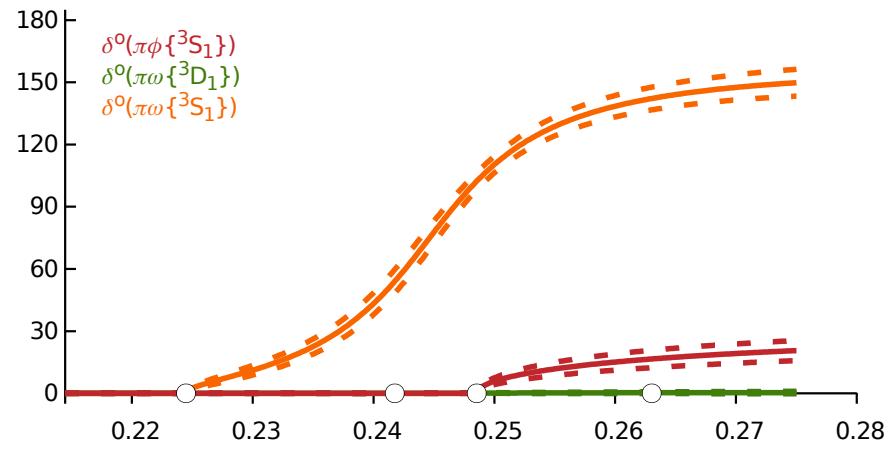
```

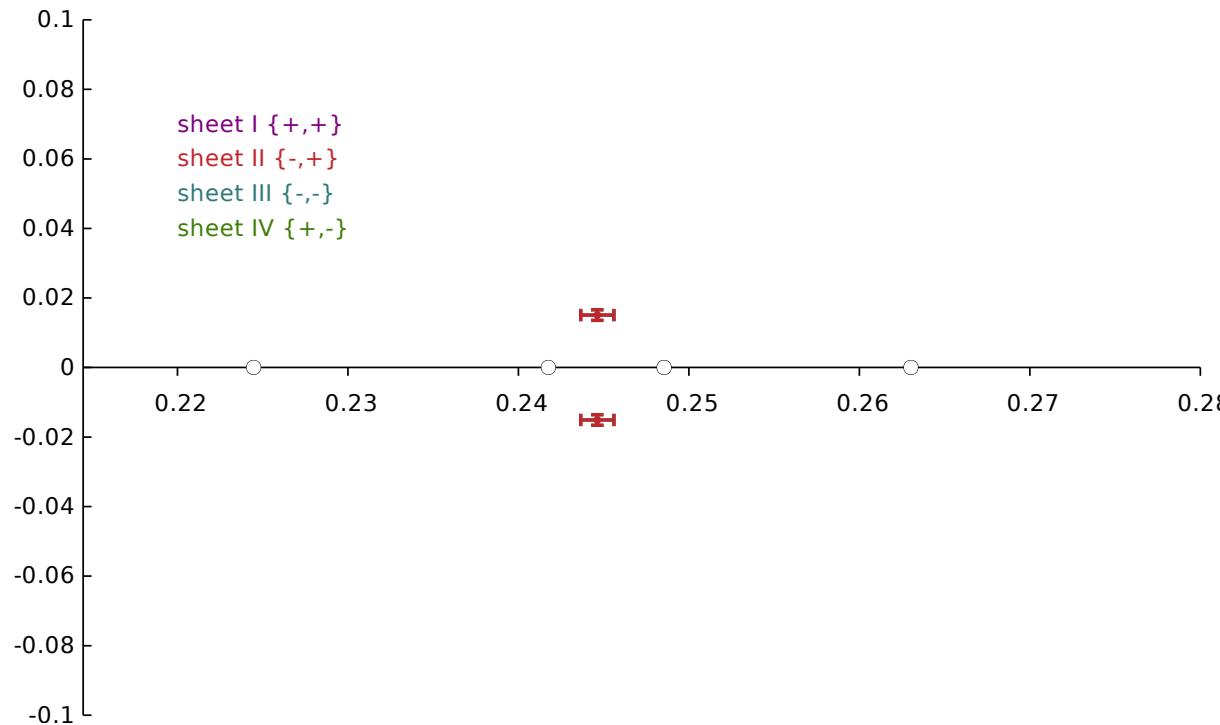
1 Successful Parameterizations

```
pi:omega | pi:phi |
=====
k_re= 0.0463 +/- 0.0010 | k_re= 0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= -0.0246 +/- 0.0017 |
corr= [ 0.43] | corr= [ 0.06] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0971 +/- 0.0053 | |g|= 0.0015 +/- 0.0272 | |g|= 0.0049 +/- 0.0040 |
arg(g)/pi= -0.0586 +/- 0.0224 | arg(g)/pi= -0.0257 +/- 11.1631 | arg(g)/pi= -0.7287 +/- 0.0351 |
-----|-----|-----|
g_re= 0.0955 +/- 0.0054 | g_re= 0.0000 +/- 0.0060 | g_re= -0.0032 +/- 0.0027 |
g_im= -0.0178 +/- 0.0068 | g_im= 0.0000 +/- 0.0433 | g_im= -0.0037 +/- 0.0030 |
corr= [ 0.12] | corr= [ 1.00] | corr= [ 0.96] |
-----|-----|-----|
Br = 0.9766 +/- 0.0230 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0040 |
```

1.10 coupled_pp_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1_3sS1.gorder0_3s1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 39.62 / (36 - 6) = 1.32
```

JP1+_g_pi:omega/3^S_1_pole0_order0		0.094523 +/- 0.0046975		1.00	-0.19	-0.15	-0.03	0.11	-0.47
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0		-14.947 +/- 9.8736		1.00	0.22	0.01	-0.11	-0.14	
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-0.27063 +/- 0.16241		1.00	0.05	0.16	0.07		
JP1+_gamma_pi:omega/3^S_1 pi:phi/3^S_1_order0		-3.5328e-05 +/- 0.47439		1.00	-0.01	0.00			
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		1.0637 +/- 0.31053		1.00	-0.27				
JP1+_m_pole0		0.24478 +/- 0.00068266		1.00					

pole singularities

```
pi:omega[+] pi:phi[-] upper half-plane
sqrt(s)_pole = (0.19007 +/- 0.023828)
  + (i/2)*(+5.3742e-14 +/- 2.7234e-11) [ 0.00]
s_pole = (0.036127 +/- 0.0090517)
  + i*(+1.0235e-14 +/- 5.186e-12) [ 0.00]
```

pi:omega	pi:phi
k_re= 0.0000 +/- 0.0000	k_re= -0.0000 +/- 0.0000
k_im= 0.0532 +/- 0.0151	k_im= -0.0652 +/- 0.0073
corr= [0.00]	corr= [0.00]

```

pi:omega/3^S_1 | pi:phi/3^S_1(*) | pi:omega/3^D_1 |
=====
|g|= 0.0028 +/- 0.0499 | |g|= 0.1837 +/- 0.0019 | |g|= 0.0002 +/- 0.0032 |
arg(g)/pi= -0.0180 +/- 11.1615 |arg(g)/pi= 0.5000 +/- 0.0000 |arg(g)/pi= 0.0180 +/- 11.1557 |
-----
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= -0.0000 +/- 0.0806 | g_im= 0.1837 +/- 0.0019 | g_im= 0.0000 +/- 0.0052 |
corr= [-1.00] | corr= [-1.00] | corr= [-0.80] |
-----
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.27244 +/- 0.016733)
+ (i/2)*(+0.21136 +/- 0.085173) [ 0.90]  

s_pole = (0.06305 +/- 0.0040042)
+ i*(+0.057584 +/- 0.026449) [-0.14]

pi:omega | pi:phi |
=====
k_re= -0.0892 +/- 0.0170 | k_re= 0.0770 +/- 0.0190 |
k_im= -0.0765 +/- 0.0227 | k_im= 0.0838 +/- 0.0222 |
corr= [ 0.95] | corr= [ 0.95] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1434 +/- 0.0184 | |g|= 0.0017 +/- 0.0305 | |g|= 0.1340 +/- 0.0184 |
arg(g)/pi= -0.4370 +/- 0.0479 |arg(g)/pi= -0.3588 +/- 11.1614 |arg(g)/pi= 0.5051 +/- 0.0435 |
-----
g_re= 0.0282 +/- 0.0244 | g_re= 0.0000 +/- 0.0456 | g_re= -0.0021 +/- 0.0186 |
g_im= -0.1406 +/- 0.0145 | g_im= 0.0000 +/- 0.0186 | g_im= 0.1340 +/- 0.0182 |
corr= [-0.82] | corr= [ 1.00] | corr= [-0.92] |
-----
Br = 0.1915 +/- 0.0513 | Br = 0.0000 +/- 0.0010 | Br = 0.1672 +/- 0.0407 |

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.24463 +/- 0.00096969)
+ (i/2)*(+0.015075 +/- 0.0015205) [-0.41]  

s_pole = (0.059789 +/- 0.00047927)
+ i*(+0.036878 +/- 0.0003662) [-0.40]

pi:omega | pi:phi |
=====
k_re= -0.0462 +/- 0.0011 | k_re= 0.0146 +/- 0.0011 |
k_im= -0.0089 +/- 0.0010 | k_im= 0.0249 +/- 0.0018 |
corr= [-0.45] | corr= [-0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0981 +/- 0.0053 | |g|= 0.0006 +/- 0.0101 | |g|= 0.0054 +/- 0.0036 |
arg(g)/pi= 0.0619 +/- 0.0223 |arg(g)/pi= 0.0848 +/- 11.1608 |arg(g)/pi= 0.6598 +/- 0.0359 |
-----
g_re= 0.0963 +/- 0.0054 | g_re= -0.0000 +/- 0.0033 | g_re= -0.0026 +/- 0.0018 |
g_im= 0.0190 +/- 0.0068 | g_im= 0.0000 +/- 0.0160 | g_im= 0.0047 +/- 0.0031 |
corr= [-0.12] | corr= [-1.00] | corr= [-0.93] |
-----
```

1 Successful Parameterizations

```

Br = 0.9719 +/- 0.0221 | Br = 0.0000 +/- 0.0000 | Br = 0.0029 +/- 0.0038 |

--pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.27244 +/- 0.016733)
+ (i/2)*(-0.21136 +/- 0.085173) [-0.90]

s_pole = (0.06305 +/- 0.0040042)
+ i*(-0.057584 +/- 0.026449) [ 0.14]

pi:omega | pi:phi |
=====|=====
k_re= 0.0892 +/- 0.0170 | k_re= -0.0770 +/- 0.0190 |
k_im= -0.0765 +/- 0.0227 | k_im= 0.0838 +/- 0.0222 |
corr= [-0.95] | corr= [-0.95] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1434 +/- 0.0184 | |g|= 0.0017 +/- 0.0305 | |g|= 0.1340 +/- 0.0184 |
arg(g)/pi= 0.4370 +/- 0.0479 | arg(g)/pi= 0.3588 +/- 11.1614 | arg(g)/pi= -0.5051 +/- 0.0435 |
-----|-----|-----
g_re= 0.0282 +/- 0.0244 | g_re= 0.0000 +/- 0.0456 | g_re= -0.0021 +/- 0.0186 |
g_im= 0.1406 +/- 0.0145 | g_im= -0.0000 +/- 0.0186 | g_im= -0.1340 +/- 0.0182 |
corr= [ 0.82] | corr= [-1.00] | corr= [ 0.92] |
-----|-----|-----
Br = 0.1915 +/- 0.0513 | Br = 0.0000 +/- 0.0010 | Br = 0.1672 +/- 0.0407 |

--pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.24463 +/- 0.00096969)
+ (i/2)*(-0.015075 +/- 0.0015205) [ 0.41]

s_pole = (0.059789 +/- 0.00047927)
+ i*(-0.0036878 +/- 0.0003662) [ 0.40]

pi:omega | pi:phi |
=====|=====
k_re= 0.0462 +/- 0.0011 | k_re= -0.0146 +/- 0.0011 |
k_im= -0.0089 +/- 0.0010 | k_im= 0.0249 +/- 0.0018 |
corr= [ 0.45] | corr= [ 0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0981 +/- 0.0053 | |g|= 0.0006 +/- 0.0101 | |g|= 0.0054 +/- 0.0036 |
arg(g)/pi= -0.0619 +/- 0.0223 | arg(g)/pi= -0.0848 +/- 11.1608 | arg(g)/pi= -0.6598 +/- 0.0359 |
-----|-----|-----
g_re= 0.0963 +/- 0.0054 | g_re= -0.0000 +/- 0.0033 | g_re= -0.0026 +/- 0.0018 |
g_im= -0.0190 +/- 0.0068 | g_im= -0.0000 +/- 0.0160 | g_im= -0.0047 +/- 0.0031 |
corr= [ 0.12] | corr= [ 1.00] | corr= [ 0.93] |
-----|-----|-----
Br = 0.9719 +/- 0.0221 | Br = 0.0000 +/- 0.0000 | Br = 0.0029 +/- 0.0038 |

--pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.27244 +/- 0.01674)
+ (i/2)*(+0.21138 +/- 0.085165) [ 0.90]

s_pole = (0.06305 +/- 0.0040012)
+ i*(+0.057592 +/- 0.02645) [-0.14]

```

```

pi:omega | pi:phi |
=====
k_re= -0.0893 +/- 0.0170 | k_re= -0.0770 +/- 0.0190 |
k_im= -0.0765 +/- 0.0227 | k_im= -0.0838 +/- 0.0222 |
corr= [ 0.95] | corr= [ 0.96] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1434 +/- 0.0184 | |g|= 0.0020 +/- 0.0344 | |g|= 0.1340 +/- 0.0184 |
arg(g)/pi= -0.4370 +/- 0.0479 | arg(g)/pi= 0.2343 +/- 11.1645 | arg(g)/pi= 0.5051 +/- 0.0435 |
-----|-----|-----|
g_re= 0.0282 +/- 0.0244 | g_re= 0.0000 +/- 0.0396 | g_re= -0.0021 +/- 0.0186 |
g_im= -0.1406 +/- 0.0145 | g_im= -0.0000 +/- 0.0390 | g_im= 0.1340 +/- 0.0182 |
corr= [-0.82] | corr= [-1.00] | corr= [-0.92] |
-----|-----|-----|
Br = 0.1915 +/- 0.0513 | Br = 0.0000 +/- 0.0013 | Br = 0.1673 +/- 0.0407 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.19011 +/- 0.023803)
+ (i/2)*(+1.7468e-16 +/- 2.5299e-13) [ 0.00]

s_pole = (0.036143 +/- 0.0090446)
+ i*(+3.3768e-17 +/- 4.8027e-14) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0532 +/- 0.0151 | k_im= -0.0652 +/- 0.0073 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1 | pi:phi/3^S_1(*) | pi:omega/3^D_1 |
=====
|g|= 0.0032 +/- 0.0567 | |g|= 0.1836 +/- 0.0025 | |g|= 0.0004 +/- 0.0071 |
arg(g)/pi= -0.0180 +/- 11.1616 | arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.0180 +/- 11.1591 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= -0.0000 +/- 0.0917 | g_im= 0.1836 +/- 0.0025 | g_im= -0.0000 +/- 0.0114 |
corr= [-1.00] | corr= [-1.00] | corr= [-0.92] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.27244 +/- 0.01674)
+ (i/2)*(-0.21138 +/- 0.085165) [-0.90]

s_pole = (0.06305 +/- 0.0040012)
+ i*(-0.057592 +/- 0.02645) [ 0.14]

pi:omega | pi:phi |
=====
k_re= 0.0893 +/- 0.0170 | k_re= 0.0770 +/- 0.0190 |
k_im= -0.0765 +/- 0.0227 | k_im= -0.0838 +/- 0.0222 |
corr= [-0.95] | corr= [-0.96] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1434 +/- 0.0184 | |g|= 0.0020 +/- 0.0344 | |g|= 0.1340 +/- 0.0184 |
arg(g)/pi= 0.4370 +/- 0.0479 | arg(g)/pi= -0.2343 +/- 11.1645 | arg(g)/pi= -0.5051 +/- 0.0435 |
-----|-----|-----|

```

```

-----|-----|-----|
 g_re= 0.0282 +/- 0.0244 | g_re= 0.0000 +/- 0.0396 | g_re= -0.0021 +/- 0.0186 |
 g_im= 0.1406 +/- 0.0145 | g_im= 0.0000 +/- 0.0390 | g_im= -0.1340 +/- 0.0182 |
 corr= [ 0.82] | corr= [ 1.00] | corr= [ 0.92] |
-----|-----|-----|
 Br = 0.1915 +/- 0.0513 | Br = 0.0000 +/- 0.0013 | Br = 0.1673 +/- 0.0407 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24463 +/- 0.00097259)
+ (i/2)*(+0.015074 +/- 0.0015329) [-0.41]

s_pole = (0.059789 +/- 0.00048068)
+ i*(+0.0036876 +/- 0.00036926) [-0.39]

pi:omega | pi:phi |
=====|=====
 k_re= -0.0462 +/- 0.0011 | k_re= -0.0146 +/- 0.0011 |
 k_im= -0.0089 +/- 0.0010 | k_im= -0.0249 +/- 0.0018 |
 corr= [-0.45] | corr= [-0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0981 +/- 0.0054 | lg= 0.0009 +/- 0.0154 | lg= 0.0054 +/- 0.0036 |
 arg(g)/pi= 0.0619 +/- 0.0224 | arg(g)/pi= -0.0117 +/- 11.1609 | arg(g)/pi= 0.6597 +/- 0.0360 |
-----|-----|-----|
 g_re= 0.0963 +/- 0.0055 | g_re= 0.0000 +/- 0.0023 | g_re= -0.0026 +/- 0.0019 |
 g_im= 0.0190 +/- 0.0068 | g_im= 0.0000 +/- 0.0247 | g_im= 0.0047 +/- 0.0031 |
 corr= [-0.13] | corr= [ 1.00] | corr= [-0.93] |
-----|-----|-----|
 Br = 0.9719 +/- 0.0225 | Br = 0.0000 +/- 0.0000 | Br = 0.0029 +/- 0.0038 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24463 +/- 0.00097259)
+ (i/2)*(-0.015074 +/- 0.0015329) [ 0.41]

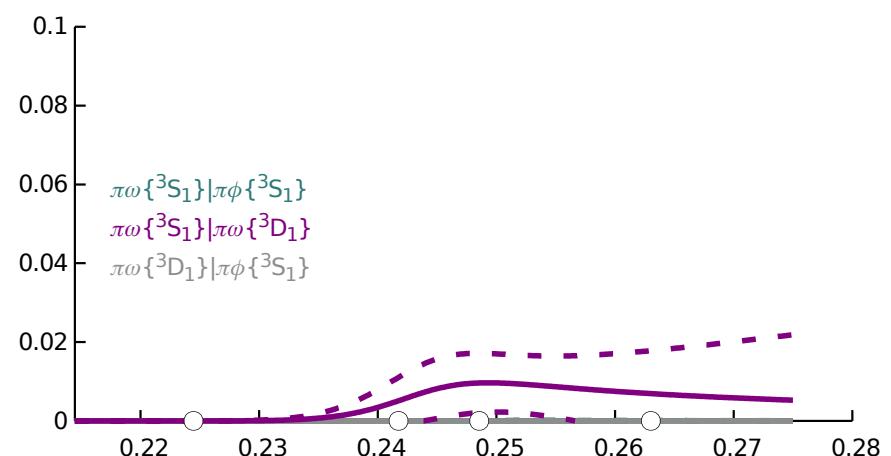
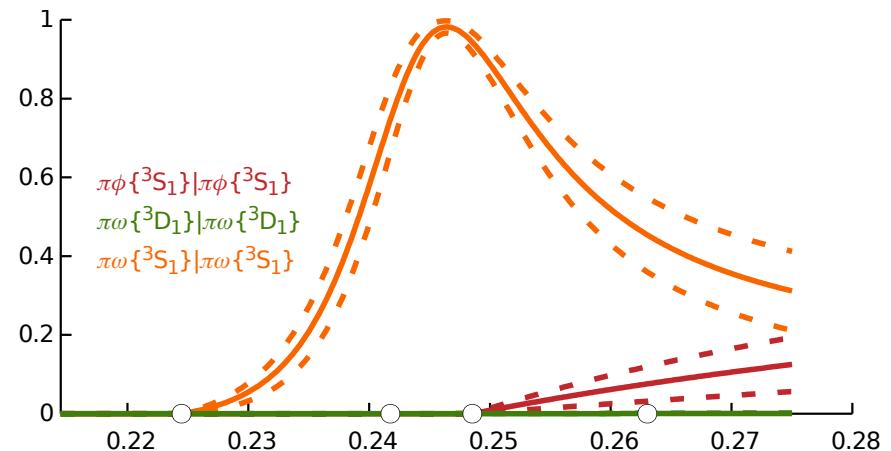
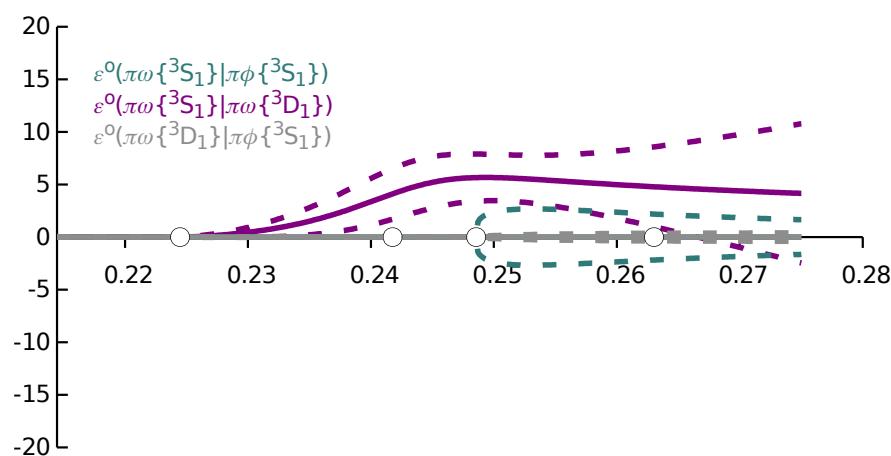
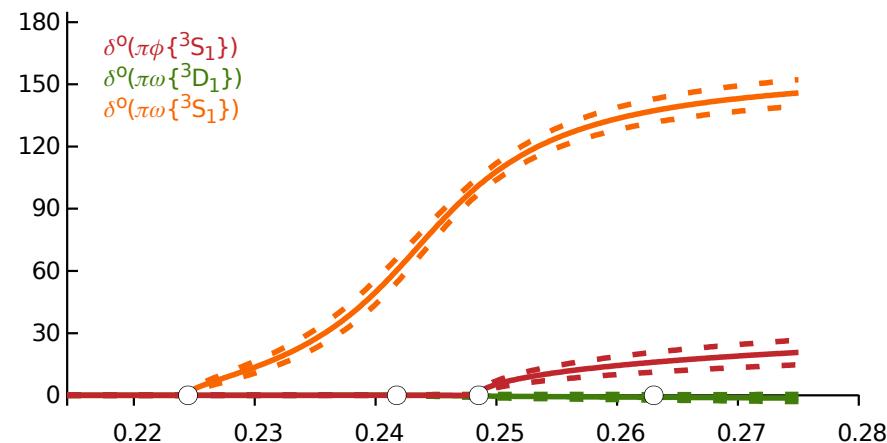
s_pole = (0.059789 +/- 0.00048068)
+ i*(-0.0036876 +/- 0.00036926) [ 0.39]

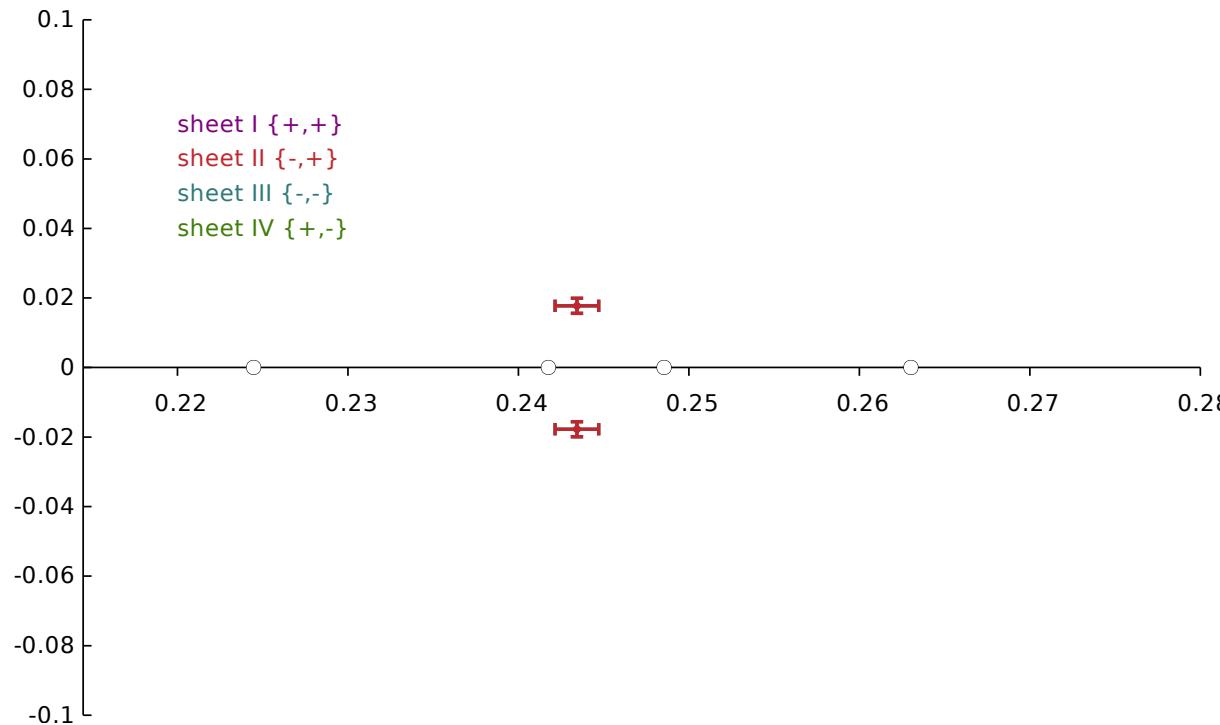
pi:omega | pi:phi |
=====|=====
 k_re= 0.0462 +/- 0.0011 | k_re= 0.0146 +/- 0.0011 |
 k_im= -0.0089 +/- 0.0010 | k_im= -0.0249 +/- 0.0018 |
 corr= [ 0.45] | corr= [ 0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0981 +/- 0.0054 | lg= 0.0009 +/- 0.0154 | lg= 0.0054 +/- 0.0036 |
 arg(g)/pi= -0.0619 +/- 0.0224 | arg(g)/pi= 0.0117 +/- 11.1609 | arg(g)/pi= -0.6597 +/- 0.0360 |
-----|-----|-----|
 g_re= 0.0963 +/- 0.0055 | g_re= 0.0000 +/- 0.0023 | g_re= -0.0026 +/- 0.0019 |
 g_im= -0.0190 +/- 0.0068 | g_im= -0.0000 +/- 0.0247 | g_im= -0.0047 +/- 0.0031 |
 corr= [ 0.13] | corr= [-1.00] | corr= [ 0.93] |
-----|-----|-----|
 Br = 0.9719 +/- 0.0225 | Br = 0.0000 +/- 0.0000 | Br = 0.0029 +/- 0.0038 |

```

1.11 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1_3d1_3S1.irho





parameter values

```
minimised with chisq/nDoF = 36.71 / (36 - 7) = 1.27
```

JP1+_g_pi:omega/3^D_1_pole0_order0	1.1813 +/- 0.57466	1.00 0.71 0.00 0.49 -0.27 -0.13 -0.06
JP1+_g_pi:omega/3^S_1_pole0_order0	0.11173 +/- 0.0083178	1.00 -0.01 0.20 -0.51 -0.08 -0.09
JP1+_g_pi:phi/3^S_1_pole0_order0	1.4311e-05 +/- 0.01061	1.00 0.01 -0.00 0.00 -0.06
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0	1.8245 +/- 13.11	1.00 0.15 -0.17 -0.19
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-0.39864 +/- 0.23104	1.00 0.18 -0.04
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.96384 +/- 0.29008	1.00 -0.27
JP1+_m_pole0	0.24645 +/- 0.00071639	1.00

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
```

```
sqrt(s)_pole = (0.24343 +/- 0.0012845)
+ (i/2)*(+0.017745 +/- 0.0021584) [-0.47]
```

```
s_pole = (0.05918 +/- 0.00063461)
+ i*(+0.0043197 +/- 0.00051506) [-0.46]
```

pi:omega	pi:phi
k_re= -0.0450 +/- 0.0014	k_re= 0.0153 +/- 0.0013
k_im= -0.0107 +/- 0.0014	k_im= 0.0277 +/- 0.0022

```

corr= [-0.50] | corr= [ 0.03] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1064 +/- 0.0068 | |g|= 0.0003 +/- 0.0052 | |g|= 0.0103 +/- 0.0058 |
arg(g)/pi= 0.0776 +/- 0.0245 | arg(g)/pi= -0.4102 +/- 11.1563 | arg(g)/pi= 0.1623 +/- 0.1168 |
-----|-----|-----
g_re= 0.1033 +/- 0.0069 | g_re= 0.0000 +/- 0.0085 | g_re= 0.0090 +/- 0.0063 |
g_im= 0.0257 +/- 0.0081 | g_im= 0.0000 +/- 0.0018 | g_im= 0.0050 +/- 0.0028 |
corr= [-0.07] | corr= [ 1.00] | corr= [ 0.10] |
-----|-----|-----
Br = 0.9498 +/- 0.0253 | Br = 0.0000 +/- 0.0000 | Br = 0.0088 +/- 0.0093 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0012845)  

+ (i/2)*(-0.017745 +/- 0.0021584) [ 0.47]  

s_pole = (0.05918 +/- 0.00063461)  

+ i*(-0.0043197 +/- 0.00051506) [ 0.46]  

pi:omega | pi:phi |  

=====|=====|  

k_re= 0.0450 +/- 0.0014 | k_re= -0.0153 +/- 0.0013 |  

k_im= -0.0107 +/- 0.0014 | k_im= 0.0277 +/- 0.0022 |  

corr= [ 0.50] | corr= [-0.03] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1064 +/- 0.0068 | |g|= 0.0003 +/- 0.0052 | |g|= 0.0103 +/- 0.0058 |
arg(g)/pi= -0.0776 +/- 0.0245 | arg(g)/pi= 0.4102 +/- 11.1563 | arg(g)/pi= -0.1623 +/- 0.1168 |
-----|-----|-----
g_re= 0.1033 +/- 0.0069 | g_re= 0.0000 +/- 0.0085 | g_re= 0.0090 +/- 0.0063 |
g_im= -0.0257 +/- 0.0081 | g_im= -0.0000 +/- 0.0018 | g_im= -0.0050 +/- 0.0028 |
corr= [ 0.07] | corr= [-1.00] | corr= [-0.10] |
-----|-----|-----
Br = 0.9498 +/- 0.0253 | Br = 0.0000 +/- 0.0000 | Br = 0.0088 +/- 0.0093 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0012841)  

+ (i/2)*(+0.017745 +/- 0.0021581) [-0.47]  

s_pole = (0.05918 +/- 0.00063443)  

+ i*(+0.0043197 +/- 0.00051499) [-0.46]  

pi:omega | pi:phi |  

=====|=====|  

k_re= -0.0450 +/- 0.0014 | k_re= -0.0153 +/- 0.0013 |  

k_im= -0.0107 +/- 0.0014 | k_im= -0.0277 +/- 0.0022 |  

corr= [-0.50] | corr= [ 0.03] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1064 +/- 0.0068 | |g|= 0.0005 +/- 0.0080 | |g|= 0.0103 +/- 0.0058 |
arg(g)/pi= 0.0776 +/- 0.0245 | arg(g)/pi= 0.4562 +/- 11.1578 | arg(g)/pi= 0.1623 +/- 0.1168 |
-----|-----|-----
g_re= 0.1033 +/- 0.0069 | g_re= 0.0000 +/- 0.0133 | g_re= 0.0090 +/- 0.0063 |
g_im= 0.0257 +/- 0.0081 | g_im= -0.0000 +/- 0.0008 | g_im= 0.0050 +/- 0.0028 |
corr= [-0.07] | corr= [-1.00] | corr= [ 0.10] |
-----|-----|-----

```

1 Successful Parameterizations

```

-----|-----|-----|
Br = 0.9498 +/- 0.0253 | Br = 0.0000 +/- 0.0000 | Br = 0.0088 +/- 0.0093 |

--
pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24343 +/- 0.0012841)
+ (i/2)*(-0.017745 +/- 0.0021581) [ 0.47]

s_pole = (0.05918 +/- 0.00063443)
+ i*(-0.0043197 +/- 0.00051499) [ 0.46]

pi:omega | pi:phi |
=====|=====
k_re= 0.0450 +/- 0.0014 | k_re= 0.0153 +/- 0.0013 |
k_im= -0.0107 +/- 0.0014 | k_im= -0.0277 +/- 0.0022 |
corr= [ 0.50] | corr= [-0.03] |

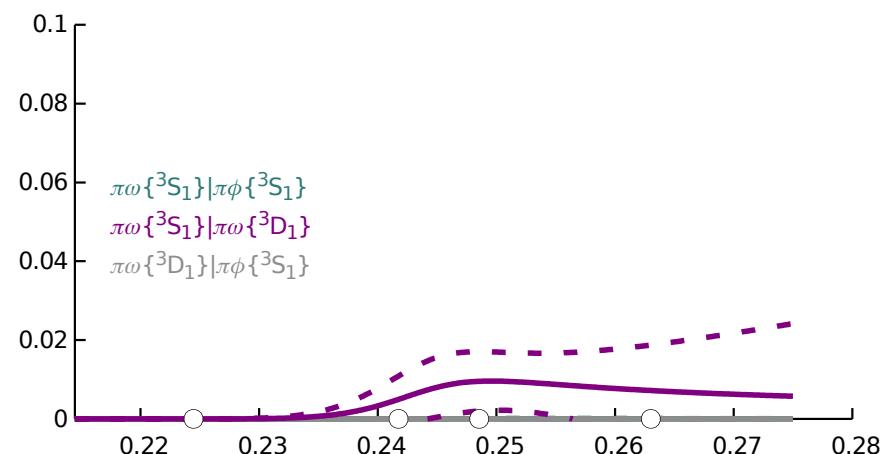
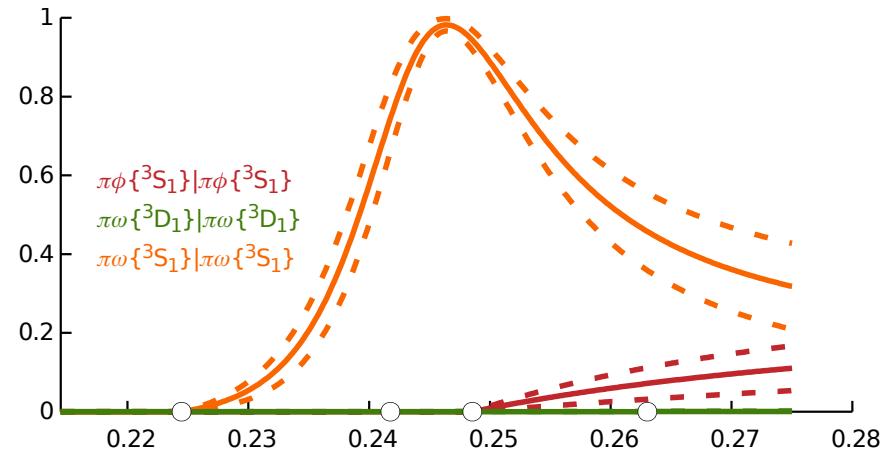
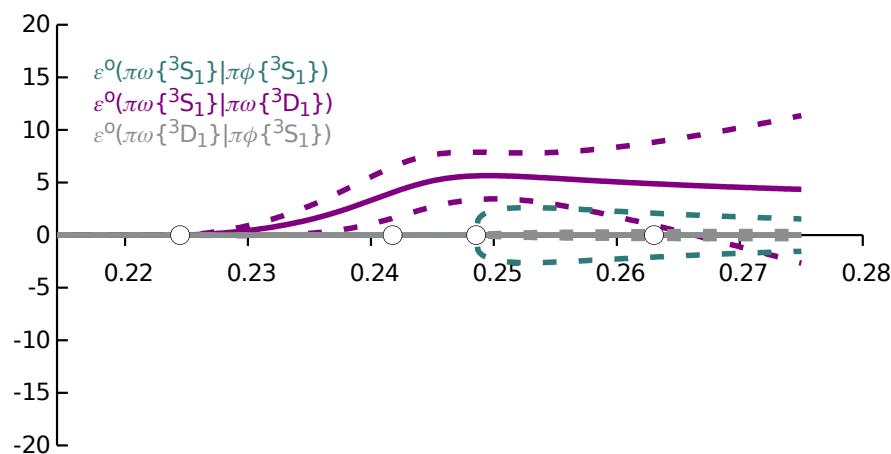
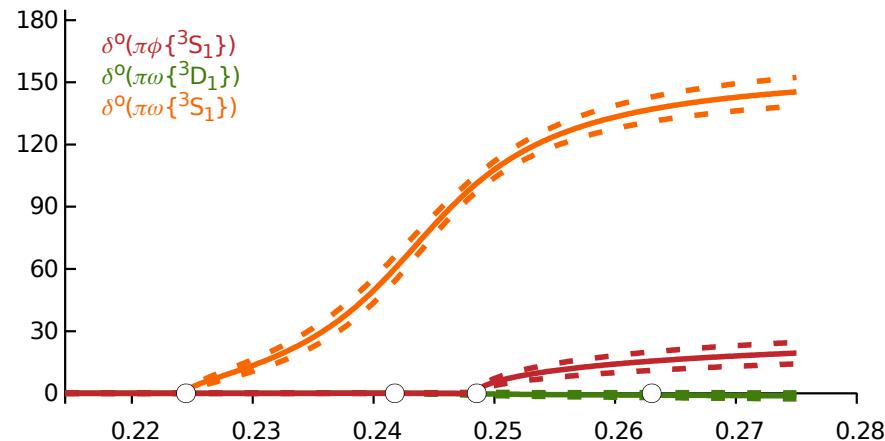
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1064 +/- 0.0068 | |g|= 0.0005 +/- 0.0080 | |g|= 0.0103 +/- 0.0058 |
arg(g)/pi= -0.0776 +/- 0.0245 | arg(g)/pi= -0.4562 +/- 11.1578 | arg(g)/pi= -0.1623 +/- 0.1168 |

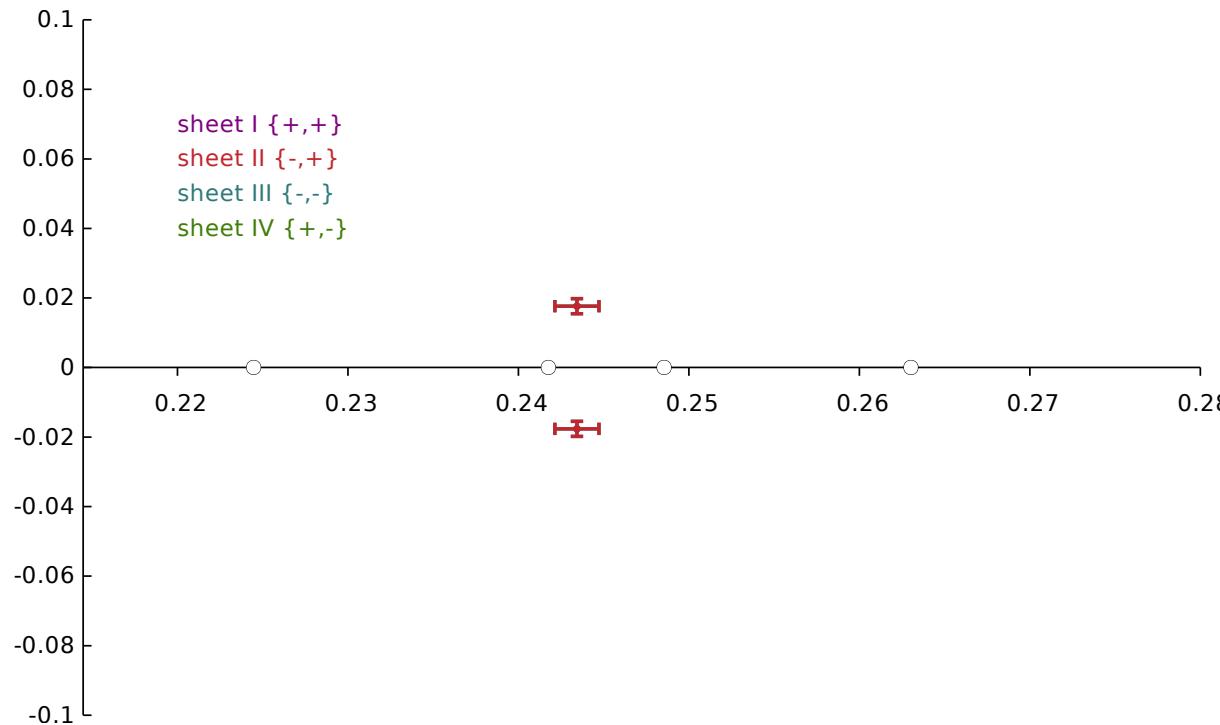
g_re= 0.1033 +/- 0.0069 | g_re= 0.0000 +/- 0.0133 | g_re= 0.0090 +/- 0.0063 |
g_im= -0.0257 +/- 0.0081 | g_im= 0.0000 +/- 0.0008 | g_im= -0.0050 +/- 0.0028 |
corr= [ 0.07] | corr= [ 1.00] | corr= [-0.10] |

-----|-----|-----|
Br = 0.9498 +/- 0.0253 | Br = 0.0000 +/- 0.0000 | Br = 0.0088 +/- 0.0093 |

```

1.12 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1_3d1_3S1.pole0_sub





parameter values

minimised with chisq/nDoF = 36.75 / (36 - 7) = 1.27

JP1+_g_pi:omega/3^D_1_pole0_order0	1.1118 +/- 0.54329	1.00 0.70 0.00 0.50 -0.25 -0.14 -0.06
JP1+_g_pi:omega/3^S_1_pole0_order0	0.10595 +/- 0.0071609	1.00 -0.01 0.20 -0.49 -0.09 -0.09
JP1+_g_pi:phi/3^S_1_pole0_order0	-1.1354e-05 +/- 0.0090167	1.00 0.01 -0.00 -0.01 -0.04
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0	1.4667 +/- 12.163	1.00 0.16 -0.18 -0.20
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-0.34279 +/- 0.19569	1.00 0.19 -0.04
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.89334 +/- 0.24413	1.00 -0.18
JP1+_m_pole0	0.24645 +/- 0.00071224	1.00

pole singularities

pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24343 +/- 0.0012951)
 $+ (i/2)*(+0.017629 +/- 0.002161)$ [-0.46]

s_pole = (0.059182 +/- 0.00063942)
 $+ i*(+0.0042914 +/- 0.00051605)$ [-0.44]

pi:omega	pi:phi
k_re= -0.0450 +/- 0.0014	k_re= 0.0153 +/- 0.0013
k_im= -0.0106 +/- 0.0014	k_im= 0.0276 +/- 0.0022

1 Successful Parameterizations

```

corr= [-0.48] | corr= [ 0.02] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1059 +/- 0.0069 | |g|= 0.0003 +/- 0.0052 | |g|= 0.0101 +/- 0.0058 |
arg(g)/pi= 0.0782 +/- 0.0250 |arg(g)/pi= -0.4352 +/- 11.1779 |arg(g)/pi= 0.1663 +/- 0.1217 |
-----
g_re= 0.1027 +/- 0.0071 | g_re= -0.0000 +/- 0.0085 | g_re= 0.0087 +/- 0.0064 |
g_im= 0.0258 +/- 0.0082 | g_im= 0.0000 +/- 0.0016 | g_im= 0.0050 +/- 0.0028 |
corr= [-0.12] | corr= [ 1.00] | corr= [ 0.08] |
-----
Br = 0.9469 +/- 0.0266 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0092 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0012951)
+ (i/2)*(-0.017629 +/- 0.002161) [ 0.46]

s_pole = (0.059182 +/- 0.00063942)
+ i*(-0.0042914 +/- 0.00051605) [ 0.44]

pi:omega | pi:phi |
=====
k_re= 0.0450 +/- 0.0014 | k_re= -0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0014 | k_im= 0.0276 +/- 0.0022 |
corr= [ 0.48] | corr= [-0.02] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1059 +/- 0.0069 | |g|= 0.0003 +/- 0.0052 | |g|= 0.0101 +/- 0.0058 |
arg(g)/pi= -0.0782 +/- 0.0250 |arg(g)/pi= 0.4365 +/- 11.1576 |arg(g)/pi= -0.1663 +/- 0.1217 |
-----
g_re= 0.1027 +/- 0.0071 | g_re= -0.0000 +/- 0.0085 | g_re= 0.0087 +/- 0.0064 |
g_im= -0.0258 +/- 0.0082 | g_im= 0.0000 +/- 0.0016 | g_im= -0.0050 +/- 0.0028 |
corr= [ 0.12] | corr= [-1.00] | corr= [-0.08] |
-----
Br = 0.9469 +/- 0.0266 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0092 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0012948)
+ (i/2)*(+0.017629 +/- 0.0021606) [-0.46]

s_pole = (0.059182 +/- 0.00063926)
+ i*(+0.0042915 +/- 0.00051598) [-0.44]

pi:omega | pi:phi |
=====
k_re= -0.0450 +/- 0.0014 | k_re= -0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0014 | k_im= -0.0276 +/- 0.0022 |
corr= [-0.48] | corr= [ 0.02] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1059 +/- 0.0069 | |g|= 0.0005 +/- 0.0081 | |g|= 0.0101 +/- 0.0058 |
arg(g)/pi= 0.0782 +/- 0.0250 |arg(g)/pi= 0.4622 +/- 11.1633 |arg(g)/pi= 0.1663 +/- 0.1217 |
-----
g_re= 0.1027 +/- 0.0071 | g_re= -0.0000 +/- 0.0133 | g_re= 0.0087 +/- 0.0064 |
g_im= 0.0258 +/- 0.0082 | g_im= 0.0000 +/- 0.0014 | g_im= 0.0050 +/- 0.0028 |
corr= [-0.12] | corr= [-1.00] | corr= [ 0.08] |

```

1 Successful Parameterizations

```

-----|-----|-----|
Br = 0.9469 +/- 0.0266 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0092 |

--
pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24343 +/- 0.0012948)
+ (i/2)*(-0.017629 +/- 0.0021606) [ 0.46]

s_pole = (0.059182 +/- 0.00063926)
+ i*(-0.0042915 +/- 0.00051598) [ 0.44]

pi:omega | pi:phi |
=====|=====
k_re= 0.0450 +/- 0.0014 | k_re= 0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0014 | k_im= -0.0276 +/- 0.0022 |
corr= [ 0.48] | corr= [-0.02] |

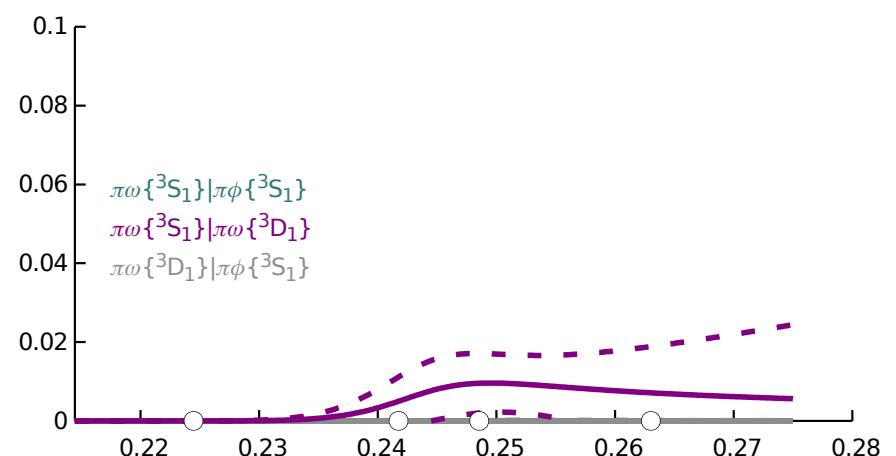
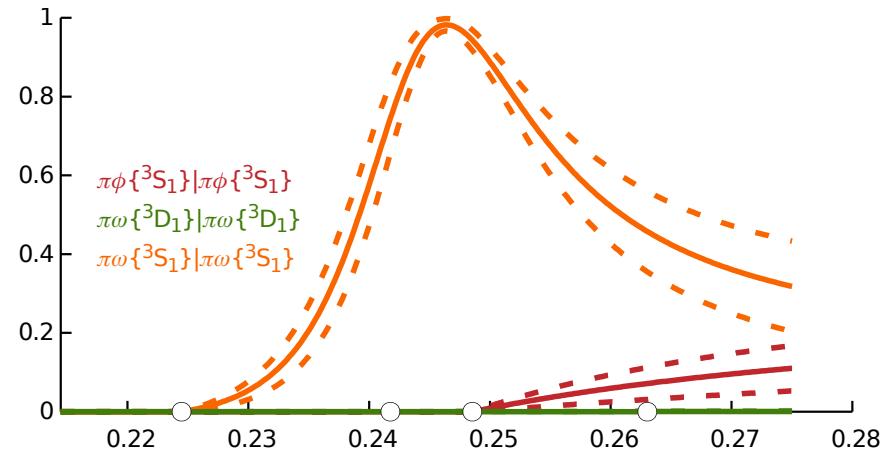
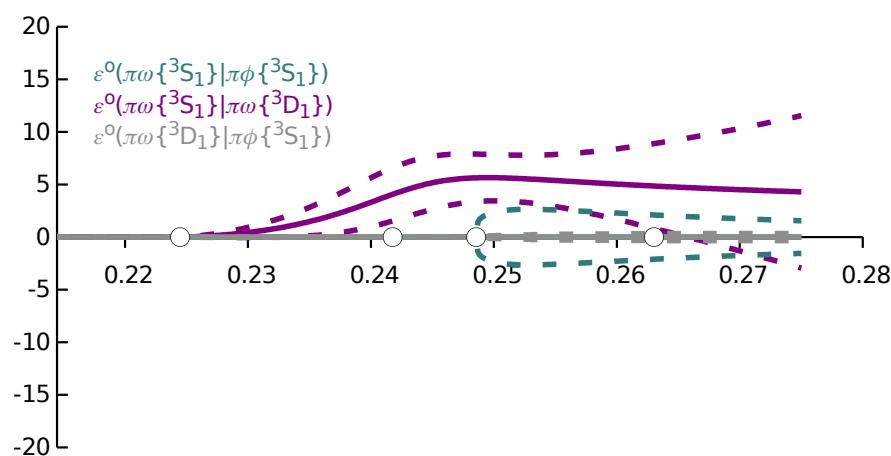
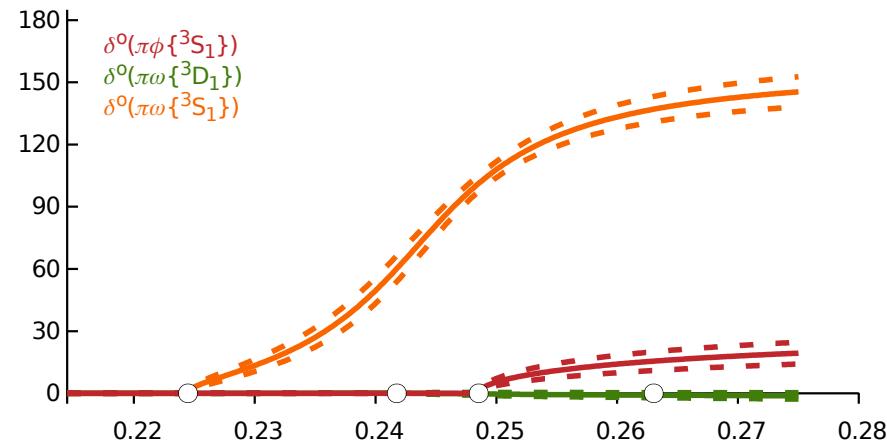
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0069 | |g|= 0.0005 +/- 0.0081 | |g|= 0.0101 +/- 0.0058 |
arg(g)/pi= -0.0782 +/- 0.0250 | arg(g)/pi= -0.4613 +/- 11.1862 | arg(g)/pi= -0.1663 +/- 0.1217 |

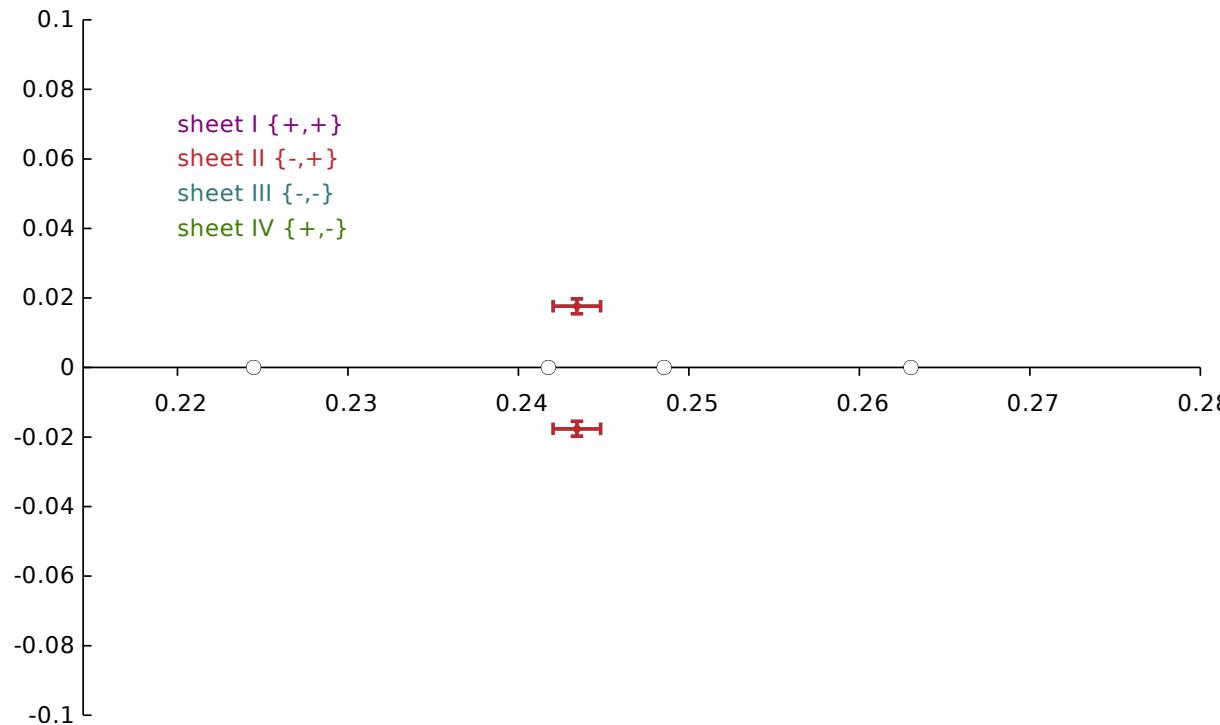
g_re= 0.1027 +/- 0.0071 | g_re= -0.0000 +/- 0.0133 | g_re= 0.0087 +/- 0.0064 |
g_im= -0.0258 +/- 0.0082 | g_im= -0.0000 +/- 0.0014 | g_im= -0.0050 +/- 0.0028 |
corr= [ 0.12] | corr= [ 1.00] | corr= [-0.08] |

-----|-----|-----|
Br = 0.9469 +/- 0.0266 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0092 |

```

1.13 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1_3d1_3S1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 36.75 / (36 - 7) = 1.27
```

JP1+_g_pi:omega/3^D_1_pole0_order0		1.1284 +/- 0.63356		1.00	0.70	0.00	0.66	-0.22	-0.13 -0.45
JP1+_g_pi:omega/3^S_1_pole0_order0		0.10237 +/- 0.0064041		1.00	-0.00	0.32	-0.27	-0.01	-0.58
JP1+_g_pi:phi/3^S_1_pole0_order0		-1.7035e-07 +/- 0.010042		1.00	0.00	-0.00	0.00	-0.02	
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order		1.5103 +/- 12.124		1.00	0.12	-0.15	-0.32		
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order		-0.33091 +/- 0.18587		1.00	0.18	0.18			
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.98807 +/- 0.30528		1.00	-0.20				
JP1+_m_pole0		0.24423 +/- 0.00079476		1.00					

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24343 +/- 0.0013935)
  + (i/2)*(+0.017633 +/- 0.0021476) [-0.48]

s_pole = (0.059181 +/- 0.00068779)
  + i*(+0.0042923 +/- 0.00051137) [-0.47]
```

pi:omega	pi:phi
k_re= -0.0450 +/- 0.0015	k_re= 0.0153 +/- 0.0013
k_im= -0.0106 +/- 0.0014	k_im= 0.0277 +/- 0.0023

```

corr= [-0.53] | corr= [-0.05] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0069 | |g|= 0.0003 +/- 0.0052 | |g|= 0.0101 +/- 0.0060 |
arg(g)/pi= 0.0782 +/- 0.0264 |arg(g)/pi= -0.4275 +/- 11.1657 |arg(g)/pi= 0.1654 +/- 0.1246 |
-----|-----|-----
g_re= 0.1028 +/- 0.0071 | g_re= -0.0000 +/- 0.0086 | g_re= 0.0088 +/- 0.0066 |
g_im= 0.0258 +/- 0.0086 | g_im= -0.0000 +/- 0.0017 | g_im= 0.0050 +/- 0.0028 |
corr= [-0.14] | corr= [ 1.00] | corr= [ 0.07] |
-----|-----|-----
Br = 0.9467 +/- 0.0276 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0095 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0013935)  

+ (i/2)*(-0.017633 +/- 0.0021476) [ 0.48]  

s_pole = (0.059181 +/- 0.00068779)  

+ i*(-0.0042923 +/- 0.00051137) [ 0.47]  

pi:omega | pi:phi |  

=====|=====|  

k_re= 0.0450 +/- 0.0015 | k_re= -0.0153 +/- 0.0013 |  

k_im= -0.0106 +/- 0.0014 | k_im= 0.0277 +/- 0.0023 |  

corr= [ 0.53] | corr= [ 0.05] |  

-----|-----|-----  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0069 | |g|= 0.0003 +/- 0.0052 | |g|= 0.0101 +/- 0.0060 |
arg(g)/pi= -0.0782 +/- 0.0264 |arg(g)/pi= 0.4275 +/- 11.1657 |arg(g)/pi= -0.1654 +/- 0.1246 |
-----|-----|-----
g_re= 0.1028 +/- 0.0071 | g_re= -0.0000 +/- 0.0086 | g_re= 0.0088 +/- 0.0066 |
g_im= -0.0258 +/- 0.0086 | g_im= 0.0000 +/- 0.0017 | g_im= -0.0050 +/- 0.0028 |
corr= [ 0.14] | corr= [-1.00] | corr= [-0.07] |
-----|-----|-----
Br = 0.9467 +/- 0.0276 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0095 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0013932)  

+ (i/2)*(+0.017633 +/- 0.0021472) [-0.48]  

s_pole = (0.059181 +/- 0.00068765)  

+ i*(+0.0042924 +/- 0.00051128) [-0.47]  

pi:omega | pi:phi |  

=====|=====|  

k_re= -0.0450 +/- 0.0015 | k_re= -0.0153 +/- 0.0013 |  

k_im= -0.0106 +/- 0.0014 | k_im= -0.0277 +/- 0.0023 |  

corr= [-0.53] | corr= [-0.05] |  

-----|-----|-----  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0069 | |g|= 0.0005 +/- 0.0081 | |g|= 0.0101 +/- 0.0060 |
arg(g)/pi= 0.0782 +/- 0.0264 |arg(g)/pi= 0.4541 +/- 11.1674 |arg(g)/pi= 0.1654 +/- 0.1246 |
-----|-----|-----
g_re= 0.1028 +/- 0.0071 | g_re= -0.0000 +/- 0.0134 | g_re= 0.0088 +/- 0.0066 |
g_im= 0.0258 +/- 0.0086 | g_im= -0.0000 +/- 0.0014 | g_im= 0.0050 +/- 0.0028 |
corr= [-0.14] | corr= [-1.00] | corr= [ 0.07] |
-----|-----|-----
```

1 Successful Parameterizations

```

-----|-----|-----|
Br = 0.9467 +/- 0.0276 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0095 |

--
pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24343 +/- 0.0013932)
+ (i/2)*(-0.017633 +/- 0.0021472) [ 0.48]

s_pole = (0.059181 +/- 0.00068765)
+ i*(-0.0042924 +/- 0.00051128) [ 0.47]

pi:omega | pi:phi |
=====|=====
k_re= 0.0450 +/- 0.0015 | k_re= 0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0014 | k_im= -0.0277 +/- 0.0023 |
corr= [ 0.53] | corr= [ 0.05] |

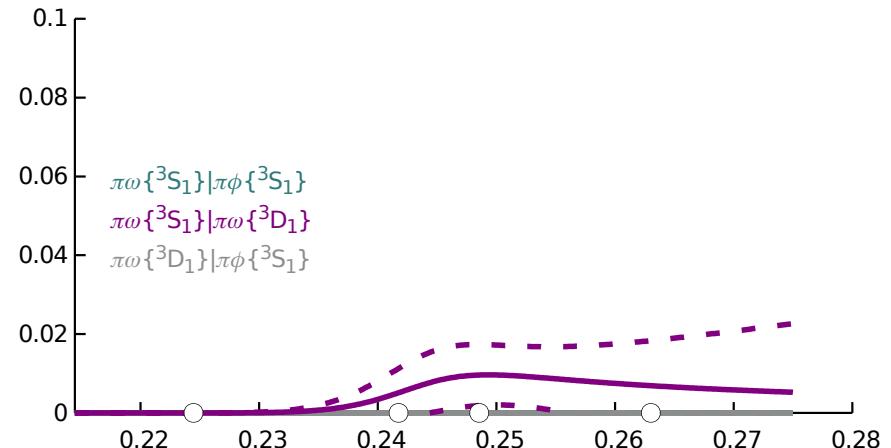
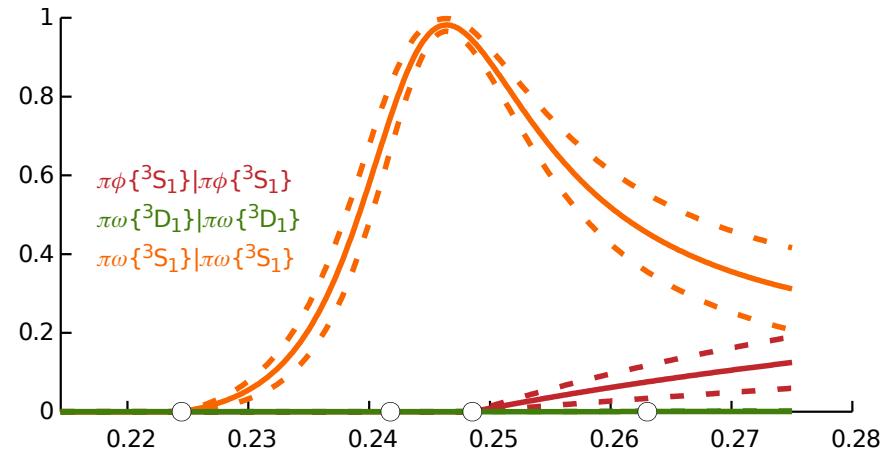
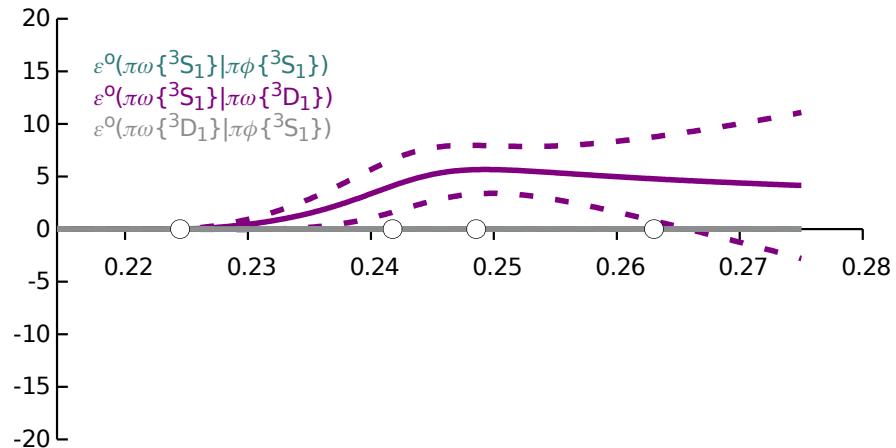
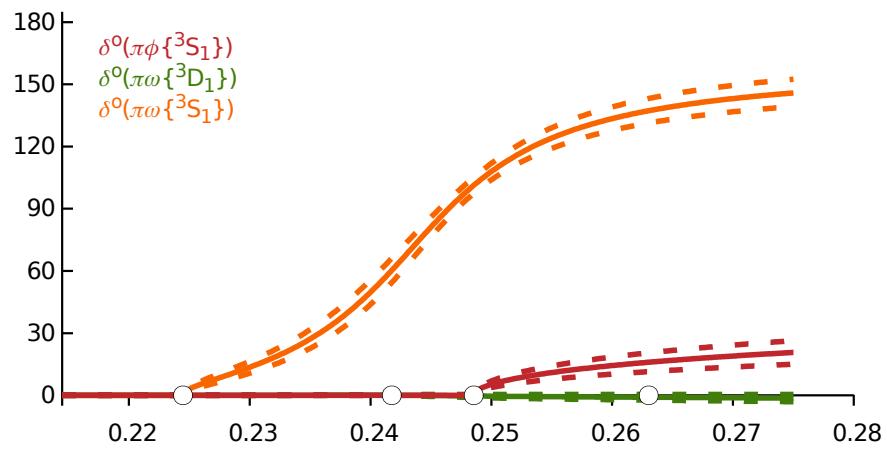
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0069 | |g|= 0.0005 +/- 0.0081 | |g|= 0.0101 +/- 0.0060 |
arg(g)/pi= -0.0782 +/- 0.0264 | arg(g)/pi= -0.4541 +/- 11.1674 | arg(g)/pi= -0.1654 +/- 0.1246 |

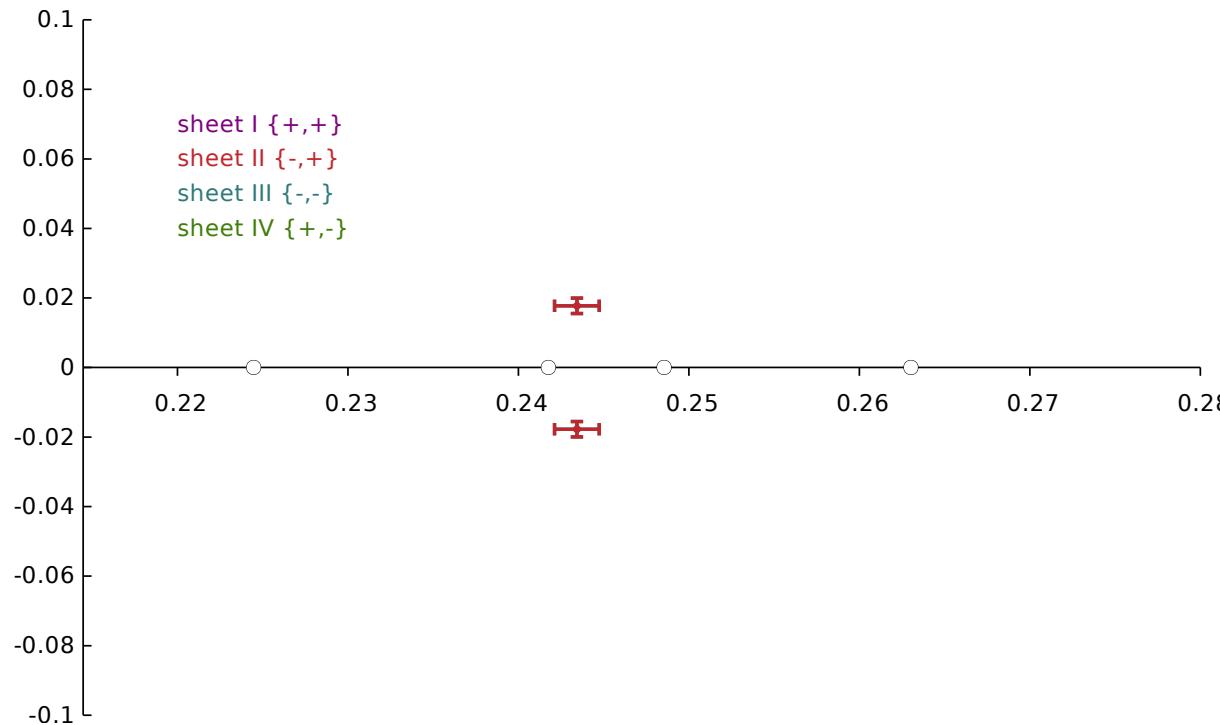
g_re= 0.1028 +/- 0.0071 | g_re= -0.0000 +/- 0.0134 | g_re= 0.0088 +/- 0.0066 |
g_im= -0.0258 +/- 0.0086 | g_im= 0.0000 +/- 0.0014 | g_im= -0.0050 +/- 0.0028 |
corr= [ 0.14] | corr= [ 1.00] | corr= [-0.07] |

-----|-----|-----|
Br = 0.9467 +/- 0.0276 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0095 |

```

1.14 coupled_pp_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1_3d1.irho





parameter values

```

minimised with chisq/nDoF = 36.71 / (36 - 6) = 1.22
=====
JP1+_g_pi:omega/3^D_1_pole0_order0 | 1.1805 +/- 0.57462 | 1.00 0.71 0.49 -0.27 -0.13 -0.06
JP1+_g_pi:omega/3^S_1_pole0_order0 | 0.11171 +/- 0.0083153 | 1.00 0.21 -0.51 -0.08 -0.09
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^D_1_order0 | 1.8305 +/- 13.109 | 1.00 0.15 -0.17 -0.19
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^S_1_order0 | -0.39831 +/- 0.23099 | 1.00 0.18 -0.04
JP1+_gamma_pi:phi/3^S_1|pi:phi/3^S_1_order0 | 0.96356 +/- 0.29003 | 1.00 -0.27
JP1+_m_pole0 | 0.24645 +/- 0.00071508 | 1.00
=====
```

pole singularities

```

pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24343 +/- 0.0013086)
+ (i/2)*(+0.017743 +/- 0.0022271) [-0.54]
s_pole = (0.059181 +/- 0.00064801)
+ i*(+0.0043193 +/- 0.00052998) [-0.53]

pi:omega | pi:phi |
=====
k_re= -0.0450 +/- 0.0014 | k_re= 0.0153 +/- 0.0012 |
k_im= -0.0107 +/- 0.0015 | k_im= 0.0277 +/- 0.0023 |
corr= [-0.56] | corr= [ 0.08] |
```

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1064 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0103 +/- 0.0060 |
arg(g)/pi= 0.0775 +/- 0.0250 | arg(g)/pi= 0.4225 +/- 0.0250 | arg(g)/pi= 0.1622 +/- 0.1231 |
-----
g_re= 0.1033 +/- 0.0069 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0090 +/- 0.0065 |
g_im= 0.0257 +/- 0.0084 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0050 +/- 0.0030 |
corr= [-0.01] | corr= [-0.16] | corr= [ 0.08] |
-----
Br = 0.9489 +/- 0.0246 | Br = 0.0000 +/- 0.0000 | Br = 0.0088 +/- 0.0096 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0013086)
+ (i/2)*(-0.017743 +/- 0.0022271) [ 0.54]  

s_pole = (0.059181 +/- 0.00064801)
+ i*(-0.0043193 +/- 0.00052998) [ 0.53]

pi:omega | pi:phi |
=====
k_re= 0.0450 +/- 0.0014 | k_re= -0.0153 +/- 0.0012 |
k_im= -0.0107 +/- 0.0015 | k_im= 0.0277 +/- 0.0023 |
corr= [ 0.56] | corr= [-0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1064 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0103 +/- 0.0060 |
arg(g)/pi= -0.0775 +/- 0.0250 | arg(g)/pi= 0.5775 +/- 0.0250 | arg(g)/pi= -0.1622 +/- 0.1231 |
-----
g_re= 0.1033 +/- 0.0069 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0090 +/- 0.0065 |
g_im= -0.0257 +/- 0.0084 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0050 +/- 0.0030 |
corr= [ 0.01] | corr= [ 0.16] | corr= [-0.08] |
-----
Br = 0.9489 +/- 0.0246 | Br = 0.0000 +/- 0.0000 | Br = 0.0088 +/- 0.0096 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0013086)
+ (i/2)*(+0.017743 +/- 0.0022271) [-0.54]  

s_pole = (0.059181 +/- 0.00064801)
+ i*(+0.0043193 +/- 0.00052998) [-0.53]

pi:omega | pi:phi |
=====
k_re= -0.0450 +/- 0.0014 | k_re= -0.0153 +/- 0.0012 |
k_im= -0.0107 +/- 0.0015 | k_im= -0.0277 +/- 0.0023 |
corr= [-0.56] | corr= [ 0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1064 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0103 +/- 0.0060 |
arg(g)/pi= 0.0775 +/- 0.0250 | arg(g)/pi= 0.4225 +/- 0.0250 | arg(g)/pi= 0.1622 +/- 0.1231 |
-----
g_re= 0.1033 +/- 0.0069 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0090 +/- 0.0065 |
g_im= 0.0257 +/- 0.0084 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0050 +/- 0.0030 |
corr= [-0.01] | corr= [-0.16] | corr= [ 0.08] |

```

1 Successful Parameterizations

```
Br = 0.9489 +/- 0.0246 | Br = 0.0000 +/- 0.0000 | Br = 0.0088 +/- 0.0096 |
```

--
pi:omega[-] pi:phi[-] lower half-plane

```
sqrt(s)_pole = (0.24343 +/- 0.0013086)  
+ (i/2)*(-0.017743 +/- 0.0022271) [ 0.54]
```

```
s_pole = (0.059181 +/- 0.00064801)  
+ i*(-0.0043193 +/- 0.00052998) [ 0.53]
```

pi:omega	pi:phi
----------	--------

k_re= 0.0450 +/- 0.0014	k_re= 0.0153 +/- 0.0012
k_im= -0.0107 +/- 0.0015	k_im= -0.0277 +/- 0.0023
corr= [0.56]	corr= [-0.08]

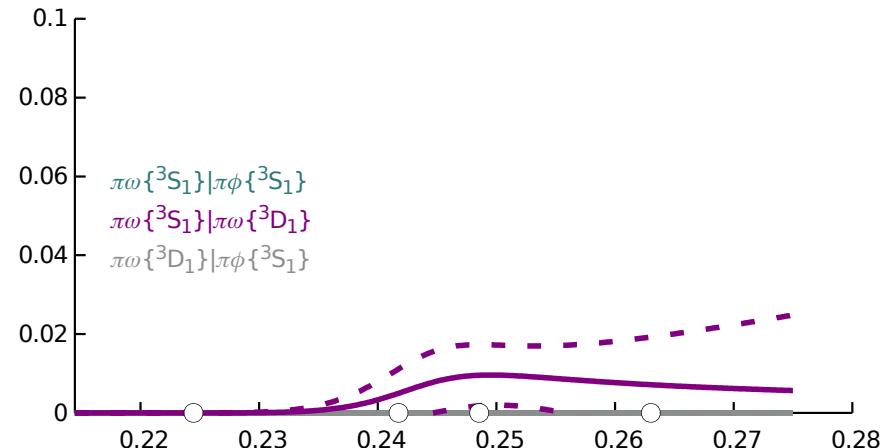
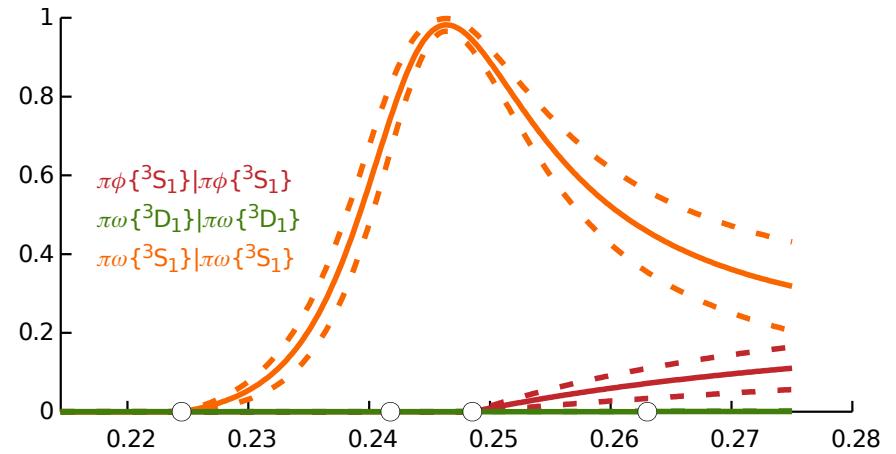
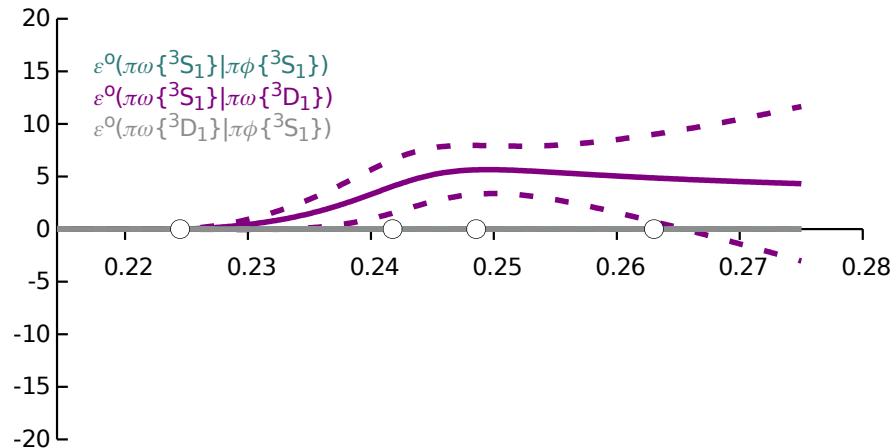
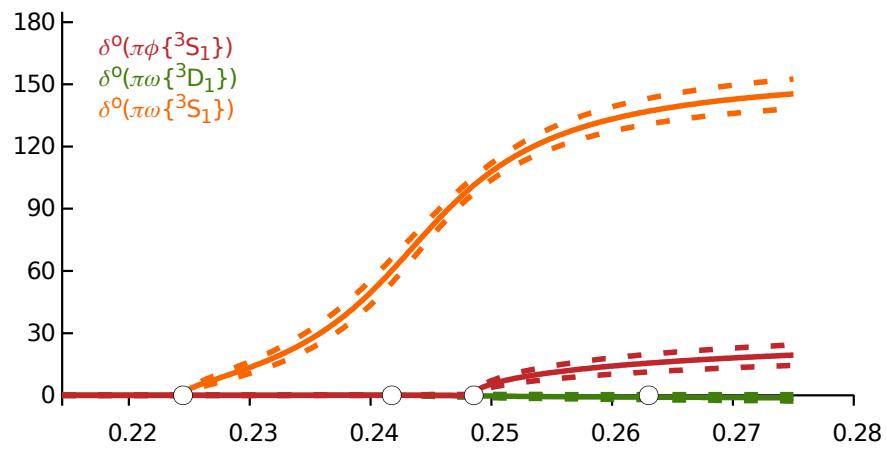
pi:omega/3^S_1(*)	pi:phi/3^S_1	pi:omega/3^D_1
-------------------	--------------	----------------

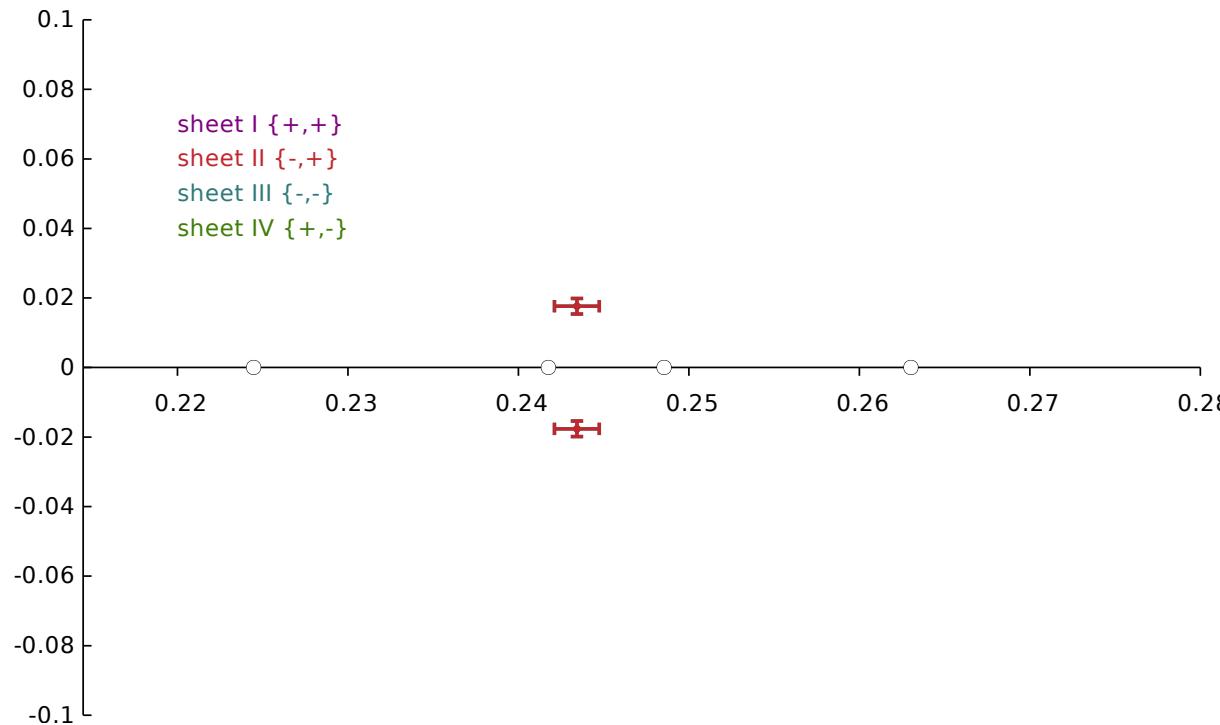
g = 0.1064 +/- 0.0070	g = 0.0000 +/- 0.0000	g = 0.0103 +/- 0.0060
arg(g)/pi= -0.0775 +/- 0.0250	arg(g)/pi= 0.5775 +/- 0.0250	arg(g)/pi= -0.1622 +/- 0.1231

g_re= 0.1033 +/- 0.0069	g_re= -0.0000 +/- 0.0000	g_re= 0.0090 +/- 0.0065
g_im= -0.0257 +/- 0.0084	g_im= 0.0000 +/- 0.0000	g_im= -0.0050 +/- 0.0030
corr= [0.01]	corr= [0.16]	corr= [-0.08]

```
Br = 0.9489 +/- 0.0246 | Br = 0.0000 +/- 0.0000 | Br = 0.0088 +/- 0.0096 |
```

1.15 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1_3d1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 36.75 / (36 - 6) = 1.22
```

JP1+_g_pi:omega/3^D_1_pole0_order0	1.1133 +/- 0.54313	1.00 0.70 0.50 -0.25 -0.14 -0.06
JP1+_g_pi:omega/3^S_1_pole0_order0	0.10595 +/- 0.0071587	1.00 0.20 -0.49 -0.09 -0.09
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0	1.5271 +/- 12.153	1.00 0.16 -0.18 -0.20
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-0.34290 +/- 0.19568	1.00 0.19 -0.04
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.89328 +/- 0.2441	1.00 -0.19
JP1+_m_pole0	0.24645 +/- 0.00071174	1.00

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24343 +/- 0.0013119)
+ (i/2)*(+0.017629 +/- 0.0022246) [-0.52]
s_pole = (0.059182 +/- 0.00064923)
+ i*(+0.0042915 +/- 0.00052978) [-0.51]
```

pi:omega	pi:phi
k_re= -0.0450 +/- 0.0014	k_re= 0.0153 +/- 0.0013
k_im= -0.0106 +/- 0.0015	k_im= 0.0276 +/- 0.0023
corr= [-0.54]	corr= [0.07]

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0101 +/- 0.0060 |
arg(g)/pi= 0.0782 +/- 0.0255 |arg(g)/pi= 0.4218 +/- 0.0255 |arg(g)/pi= 0.1656 +/- 0.1274 |
-----|-----|-----
g_re= 0.1027 +/- 0.0071 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0088 +/- 0.0066 |
g_im= 0.0258 +/- 0.0085 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0050 +/- 0.0030 |
corr= [-0.06] | corr= [-0.12] | corr= [ 0.07] |
-----|-----|-----
Br = 0.9458 +/- 0.0261 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0095 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0013119)
+ (i/2)*(-0.017629 +/- 0.0022246) [ 0.52]  

s_pole = (0.059182 +/- 0.00064923)
+ i*(-0.0042915 +/- 0.00052978) [ 0.51]

pi:omega | pi:phi |
=====|=====
k_re= 0.0450 +/- 0.0014 | k_re= -0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0015 | k_im= 0.0276 +/- 0.0023 |
corr= [ 0.54] | corr= [-0.07] |
-----|-----

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0101 +/- 0.0060 |
arg(g)/pi= -0.0782 +/- 0.0255 |arg(g)/pi= 0.5782 +/- 0.0255 |arg(g)/pi= -0.1656 +/- 0.1274 |
-----|-----|-----
g_re= 0.1027 +/- 0.0071 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0088 +/- 0.0066 |
g_im= -0.0258 +/- 0.0085 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0050 +/- 0.0030 |
corr= [ 0.06] | corr= [ 0.12] | corr= [-0.07] |
-----|-----|-----
Br = 0.9458 +/- 0.0261 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0095 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0013185)
+ (i/2)*(+0.017629 +/- 0.002223) [-0.52]  

s_pole = (0.059182 +/- 0.00065243)
+ i*(+0.0042915 +/- 0.00052932) [-0.51]

pi:omega | pi:phi |
=====|=====
k_re= -0.0450 +/- 0.0014 | k_re= -0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0015 | k_im= -0.0276 +/- 0.0023 |
corr= [-0.54] | corr= [ 0.06] |
-----|-----|-----

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0101 +/- 0.0060 |
arg(g)/pi= 0.0782 +/- 0.0256 |arg(g)/pi= 0.4218 +/- 0.0256 |arg(g)/pi= 0.1657 +/- 0.1275 |
-----|-----|-----
g_re= 0.1027 +/- 0.0070 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0088 +/- 0.0066 |
g_im= 0.0258 +/- 0.0085 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0050 +/- 0.0030 |
corr= [-0.06] | corr= [-0.12] | corr= [ 0.07] |
-----|-----|-----

```

1 Successful Parameterizations

```

Br = 0.9458 +/- 0.0261 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0096 |

--pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24343 +/- 0.0013185)
+ (i/2)*(-0.017629 +/- 0.002223) [ 0.52]

s_pole = (0.059182 +/- 0.00065243)
+ i*(-0.0042915 +/- 0.00052932) [ 0.51]

pi:omega | pi:phi |
=====
k_re= 0.0450 +/- 0.0014 | k_re= 0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0015 | k_im= -0.0276 +/- 0.0023 |
corr= [ 0.54] | corr= [-0.06] |

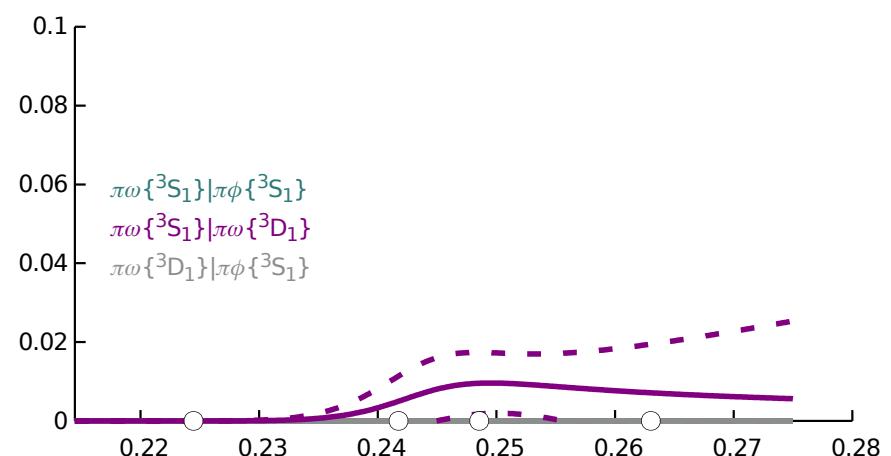
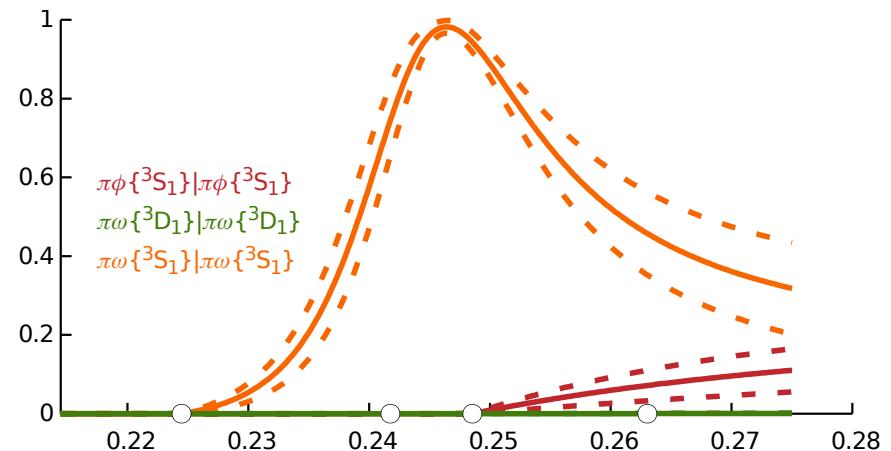
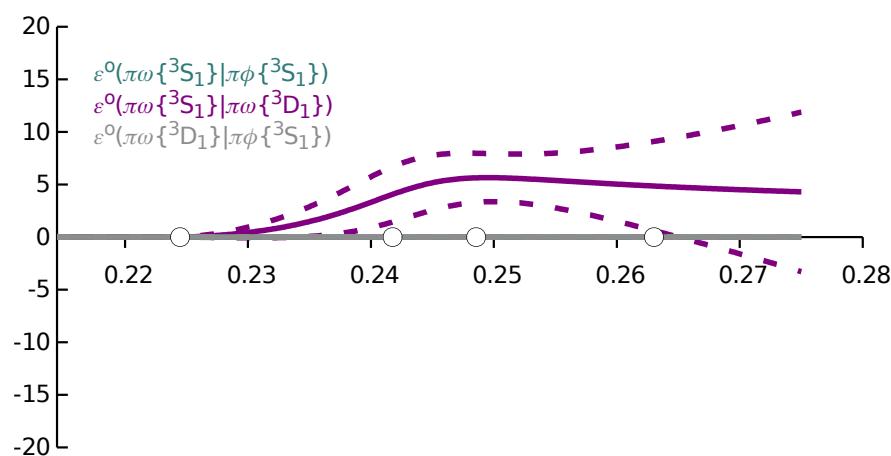
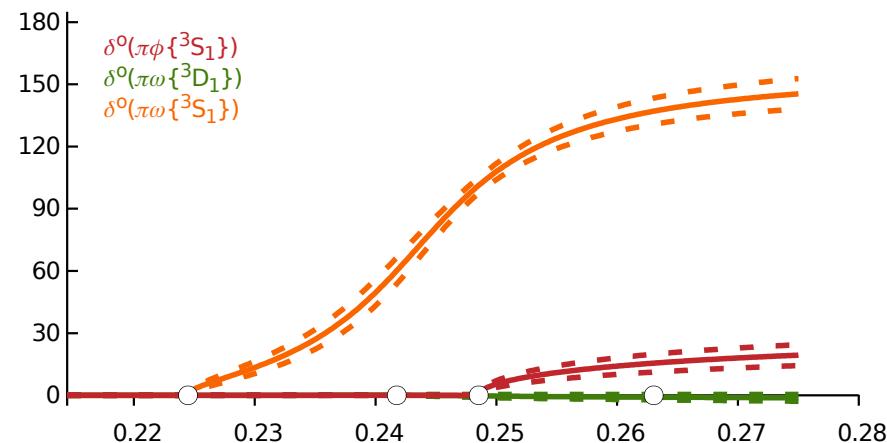
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1059 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0101 +/- 0.0060 |
arg(g)/pi= -0.0782 +/- 0.0256 | arg(g)/pi= 0.5782 +/- 0.0256 | arg(g)/pi= -0.1657 +/- 0.1275 |

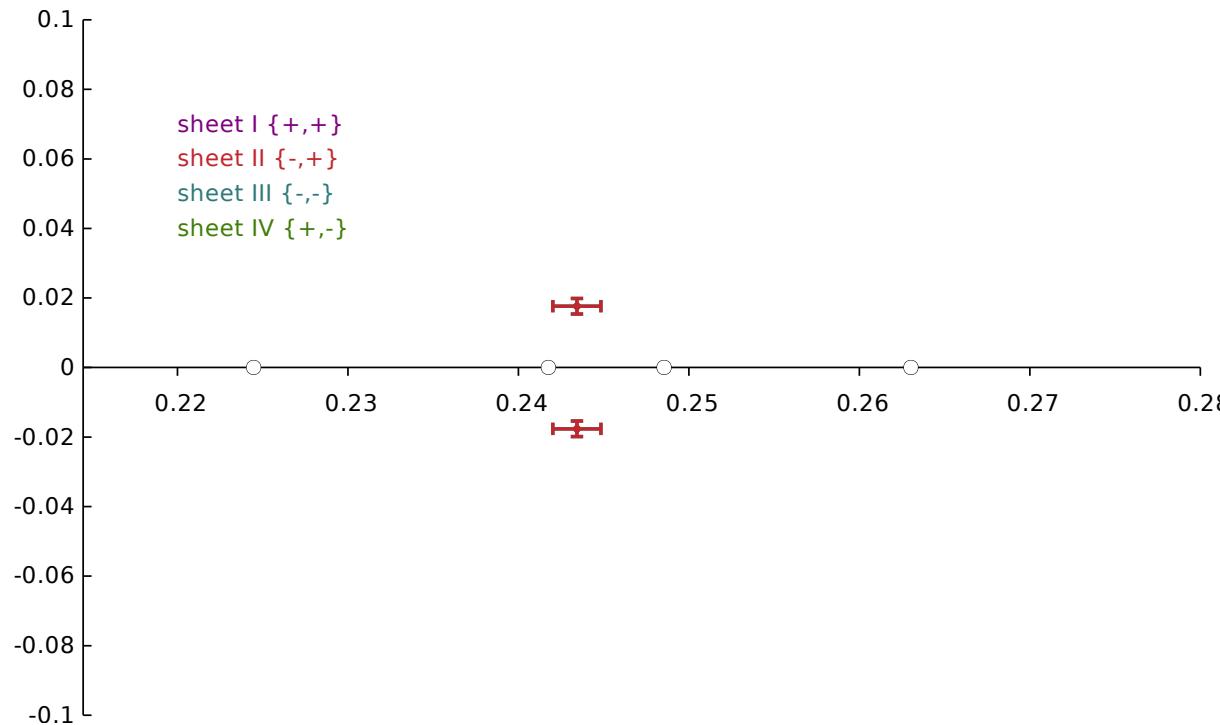
g_re= 0.1027 +/- 0.0070 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0088 +/- 0.0066 |
g_im= -0.0258 +/- 0.0085 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0050 +/- 0.0030 |
corr= [ 0.06] | corr= [ 0.12] | corr= [-0.07] |

Br = 0.9458 +/- 0.0261 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0096 |

```

1.16 coupled_pp_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1_3d1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 36.75 / (36 - 6) = 1.22
```

JP1+_g_pi:omega/3^D_1_pole0_order0		1.1284 +/- 0.63356		1.00	0.70	0.66	-0.22	-0.13 -0.45
JP1+_g_pi:omega/3^S_1_pole0_order0		0.10237 +/- 0.0064041		1.00	0.32	-0.27	-0.01	-0.58
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0		1.5103 +/- 12.123		1.00	0.12	-0.15	-0.32	
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-0.33091 +/- 0.18587		1.00	0.18	0.18		
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.98807 +/- 0.30528		1.00	-0.20			
JP1+_m_pole0		0.24423 +/- 0.00079458		1.00				

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24343 +/- 0.0014147)
+ (i/2)*(+0.017633 +/- 0.0022466) [-0.55]
s_pole = (0.059181 +/- 0.00069996)
+ i*(+0.0042923 +/- 0.00053347) [-0.54]
```

pi:omega	pi:phi
k_re= -0.0450 +/- 0.0015	k_re= 0.0153 +/- 0.0013
k_im= -0.0106 +/- 0.0015	k_im= 0.0277 +/- 0.0024
corr= [-0.59]	corr= [0.01]

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0072 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0101 +/- 0.0062 |
arg(g)/pi= 0.0782 +/- 0.0264 | arg(g)/pi= 0.4218 +/- 0.0264 | arg(g)/pi= 0.1654 +/- 0.1303 |
-----|-----|-----
g_re= 0.1028 +/- 0.0072 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0088 +/- 0.0068 |
g_im= 0.0258 +/- 0.0088 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0050 +/- 0.0030 |
corr= [-0.06] | corr= [-0.14] | corr= [ 0.07] |
-----|-----|-----
Br = 0.9454 +/- 0.0270 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0098 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0014147)
+ (i/2)*(-0.017633 +/- 0.0022466) [ 0.55]  

s_pole = (0.059181 +/- 0.00069996)
+ i*(-0.0042923 +/- 0.00053347) [ 0.54]

pi:omega | pi:phi |
=====|=====
k_re= 0.0450 +/- 0.0015 | k_re= -0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0015 | k_im= 0.0277 +/- 0.0024 |
corr= [ 0.59] | corr= [-0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0072 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0101 +/- 0.0062 |
arg(g)/pi= -0.0782 +/- 0.0264 | arg(g)/pi= 0.5782 +/- 0.0264 | arg(g)/pi= -0.1654 +/- 0.1303 |
-----|-----|-----
g_re= 0.1028 +/- 0.0072 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0088 +/- 0.0068 |
g_im= -0.0258 +/- 0.0088 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0050 +/- 0.0030 |
corr= [ 0.06] | corr= [ 0.14] | corr= [-0.07] |
-----|-----|-----
Br = 0.9454 +/- 0.0270 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0098 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24343 +/- 0.0014147)
+ (i/2)*(+0.017633 +/- 0.0022466) [-0.55]  

s_pole = (0.059181 +/- 0.00069996)
+ i*(+0.0042923 +/- 0.00053347) [-0.54]

pi:omega | pi:phi |
=====|=====
k_re= -0.0450 +/- 0.0015 | k_re= -0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0015 | k_im= -0.0277 +/- 0.0024 |
corr= [-0.59] | corr= [ 0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1059 +/- 0.0072 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0101 +/- 0.0062 |
arg(g)/pi= 0.0782 +/- 0.0264 | arg(g)/pi= 0.4218 +/- 0.0264 | arg(g)/pi= 0.1654 +/- 0.1303 |
-----|-----|-----
g_re= 0.1028 +/- 0.0072 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0088 +/- 0.0068 |
g_im= 0.0258 +/- 0.0088 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0050 +/- 0.0030 |
corr= [-0.06] | corr= [-0.14] | corr= [ 0.07] |
-----|-----|-----

```

1 Successful Parameterizations

```

Br = 0.9454 +/- 0.0270 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0098 |

--pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24343 +/- 0.0014147)
+ (i/2)*(-0.017633 +/- 0.0022466) [ 0.55]

s_pole = (0.059181 +/- 0.00069996)
+ i*(-0.0042923 +/- 0.00053347) [ 0.54]

pi:omega | pi:phi |
=====
k_re= 0.0450 +/- 0.0015 | k_re= 0.0153 +/- 0.0013 |
k_im= -0.0106 +/- 0.0015 | k_im= -0.0277 +/- 0.0024 |
corr= [ 0.59] | corr= [-0.01] |

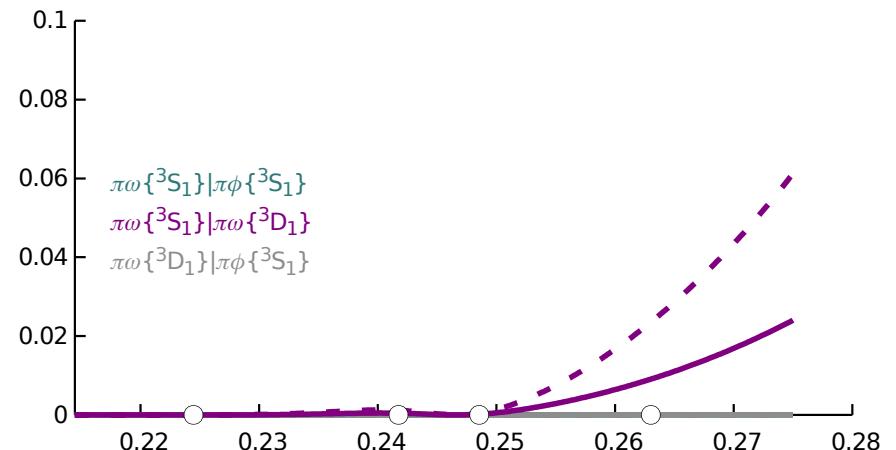
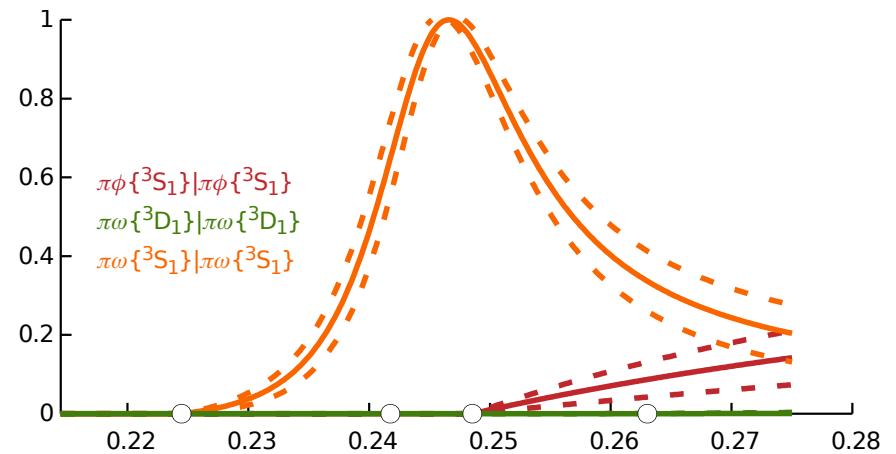
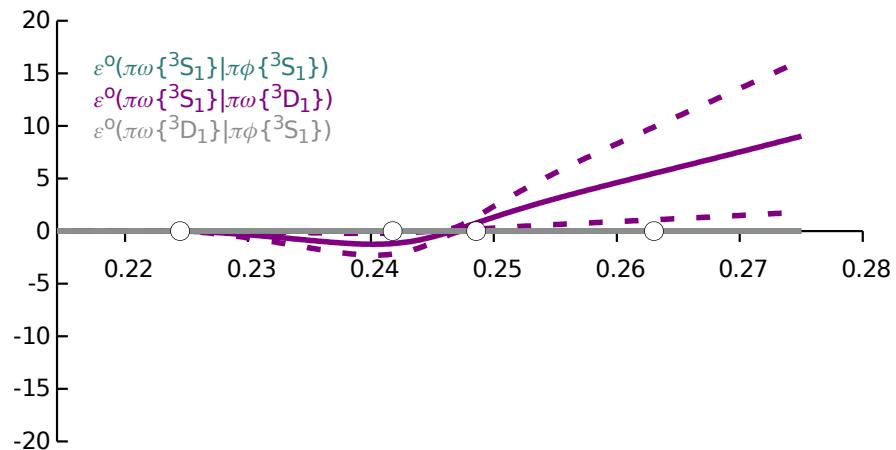
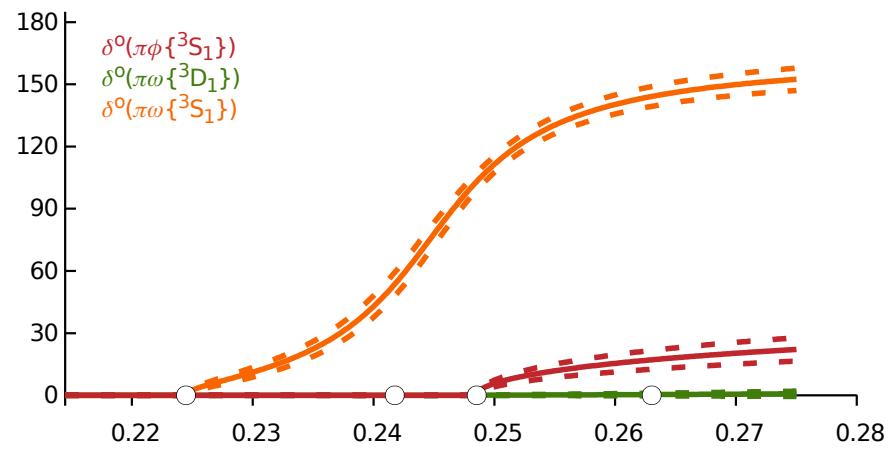
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1059 +/- 0.0072 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0101 +/- 0.0062 |
arg(g)/pi= -0.0782 +/- 0.0264 | arg(g)/pi= 0.5782 +/- 0.0264 | arg(g)/pi= -0.1654 +/- 0.1303 |

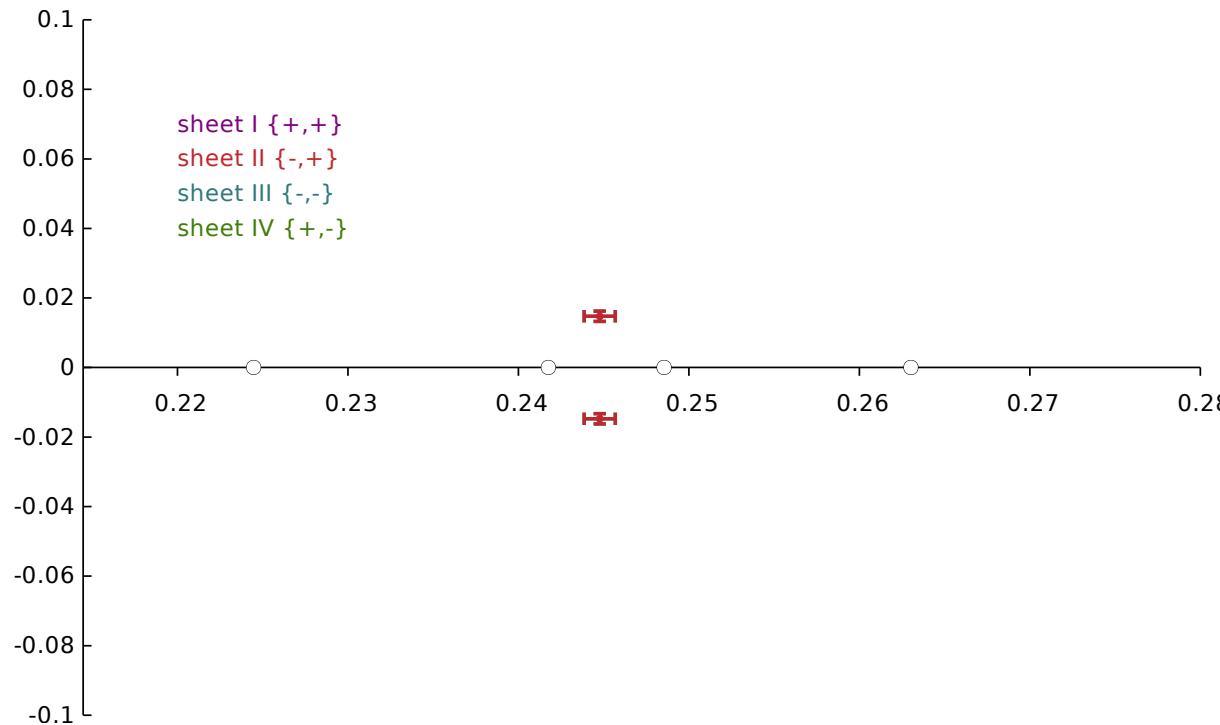
g_re= 0.1028 +/- 0.0072 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0088 +/- 0.0068 |
g_im= -0.0258 +/- 0.0088 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0050 +/- 0.0030 |
corr= [ 0.06] | corr= [ 0.14] | corr= [-0.07] |

Br = 0.9454 +/- 0.0270 | Br = 0.0000 +/- 0.0000 | Br = 0.0086 +/- 0.0098 |

```

1.17 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1+gorder1_3s1.irho





parameter values

```
minimised with chisq/nDoF = 40.51 / (36 - 6) = 1.35
```

JP1+_g_pi:omega/3^S_1_pole0_order0	0.097352 +/- 0.02161	1.00	-0.97	-0.01	-0.37	0.01	-0.01				
JP1+_g_pi:omega/3^S_1_pole0_order1	0.038015 +/- 0.35788	1.00	-0.03	0.29	0.01	-0.03					
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0	-14.357 +/- 11.752	1.00	0.19	-0.15	-0.19						
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-0.27232 +/- 0.19385	1.00	0.16	-0.07							
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	1.0383 +/- 0.29546	1.00	-0.28								
JP1+_m_pole0	0.24660 +/- 0.00066147	1.00									

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24477 +/- 0.00091651)
+ (i/2)*(+0.014753 +/- 0.0014859) [-0.36]
s_pole = (0.059857 +/- 0.00045271)
+ i*(+0.003611 +/- 0.00035909) [-0.35]
```

pi:omega	pi:phi
k_re= -0.0463 +/- 0.0010	k_re= 0.0145 +/- 0.0011
k_im= -0.0087 +/- 0.0009	k_im= 0.0246 +/- 0.0017
corr= [-0.40]	corr= [-0.07]

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0973 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0048 +/- 0.0040 |
arg(g)/pi= 0.0571 +/- 0.0209 | arg(g)/pi= 0.4429 +/- 0.0209 | arg(g)/pi= 0.7255 +/- 0.0314 |
-----
g_re= 0.0958 +/- 0.0054 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0031 +/- 0.0027 |
g_im= 0.0174 +/- 0.0063 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0030 |
corr= [-0.14] | corr= [ 0.01] | corr= [-0.97] |
-----
Br = 0.9785 +/- 0.0209 | Br = 0.0000 +/- 0.0000 | Br = 0.0024 +/- 0.0039 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24477 +/- 0.00091651)
+ (i/2)*(-0.014753 +/- 0.0014859) [ 0.36]  

s_pole = (0.059857 +/- 0.00045271)
+ i*(-0.003611 +/- 0.00035909) [ 0.35]

pi:omega | pi:phi |
=====
k_re= 0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0017 |
corr= [ 0.40] | corr= [ 0.07] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0973 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0048 +/- 0.0040 |
arg(g)/pi= -0.0571 +/- 0.0209 | arg(g)/pi= 0.5571 +/- 0.0209 | arg(g)/pi= -0.7255 +/- 0.0314 |
-----
g_re= 0.0958 +/- 0.0054 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0031 +/- 0.0027 |
g_im= -0.0174 +/- 0.0063 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0036 +/- 0.0030 |
corr= [ 0.14] | corr= [-0.01] | corr= [ 0.97] |
-----
Br = 0.9785 +/- 0.0209 | Br = 0.0000 +/- 0.0000 | Br = 0.0024 +/- 0.0039 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24477 +/- 0.00091651)
+ (i/2)*(+0.014753 +/- 0.0014859) [-0.36]  

s_pole = (0.059857 +/- 0.00045271)
+ i*(+0.003611 +/- 0.00035909) [-0.35]

pi:omega | pi:phi |
=====
k_re= -0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= -0.0246 +/- 0.0017 |
corr= [-0.40] | corr= [-0.07] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0973 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0048 +/- 0.0040 |
arg(g)/pi= 0.0571 +/- 0.0209 | arg(g)/pi= 0.4429 +/- 0.0209 | arg(g)/pi= 0.7255 +/- 0.0314 |
-----
g_re= 0.0958 +/- 0.0054 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0031 +/- 0.0027 |
g_im= 0.0174 +/- 0.0063 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0030 |
corr= [-0.14] | corr= [ 0.01] | corr= [-0.97] |

```

1 Successful Parameterizations

```
Br = 0.9785 +/- 0.0209 | Br = 0.0000 +/- 0.0000 | Br = 0.0024 +/- 0.0039 |
```

--
pi:omega[-] pi:phi[-] lower half-plane

```
sqrt(s)_pole = (0.24477 +/- 0.00091651)  
+ (i/2)*(-0.014753 +/- 0.0014859) [ 0.36]
```

```
s_pole = (0.059857 +/- 0.00045271)  
+ i*(-0.003611 +/- 0.00035909) [ 0.35]
```

pi:omega	pi:phi
----------	--------

k_re= 0.0463 +/- 0.0010	k_re= 0.0145 +/- 0.0011
k_im= -0.0087 +/- 0.0009	k_im= -0.0246 +/- 0.0017
corr= [0.40]	corr= [0.07]

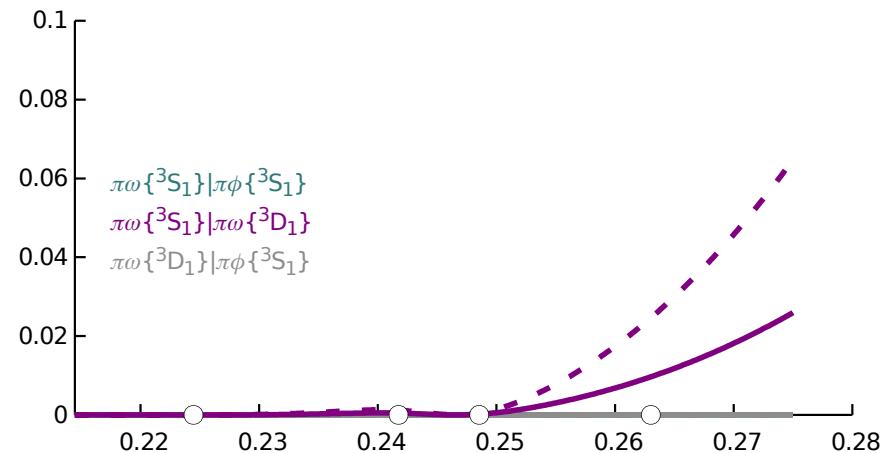
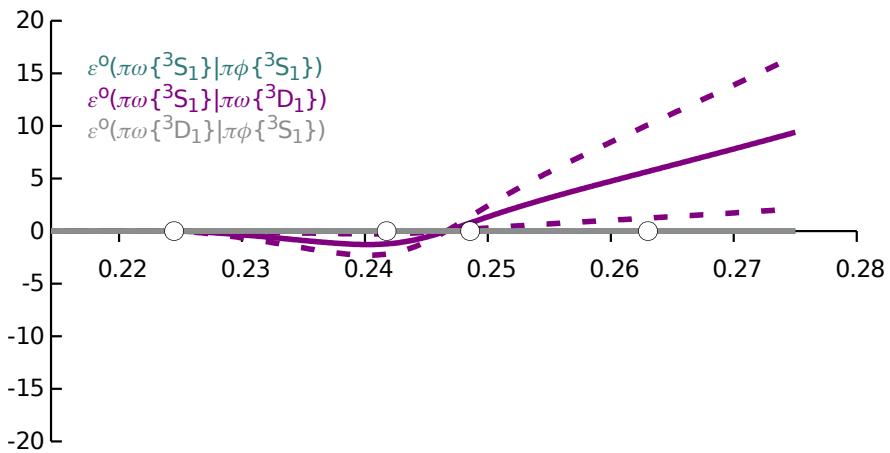
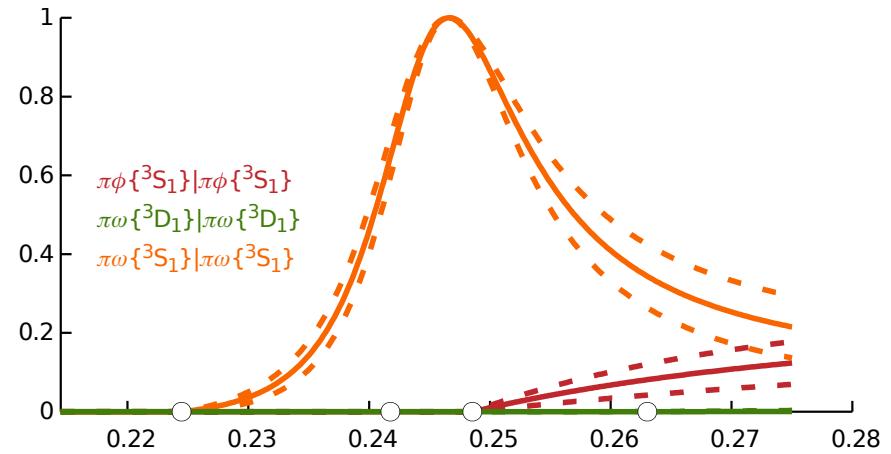
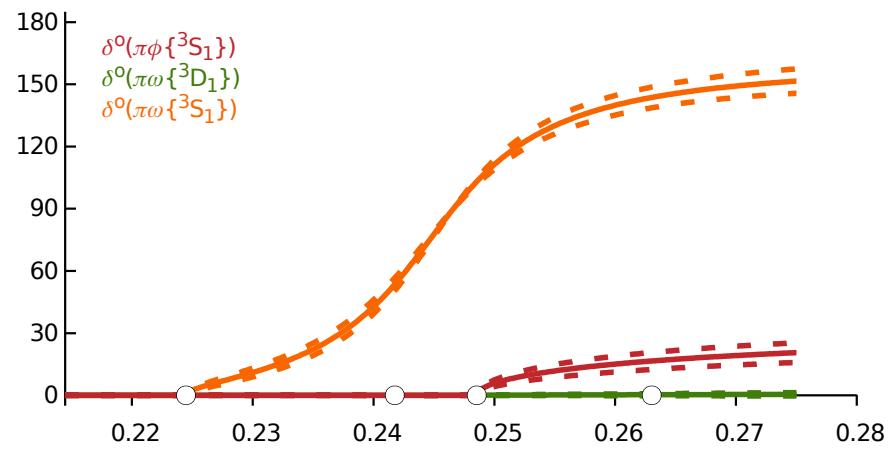
pi:omega/3^S_1(*)	pi:phi/3^S_1	pi:omega/3^D_1
-------------------	--------------	----------------

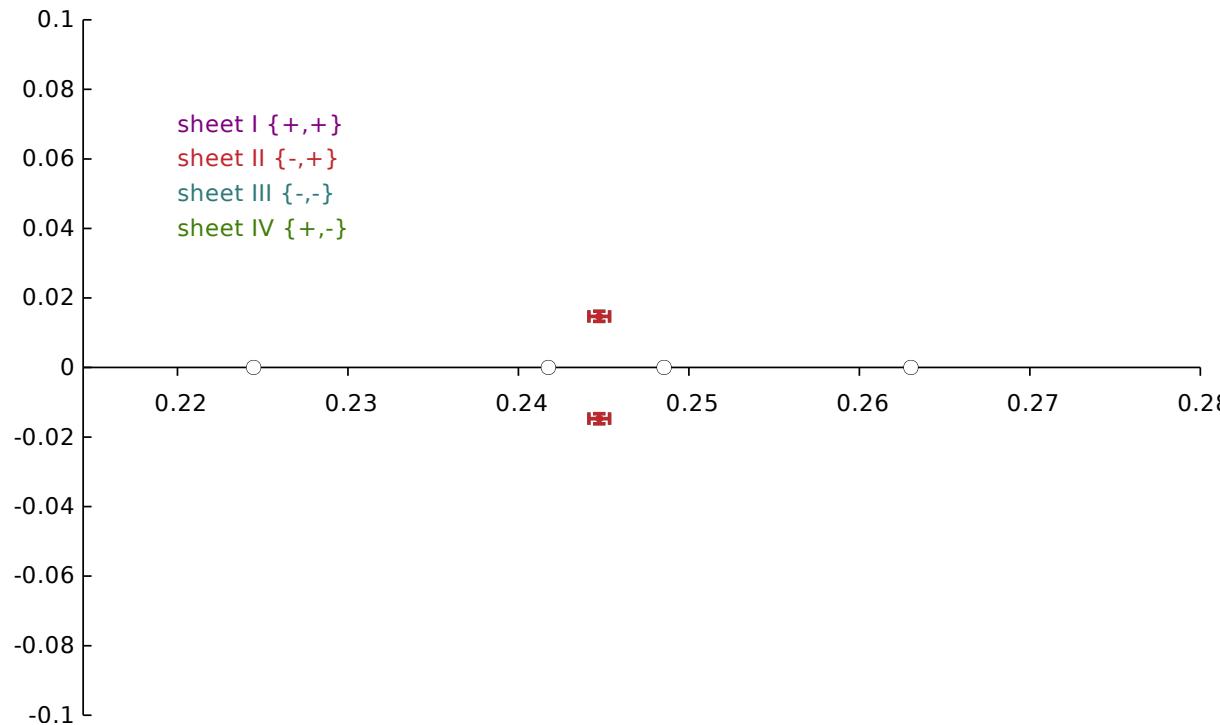
g = 0.0973 +/- 0.0053	g = 0.0000 +/- 0.0000	g = 0.0048 +/- 0.0040
arg(g)/pi= -0.0571 +/- 0.0209	arg(g)/pi= 0.5571 +/- 0.0209	arg(g)/pi= -0.7255 +/- 0.0314

g_re= 0.0958 +/- 0.0054	g_re= -0.0000 +/- 0.0000	g_re= -0.0031 +/- 0.0027
g_im= -0.0174 +/- 0.0063	g_im= 0.0000 +/- 0.0000	g_im= -0.0036 +/- 0.0030
corr= [0.14]	corr= [-0.01]	corr= [0.97]

```
Br = 0.9785 +/- 0.0209 | Br = 0.0000 +/- 0.0000 | Br = 0.0024 +/- 0.0039 |
```

1.18 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1+gorder1_3s1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 40.52 / (36 - 6) = 1.35
```

JP1+_g_pi:omega/3^S_1_pole0_order0		0.095682 +/- 0.040029		1.00	-0.99	-0.00	-0.62
JP1+_g_pi:omega/3^S_1_pole0_order1		0.00023770 +/- 0.65955		1.00	-0.02	0.59	-0.00
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0		-13.559 +/- 10.747		1.00	0.16	-0.20	-0.01
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-0.25801 +/- 0.20352		1.00	0.13	-0.00	
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.95604 +/- 0.24245		1.00	-0.01		
JP1+_m_pole0		0.24661 +/- 2.161e-05		1.00			

pole singularities

```
pi:omega[+] pi:phi[-] lower half-plane
sqrt(s)_pole = (0.18996 +/- 0.023288)
  + (i/2)*(-1.478e-14 +/- 7.3905e-12) [ 0.00]
s_pole = (0.036087 +/- 0.0088419)
  + i*(-2.8062e-15 +/- 1.4032e-12) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= 0.0532 +/- 0.0147 | k_im= -0.0652 +/- 0.0071 |
corr= [ 0.00] | corr= [ 0.00]
```

```

pi:omega/3^S_1 | pi:phi/3^S_1(*) | pi:omega/3^D_1 |
=====
|g|= 0.0000 +/- 0.0000 | |g|= 0.1837 +/- 0.0018 | |g|= 0.0000 +/- 0.0000 |
arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 |
-----
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.0000 +/- 0.0000 | g_im= 0.1837 +/- 0.0018 | g_im= 0.0000 +/- 0.0000 |
corr= [ 0.00] | corr= [-1.00] | corr= [ 0.00]
-----
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.24474 +/- 0.00060418)
+ (i/2)*(+0.014715 +/- 0.0014647) [-0.39]  

s_pole = (0.059843 +/- 0.00030013)
+ i*(-0.0036013 +/- 0.00035508) [-0.40]

pi:omega | pi:phi |
=====
k_re= -0.0463 +/- 0.0007 | k_re= 0.0145 +/- 0.0010 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0013 |
corr= [-0.33] | corr= [ 0.33] |  

-----
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0971 +/- 0.0052 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0049 +/- 0.0039 |
arg(g)/pi= 0.0587 +/- 0.0215 | arg(g)/pi= 0.4413 +/- 0.0215 | arg(g)/pi= 0.7288 +/- 0.0323 |
-----
g_re= 0.0955 +/- 0.0053 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0032 +/- 0.0027 |
g_im= 0.0178 +/- 0.0064 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0037 +/- 0.0029 |
corr= [-0.19] | corr= [ 0.02] | corr= [-0.97]
-----
Br = 0.9758 +/- 0.0108 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0039 |  

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24474 +/- 0.00060418)
+ (i/2)*(-0.014715 +/- 0.0014647) [ 0.39]  

s_pole = (0.059843 +/- 0.00030013)
+ i*(-0.0036013 +/- 0.00035508) [ 0.40]

pi:omega | pi:phi |
=====
k_re= 0.0463 +/- 0.0007 | k_re= -0.0145 +/- 0.0010 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0013 |
corr= [ 0.33] | corr= [-0.33] |  

-----
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0971 +/- 0.0052 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0049 +/- 0.0039 |
arg(g)/pi= -0.0587 +/- 0.0215 | arg(g)/pi= 0.5587 +/- 0.0215 | arg(g)/pi= -0.7288 +/- 0.0323 |
-----
g_re= 0.0955 +/- 0.0053 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0032 +/- 0.0027 |
g_im= -0.0178 +/- 0.0064 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0037 +/- 0.0029 |
corr= [ 0.19] | corr= [-0.02] | corr= [ 0.97]
-----
```

1 Successful Parameterizations

```

Br = 0.9758 +/- 0.0108 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0039 |

--pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.18996 +/- 0.023288)
+ (i/2)*(+2.3412e-12 +/- 1.1696e-09) [-0.00]

s_pole = (0.036087 +/- 0.0088419)
+ i*(+4.445e-13 +/- 2.2205e-10) [-0.00]

pi:omega | pi:phi |
=====|=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0532 +/- 0.0147 | k_im= -0.0652 +/- 0.0071 |
corr= [ 0.01] | corr= [ 0.01] |

pi:omega/3^S_1 | pi:phi/3^S_1(*) | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0000 +/- 0.0000 | |g|= 0.1837 +/- 0.0018 | |g|= 0.0000 +/- 0.0000 |
arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 |
-----|-----|-----
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.0000 +/- 0.0000 | g_im= 0.1837 +/- 0.0018 | g_im= 0.0000 +/- 0.0000 |
corr= [ 0.00] | corr= [-1.00] | corr= [ 0.00] |

Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24474 +/- 0.00060865)
+ (i/2)*(+0.014715 +/- 0.0014686) [-0.40]

s_pole = (0.059844 +/- 0.00030242)
+ i*(+0.0036013 +/- 0.00035592) [-0.41]

pi:omega | pi:phi |
=====|=====
k_re= -0.0463 +/- 0.0007 | k_re= -0.0145 +/- 0.0010 |
k_im= -0.0087 +/- 0.0009 | k_im= -0.0246 +/- 0.0013 |
corr= [-0.34] | corr= [ 0.33] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0971 +/- 0.0052 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0049 +/- 0.0039 |
arg(g)/pi= 0.0587 +/- 0.0215 | arg(g)/pi= 0.4413 +/- 0.0215 | arg(g)/pi= 0.7287 +/- 0.0325 |
-----|-----|-----
g_re= 0.0955 +/- 0.0053 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0032 +/- 0.0027 |
g_im= 0.0178 +/- 0.0064 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0037 +/- 0.0029 |
corr= [-0.18] | corr= [ 0.01] | corr= [-0.97] |

Br = 0.9758 +/- 0.0108 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0039 |

--pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24474 +/- 0.00060865)
+ (i/2)*(-0.014715 +/- 0.0014686) [ 0.40]

s_pole = (0.059844 +/- 0.00030242)
+ i*(-0.0036013 +/- 0.00035592) [ 0.41]

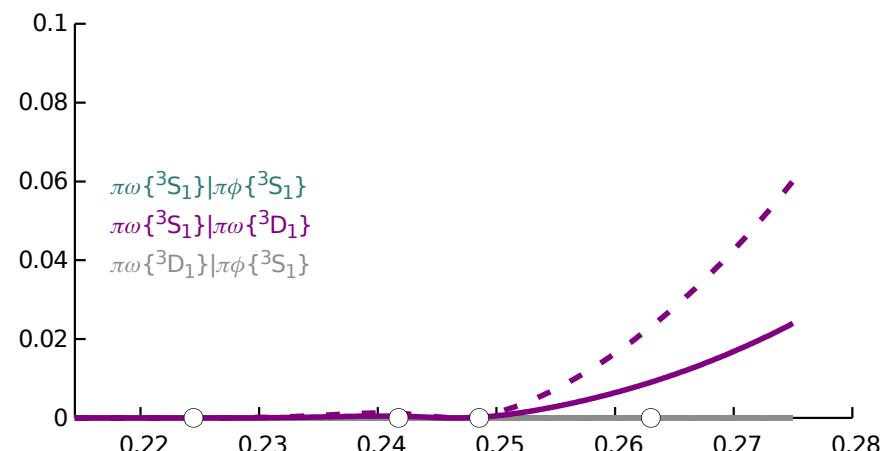
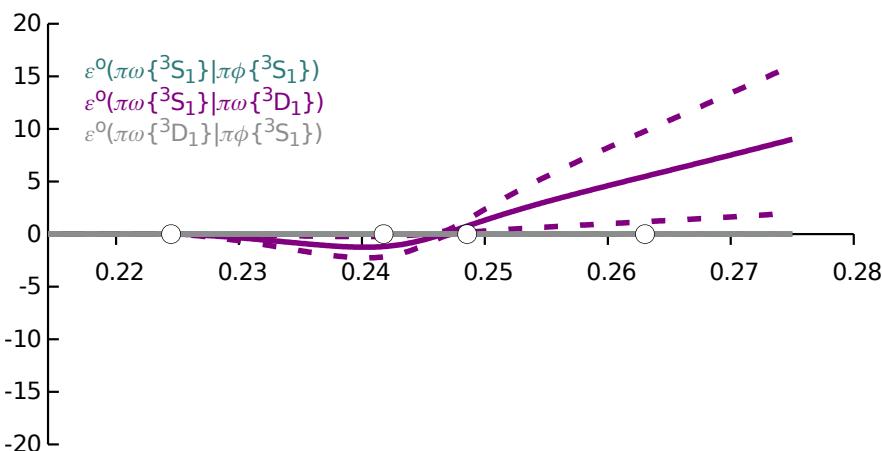
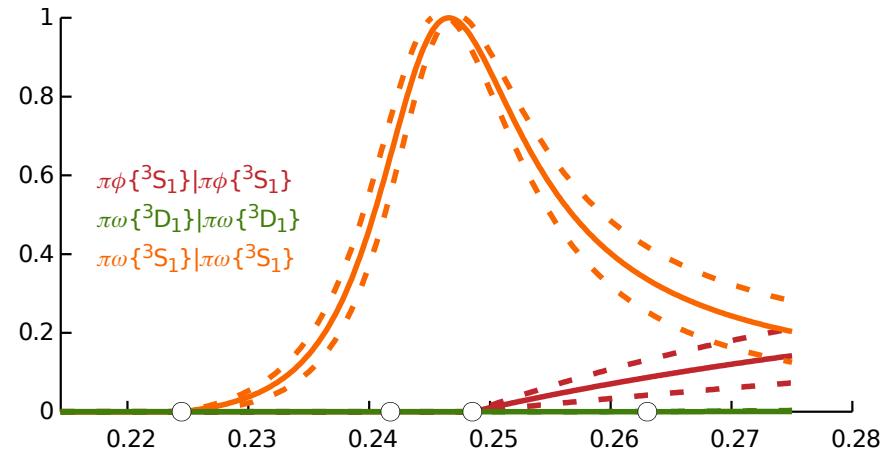
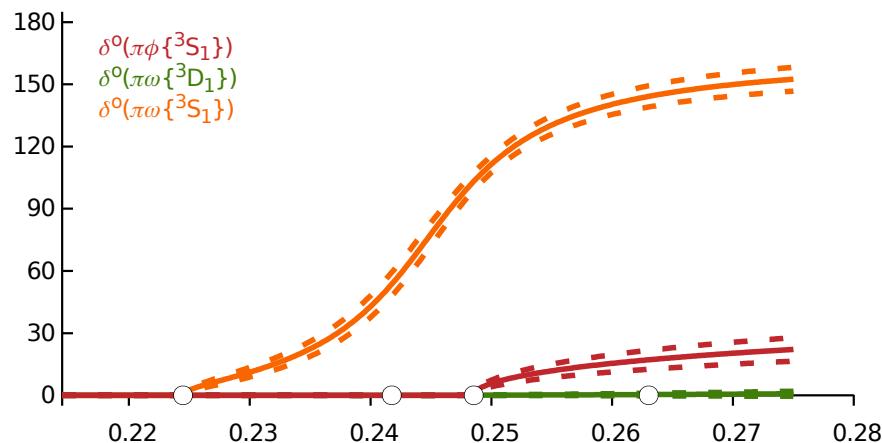
```

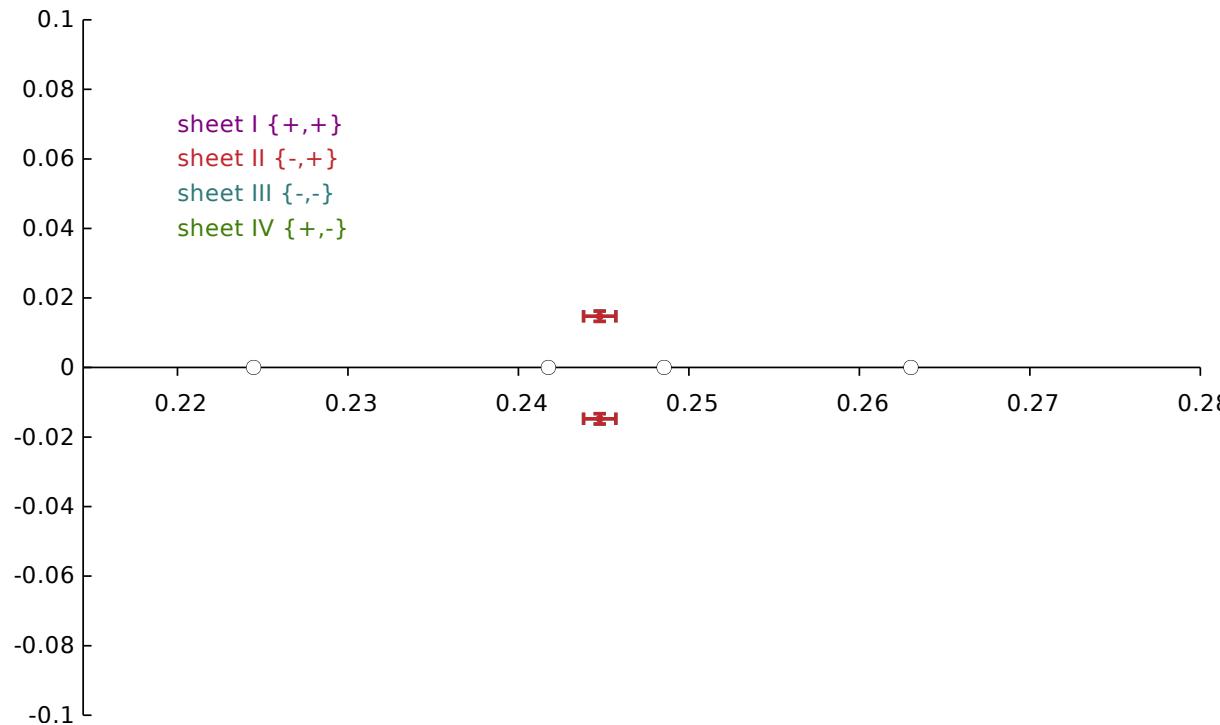
1 Successful Parameterizations

pi:omega	pi:phi
k_re= 0.0463 +/- 0.0007	k_re= 0.0145 +/- 0.0010
k_im= -0.0087 +/- 0.0009	k_im= -0.0246 +/- 0.0013
corr= [0.34]	corr= [-0.33]

pi:omega/3^S_1(*)	pi:phi/3^S_1	pi:omega/3^D_1
g = 0.0971 +/- 0.0052	g = 0.0000 +/- 0.0000	g = 0.0049 +/- 0.0039
arg(g)/pi= -0.0587 +/- 0.0215	arg(g)/pi= 0.5587 +/- 0.0215	arg(g)/pi= -0.7287 +/- 0.0325
g_re= 0.0955 +/- 0.0053	g_re= -0.0000 +/- 0.0000	g_re= -0.0032 +/- 0.0027
g_im= -0.0178 +/- 0.0064	g_im= 0.0000 +/- 0.0000	g_im= -0.0037 +/- 0.0029
corr= [0.18]	corr= [-0.01]	corr= [0.97]
Br = 0.9758 +/- 0.0108	Br = 0.0000 +/- 0.0000	Br = 0.0025 +/- 0.0039

1.19 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1.irho





parameter values

```
minimised with chisq/nDoF = 40.51 / (36 - 5) = 1.31
```

JP1+_g_pi:omega/3^S_1_pole0_order0		0.099630 +/- 0.005526		1.00	-0.14	-0.37
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0		-14.336 +/- 11.746		1.00	0.20	-0.15
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-0.27893 +/- 0.1857		1.00	0.16	-0.06
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		1.0387 +/- 0.29552		1.00	-0.28	
JP1+_m_pole0		0.24660 +/- 0.00066129				1.00

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24477 +/- 0.00093997)
  + (i/2)*(+0.014746 +/- 0.001489) [-0.37]

s_pole = (0.059859 +/- 0.00046435)
  + i*(+0.0036095 +/- 0.00035953) [-0.36]

pi:omega | pi:phi |
=====
k_re= -0.0463 +/- 0.0010 | k_re= 0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0017 |
corr= [-0.41] | corr= [-0.09]
```

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0973 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0048 +/- 0.0038 |
arg(g)/pi= 0.0570 +/- 0.0220 | arg(g)/pi= 0.4430 +/- 0.0220 | arg(g)/pi= 0.7253 +/- 0.0332 |
=====
g_re= 0.0958 +/- 0.0054 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0031 +/- 0.0025 |
g_im= 0.0173 +/- 0.0066 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0029 |
corr= [-0.11] | corr= [-0.05] | corr= [-0.97] |
=====
Br = 0.9797 +/- 0.0208 | Br = 0.0000 +/- 0.0000 | Br = 0.0024 +/- 0.0038 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24477 +/- 0.00093997)
+ (i/2)*(-0.014746 +/- 0.001489) [ 0.37]  

s_pole = (0.059859 +/- 0.00046435)
+ i*(-0.0036095 +/- 0.00035953) [ 0.36]  

=====
pi:omega | pi:phi |
=====
k_re= 0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0017 |
corr= [ 0.41] | corr= [ 0.09] |  

=====
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0973 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0048 +/- 0.0038 |
arg(g)/pi= -0.0570 +/- 0.0220 | arg(g)/pi= 0.5570 +/- 0.0220 | arg(g)/pi= -0.7253 +/- 0.0332 |
=====
g_re= 0.0958 +/- 0.0054 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0031 +/- 0.0025 |
g_im= -0.0173 +/- 0.0066 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0036 +/- 0.0029 |
corr= [ 0.11] | corr= [ 0.05] | corr= [ 0.97] |
=====
Br = 0.9797 +/- 0.0208 | Br = 0.0000 +/- 0.0000 | Br = 0.0024 +/- 0.0038 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24477 +/- 0.00094871)
+ (i/2)*(+0.014746 +/- 0.001502) [-0.38]  

s_pole = (0.059859 +/- 0.00046877)
+ i*(+0.0036095 +/- 0.00036253) [-0.37]  

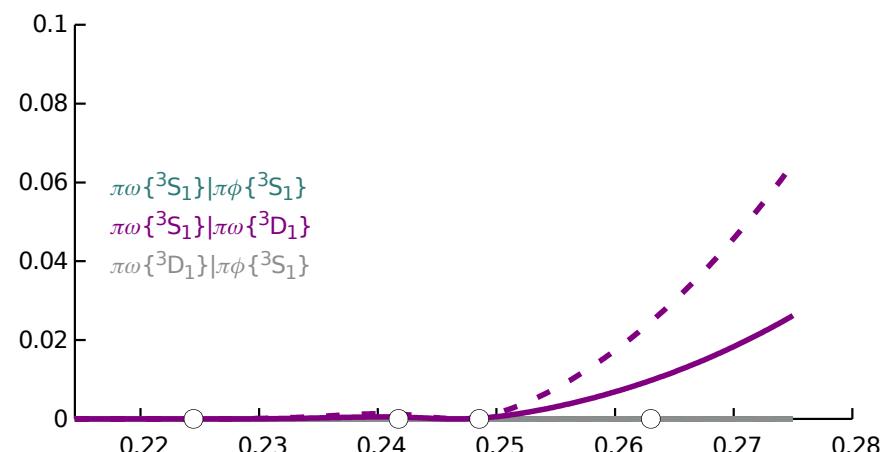
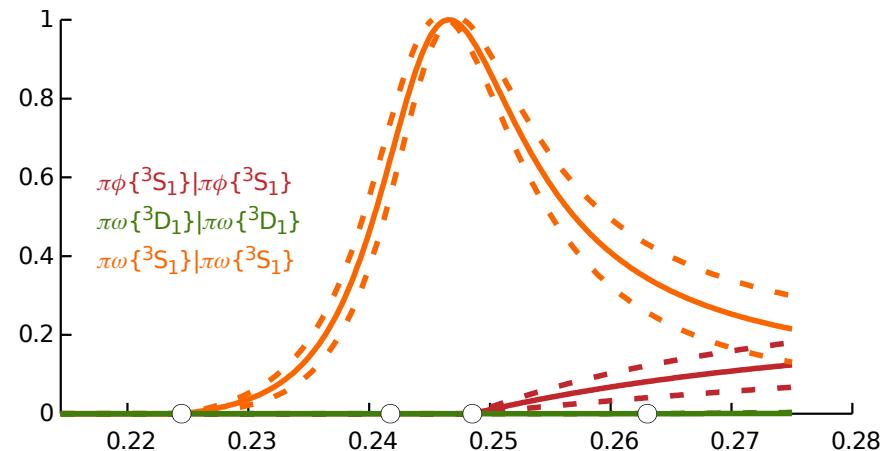
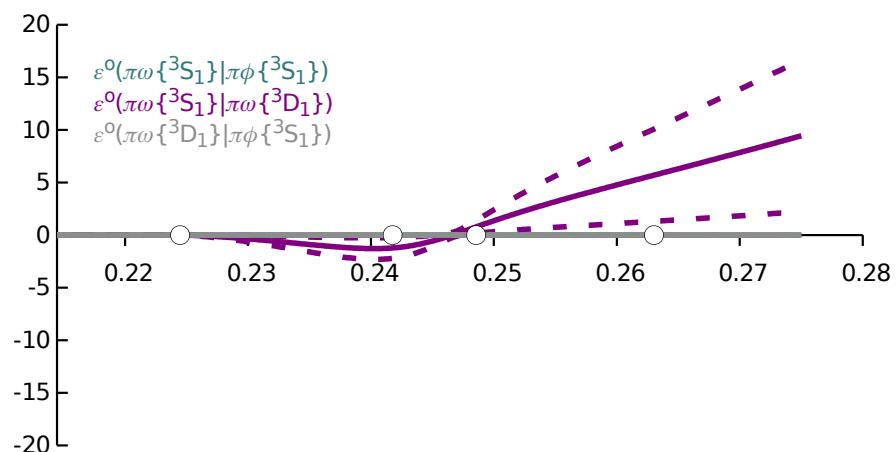
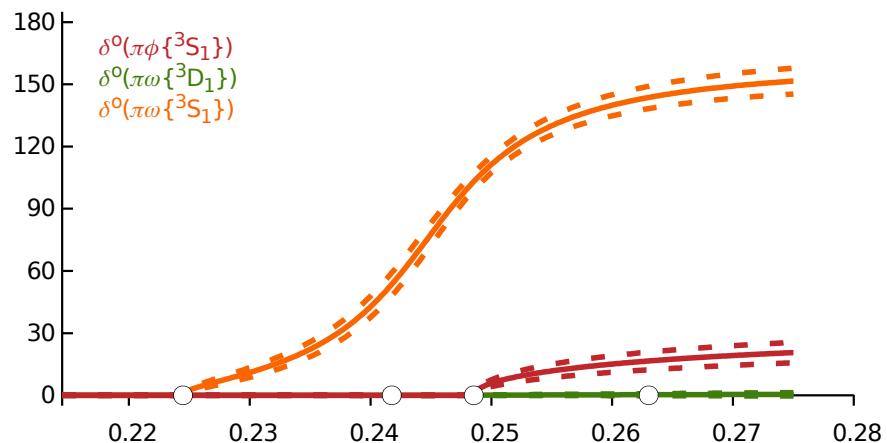
=====
pi:omega | pi:phi |
=====
k_re= -0.0463 +/- 0.0011 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= -0.0246 +/- 0.0017 |
corr= [-0.42] | corr= [-0.08] |  

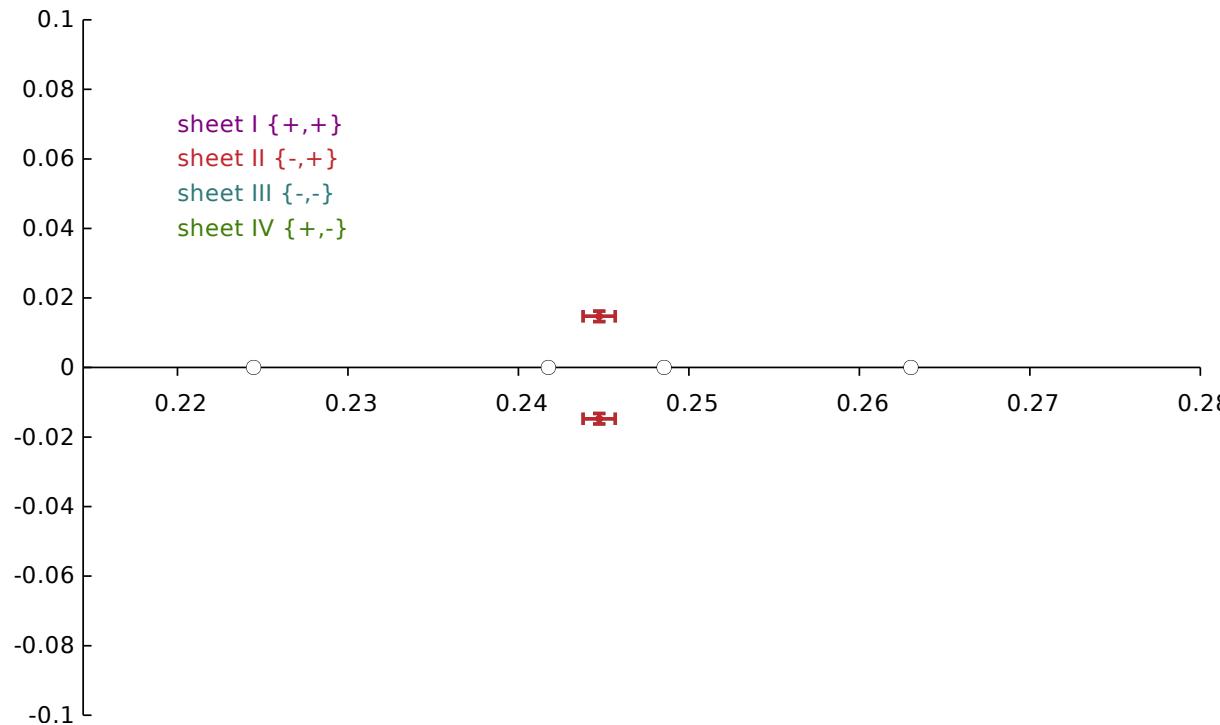
=====
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0973 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0048 +/- 0.0039 |
arg(g)/pi= 0.0570 +/- 0.0221 | arg(g)/pi= 0.4430 +/- 0.0221 | arg(g)/pi= 0.7253 +/- 0.0337 |
=====
g_re= 0.0958 +/- 0.0054 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0031 +/- 0.0026 |
g_im= 0.0173 +/- 0.0067 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0029 |
corr= [-0.10] | corr= [-0.07] | corr= [-0.97] |
=====
Br = 0.9797 +/- 0.0210 | Br = 0.0000 +/- 0.0000 | Br = 0.0024 +/- 0.0038 |

```

```
--  
pi:omega[-] pi:phi[-] lower half-plane  
  
sqrt(s)_pole = (0.24477 +/- 0.00094871)  
+ (i/2)*(-0.014746 +/- 0.001502) [ 0.38]  
  
s_pole = (0.059859 +/- 0.00046877)  
+ i*(-0.0036095 +/- 0.00036253) [ 0.37]  
  
pi:omega | pi:phi |  
=====|=====|  
k_re= 0.0463 +/- 0.0011 | k_re= 0.0145 +/- 0.0011 |  
k_im= -0.0087 +/- 0.0009 | k_im= -0.0246 +/- 0.0017 |  
corr= [ 0.42] | corr= [ 0.08] |  
  
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |  
=====|=====|=====|  
|g|= 0.0973 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0048 +/- 0.0039 |  
arg(g)/pi= -0.0570 +/- 0.0221 | arg(g)/pi= 0.5570 +/- 0.0221 | arg(g)/pi= -0.7253 +/- 0.0337 |  
-----|-----|-----|  
g_re= 0.0958 +/- 0.0054 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0031 +/- 0.0026 |  
g_im= -0.0173 +/- 0.0067 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0036 +/- 0.0029 |  
corr= [ 0.10] | corr= [ 0.07] | corr= [ 0.97] |  
-----|-----|-----|  
Br = 0.9797 +/- 0.0210 | Br = 0.0000 +/- 0.0000 | Br = 0.0024 +/- 0.0038 |
```

1.20 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 40.52 / (36 - 5) = 1.31
```

JP1+_g_pi:omega/3^S_1_pole0		0.095712 +/- 0.0049231		1.00	-0.14	-0.38
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0		-13.632 +/- 10.973		1.00	0.22	-0.16
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-0.25788 +/- 0.16449		1.00	0.17	-0.06
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.95710 +/- 0.24639		1.00	-0.18	
JP1+_m_pole0		0.24661 +/- 0.00064059				1.00

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24474 +/- 0.00094169)
  + (i/2)*(+0.014719 +/- 0.0014873) [-0.37]
s_pole = (0.059842 +/- 0.00046512)
  + i*(+0.0036023 +/- 0.00035906) [-0.36]

pi:omega | pi:phi |
=====
k_re= -0.0463 +/- 0.0010 | k_re= 0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0017 |
corr= [-0.42] | corr= [-0.09]
```

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0971 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0049 +/- 0.0039 |
arg(g)/pi= 0.0587 +/- 0.0228 | arg(g)/pi= 0.4413 +/- 0.0228 | arg(g)/pi= 0.7288 +/- 0.0355 |
=====
g_re= 0.0955 +/- 0.0054 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0032 +/- 0.0026 |
g_im= 0.0178 +/- 0.0069 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0037 +/- 0.0029 |
corr= [-0.14] | corr= [-0.06] | corr= [-0.96] |
=====
Br = 0.9770 +/- 0.0208 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0039 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24474 +/- 0.00094169)
+ (i/2)*(-0.014719 +/- 0.0014873) [ 0.37]  

s_pole = (0.059842 +/- 0.00046512)
+ i*(-0.0036023 +/- 0.00035906) [ 0.36]  

=====
pi:omega | pi:phi |
=====
k_re= 0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= 0.0246 +/- 0.0017 |
corr= [ 0.42] | corr= [ 0.09] |  

=====
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0971 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0049 +/- 0.0039 |
arg(g)/pi= -0.0587 +/- 0.0228 | arg(g)/pi= 0.5587 +/- 0.0228 | arg(g)/pi= -0.7288 +/- 0.0355 |
=====
g_re= 0.0955 +/- 0.0054 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0032 +/- 0.0026 |
g_im= -0.0178 +/- 0.0069 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0037 +/- 0.0029 |
corr= [ 0.14] | corr= [ 0.06] | corr= [ 0.96] |
=====
Br = 0.9770 +/- 0.0208 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0039 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24474 +/- 0.0009444)
+ (i/2)*(+0.014719 +/- 0.0014962) [-0.38]  

s_pole = (0.059842 +/- 0.00046651)
+ i*(+0.0036024 +/- 0.00036118) [-0.36]  

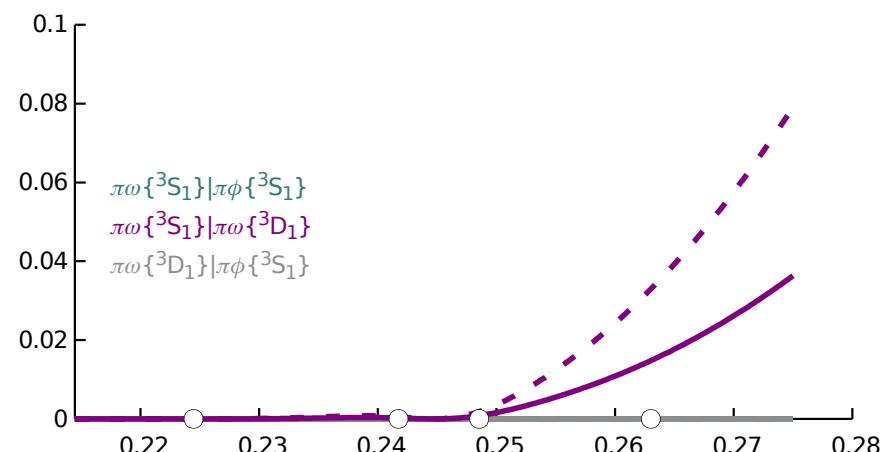
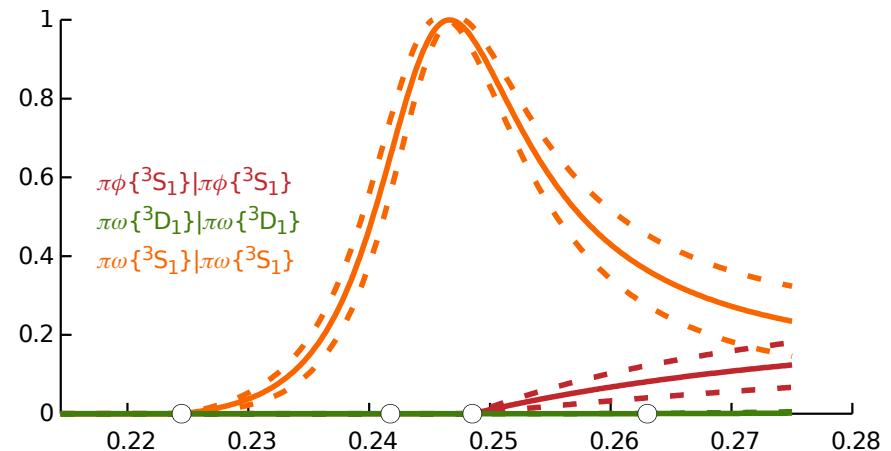
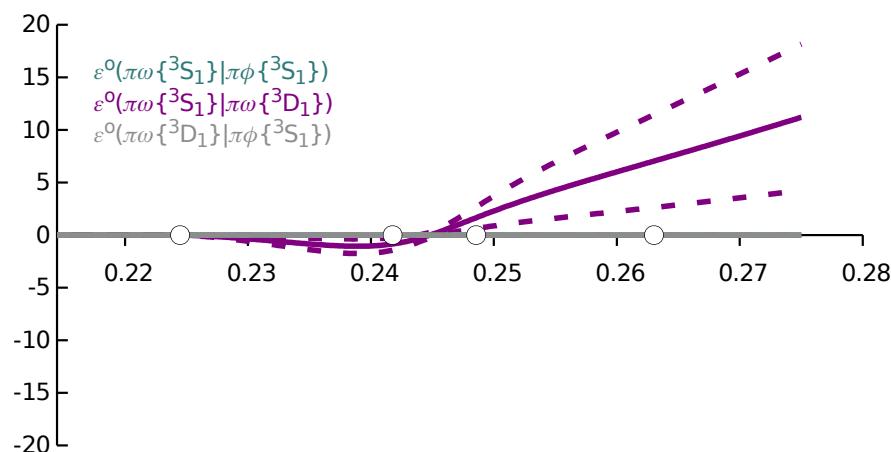
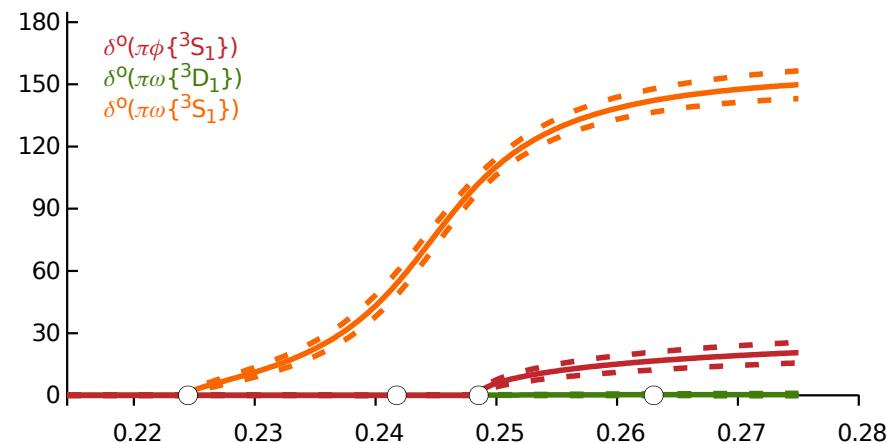
=====
pi:omega | pi:phi |
=====
k_re= -0.0463 +/- 0.0010 | k_re= -0.0145 +/- 0.0011 |
k_im= -0.0087 +/- 0.0009 | k_im= -0.0246 +/- 0.0017 |
corr= [-0.42] | corr= [-0.08] |  

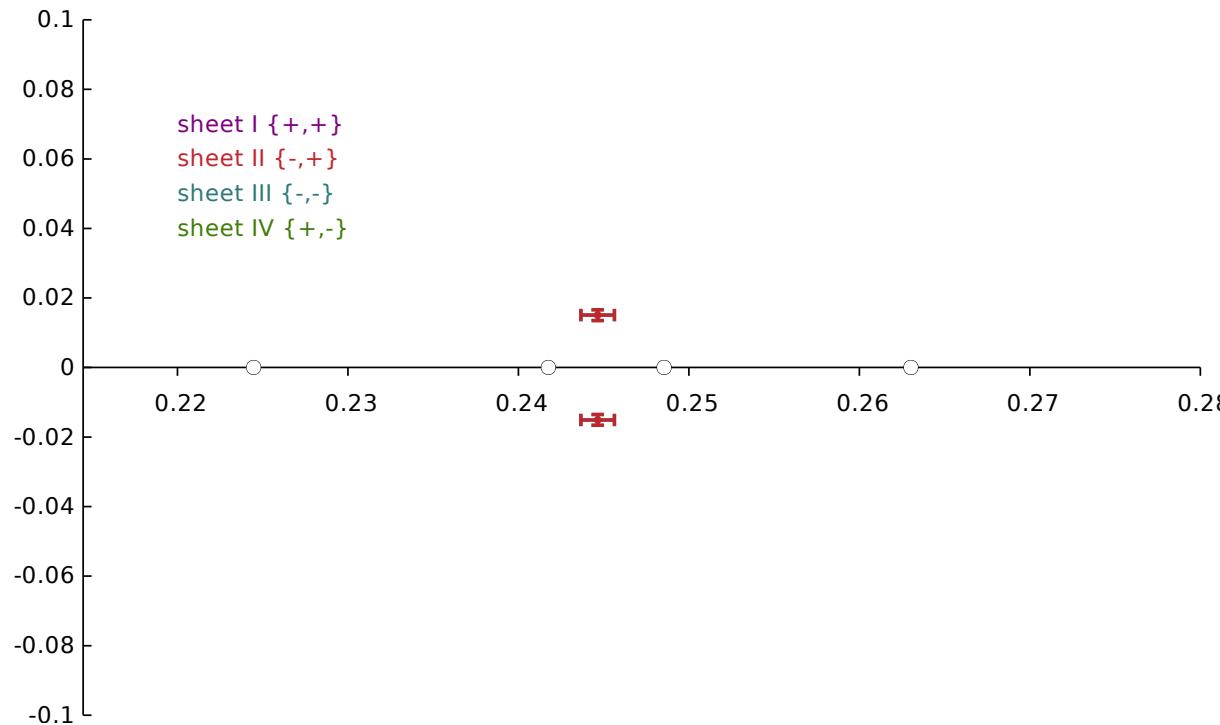
=====
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0971 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0049 +/- 0.0039 |
arg(g)/pi= 0.0587 +/- 0.0228 | arg(g)/pi= 0.4413 +/- 0.0228 | arg(g)/pi= 0.7288 +/- 0.0356 |
=====
g_re= 0.0955 +/- 0.0054 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0032 +/- 0.0026 |
g_im= 0.0178 +/- 0.0069 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0037 +/- 0.0029 |
corr= [-0.14] | corr= [-0.05] | corr= [-0.96] |
=====
Br = 0.9771 +/- 0.0209 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0039 |

```

```
--  
pi:omega[-] pi:phi[-] lower half-plane  
  
sqrt(s)_pole = (0.24474 +/- 0.0009444)  
+ (i/2)*(-0.014719 +/- 0.0014962) [ 0.38]  
  
s_pole = (0.059842 +/- 0.00046651)  
+ i*(-0.0036024 +/- 0.00036118) [ 0.36]  
  
pi:omega | pi:phi |  
=====|=====|  
k_re= 0.0463 +/- 0.0010 | k_re= 0.0145 +/- 0.0011 |  
k_im= -0.0087 +/- 0.0009 | k_im= -0.0246 +/- 0.0017 |  
corr= [ 0.42] | corr= [ 0.08] |  
  
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |  
=====|=====|=====|  
|g|= 0.0971 +/- 0.0053 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0049 +/- 0.0039 |  
arg(g)/pi= -0.0587 +/- 0.0228 |arg(g)/pi= 0.5587 +/- 0.0228 |arg(g)/pi= -0.7288 +/- 0.0356 |  
-----|-----|-----|  
g_re= 0.0955 +/- 0.0054 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0032 +/- 0.0026 |  
g_im= -0.0178 +/- 0.0069 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0037 +/- 0.0029 |  
corr= [ 0.14] | corr= [ 0.05] | corr= [ 0.96] |  
-----|-----|-----|  
Br = 0.9771 +/- 0.0209 | Br = 0.0000 +/- 0.0000 | Br = 0.0025 +/- 0.0039 |
```

1.21 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 39.62 / (36 - 5) = 1.28
```

JP1+_g_pi:omega/3^S_1_pole0_order0		0.094485 +/- 0.0045903		1.00	-0.20	-0.11
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order0		-14.970 +/- 9.8761		1.00	0.22	-0.11
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-0.27034 +/- 0.16117		1.00	0.17	0.03
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		1.0625 +/- 0.31038		1.00	-0.28	
JP1+_m_pole0		0.24479 +/- 0.00066808				1.00

pole singularities

```
pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.27238 +/- 0.016564)
  + (i/2)*(+0.21117 +/- 0.083878) [ 0.89]
s_pole = (0.063037 +/- 0.0041536)
  + i*(+0.057521 +/- 0.026021) [-0.14]
```

pi:omega	pi:phi
k_re= -0.0892 +/- 0.0167	k_re= 0.0769 +/- 0.0187
k_im= -0.0764 +/- 0.0224	k_im= 0.0838 +/- 0.0219
corr= [0.95]	corr= [0.95]

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1434 +/- 0.0181 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1340 +/- 0.0181 |
arg(g)/pi= -0.4372 +/- 0.0475 | arg(g)/pi= 0.9372 +/- 0.0475 | arg(g)/pi= 0.5050 +/- 0.0431 |
=====
g_re= 0.0281 +/- 0.0241 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0021 +/- 0.0184 |
g_im= -0.1406 +/- 0.0143 | g_im= 0.0000 +/- 0.0000 | g_im= 0.1340 +/- 0.0179 |
corr= [-0.80] | corr= [ 0.84] | corr= [-0.92] |
=====
Br = 0.1915 +/- 0.0507 | Br = 0.0000 +/- 0.0000 | Br = 0.1672 +/- 0.0402 |

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.24465 +/- 0.00098683)
+ (i/2)*(+0.015065 +/- 0.0015335) [-0.37]  

s_pole = (0.059796 +/- 0.00048728)
+ i*(+0.0036857 +/- 0.00036987) [-0.36]  

=====
pi:omega | pi:phi |
=====
k_re= -0.0462 +/- 0.0011 | k_re= 0.0146 +/- 0.0011 |
k_im= -0.0089 +/- 0.0010 | k_im= 0.0249 +/- 0.0018 |
corr= [-0.42] | corr= [-0.10] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0981 +/- 0.0054 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0054 +/- 0.0035 |
arg(g)/pi= 0.0618 +/- 0.0234 | arg(g)/pi= 0.4382 +/- 0.0234 | arg(g)/pi= 0.6595 +/- 0.0368 |
=====
g_re= 0.0963 +/- 0.0055 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0026 +/- 0.0018 |
g_im= 0.0189 +/- 0.0071 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0047 +/- 0.0031 |
corr= [-0.16] | corr= [-0.06] | corr= [-0.92] |
=====
Br = 0.9723 +/- 0.0219 | Br = 0.0000 +/- 0.0000 | Br = 0.0029 +/- 0.0038 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.27238 +/- 0.016564)
+ (i/2)*(-0.21117 +/- 0.083878) [-0.89]  

s_pole = (0.063037 +/- 0.0041536)
+ i*(-0.057521 +/- 0.026021) [ 0.14]  

=====
pi:omega | pi:phi |
=====
k_re= 0.0892 +/- 0.0167 | k_re= -0.0769 +/- 0.0187 |
k_im= -0.0764 +/- 0.0224 | k_im= 0.0838 +/- 0.0219 |
corr= [-0.95] | corr= [-0.95] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1434 +/- 0.0181 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1340 +/- 0.0181 |
arg(g)/pi= 0.4372 +/- 0.0475 | arg(g)/pi= 0.0628 +/- 0.0475 | arg(g)/pi= -0.5050 +/- 0.0431 |
=====
g_re= 0.0281 +/- 0.0241 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0021 +/- 0.0184 |
g_im= 0.1406 +/- 0.0143 | g_im= 0.0000 +/- 0.0000 | g_im= -0.1340 +/- 0.0179 |
corr= [ 0.80] | corr= [-0.84] | corr= [ 0.92] |
=====
Br = 0.1915 +/- 0.0507 | Br = 0.0000 +/- 0.0000 | Br = 0.1672 +/- 0.0402 |

```

```

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.24465 +/- 0.00098683)
  + (i/2)*(-0.015065 +/- 0.0015335) [ 0.37]

s_pole = (0.059796 +/- 0.00048728)
  + i*(-0.0036857 +/- 0.00036987) [ 0.36]

pi:omega | pi:phi |
=====
k_re= 0.0462 +/- 0.0011 | k_re= -0.0146 +/- 0.0011 |
k_im= -0.0089 +/- 0.0010 | k_im= 0.0249 +/- 0.0018 |
corr= [ 0.42] | corr= [ 0.10] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0981 +/- 0.0054 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0054 +/- 0.0035 |
arg(g)/pi= -0.0618 +/- 0.0234 |arg(g)/pi= 0.5618 +/- 0.0234 |arg(g)/pi= -0.6595 +/- 0.0368 |
-----|-----|-----|
g_re= 0.0963 +/- 0.0055 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0026 +/- 0.0018 |
g_im= -0.0189 +/- 0.0071 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0047 +/- 0.0031 |
corr= [ 0.16] | corr= [ 0.06] | corr= [ 0.92] |
-----|-----|-----|
Br = 0.9723 +/- 0.0219 | Br = 0.0000 +/- 0.0000 | Br = 0.0029 +/- 0.0038 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.27238 +/- 0.016564)
  + (i/2)*(+0.21117 +/- 0.083878) [ 0.89]

s_pole = (0.063037 +/- 0.0041536)
  + i*(+0.057521 +/- 0.026021) [-0.14]

pi:omega | pi:phi |
=====
k_re= -0.0892 +/- 0.0167 | k_re= -0.0769 +/- 0.0187 |
k_im= -0.0764 +/- 0.0224 | k_im= -0.0838 +/- 0.0219 |
corr= [ 0.95] | corr= [ 0.95] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1434 +/- 0.0181 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1340 +/- 0.0181 |
arg(g)/pi= -0.4372 +/- 0.0475 |arg(g)/pi= 0.9372 +/- 0.0475 |arg(g)/pi= 0.5050 +/- 0.0431 |
-----|-----|-----|
g_re= 0.0281 +/- 0.0241 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0021 +/- 0.0184 |
g_im= -0.1406 +/- 0.0143 | g_im= 0.0000 +/- 0.0000 | g_im= 0.1340 +/- 0.0179 |
corr= [-0.80] | corr= [ 0.84] | corr= [-0.92] |
-----|-----|-----|
Br = 0.1915 +/- 0.0507 | Br = 0.0000 +/- 0.0000 | Br = 0.1672 +/- 0.0402 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24465 +/- 0.00098836)
  + (i/2)*(+0.015065 +/- 0.0015342) [-0.37]

s_pole = (0.059796 +/- 0.00048804)
  + i*(+0.0036857 +/- 0.00037002) [-0.36]

pi:omega | pi:phi |

```

```

=====
|=====
| k_re= -0.0462 +/- 0.0011 | k_re= -0.0146 +/- 0.0011 |
| k_im= -0.0089 +/- 0.0010 | k_im= -0.0249 +/- 0.0018 |
| corr= [-0.42] | corr= [-0.10] |

=====
|===== pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 | | | |
|=====|=====|=====|
| lg|= 0.0981 +/- 0.0054 | lg|= 0.0000 +/- 0.0000 | lg|= 0.0054 +/- 0.0035 |
| arg(g)/pi= 0.0618 +/- 0.0234 | arg(g)/pi= 0.4382 +/- 0.0234 | arg(g)/pi= 0.6595 +/- 0.0368 |
|-----|-----|-----|
| g_re= 0.0963 +/- 0.0055 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0026 +/- 0.0018 |
| g_im= 0.0189 +/- 0.0071 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0047 +/- 0.0031 |
| corr= [-0.16] | corr= [-0.06] | corr= [-0.92] |
|-----|-----|-----|
| Br = 0.9723 +/- 0.0220 | Br = 0.0000 +/- 0.0000 | Br = 0.0029 +/- 0.0038 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.27238 +/- 0.016564)
+ (i/2)*(-0.21117 +/- 0.083878) [-0.89]

s_pole = (0.063037 +/- 0.0041536)
+ i*(-0.057521 +/- 0.026021) [ 0.14]

=====
|===== pi:omega | pi:phi | |
|=====|=====|=====|
| k_re= 0.0892 +/- 0.0167 | k_re= 0.0769 +/- 0.0187 |
| k_im= -0.0764 +/- 0.0224 | k_im= -0.0838 +/- 0.0219 |
| corr= [-0.95] | corr= [-0.95] |

=====
|===== pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 | | | |
|=====|=====|=====|
| lg|= 0.1434 +/- 0.0181 | lg|= 0.0000 +/- 0.0000 | lg|= 0.1340 +/- 0.0181 |
| arg(g)/pi= 0.4372 +/- 0.0475 | arg(g)/pi= 0.0628 +/- 0.0475 | arg(g)/pi= -0.5050 +/- 0.0431 |
|-----|-----|-----|
| g_re= 0.0281 +/- 0.0241 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0021 +/- 0.0184 |
| g_im= 0.1406 +/- 0.0143 | g_im= 0.0000 +/- 0.0000 | g_im= -0.1340 +/- 0.0179 |
| corr= [ 0.80] | corr= [-0.84] | corr= [ 0.92] |
|-----|-----|-----|
| Br = 0.1915 +/- 0.0507 | Br = 0.0000 +/- 0.0000 | Br = 0.1672 +/- 0.0402 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24465 +/- 0.00098836)
+ (i/2)*(-0.015065 +/- 0.0015342) [ 0.37]

s_pole = (0.059796 +/- 0.00048804)
+ i*(-0.0036857 +/- 0.00037002) [ 0.36]

=====
|===== pi:omega | pi:phi | |
|=====|=====|=====|
| k_re= 0.0462 +/- 0.0011 | k_re= 0.0146 +/- 0.0011 |
| k_im= -0.0089 +/- 0.0010 | k_im= -0.0249 +/- 0.0018 |
| corr= [ 0.42] | corr= [ 0.10] |

=====
|===== pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 | | | |
|=====|=====|=====|
| lg|= 0.0981 +/- 0.0054 | lg|= 0.0000 +/- 0.0000 | lg|= 0.0054 +/- 0.0035 |
| arg(g)/pi= -0.0618 +/- 0.0234 | arg(g)/pi= 0.5618 +/- 0.0234 | arg(g)/pi= -0.6595 +/- 0.0368 |
|-----|-----|-----|

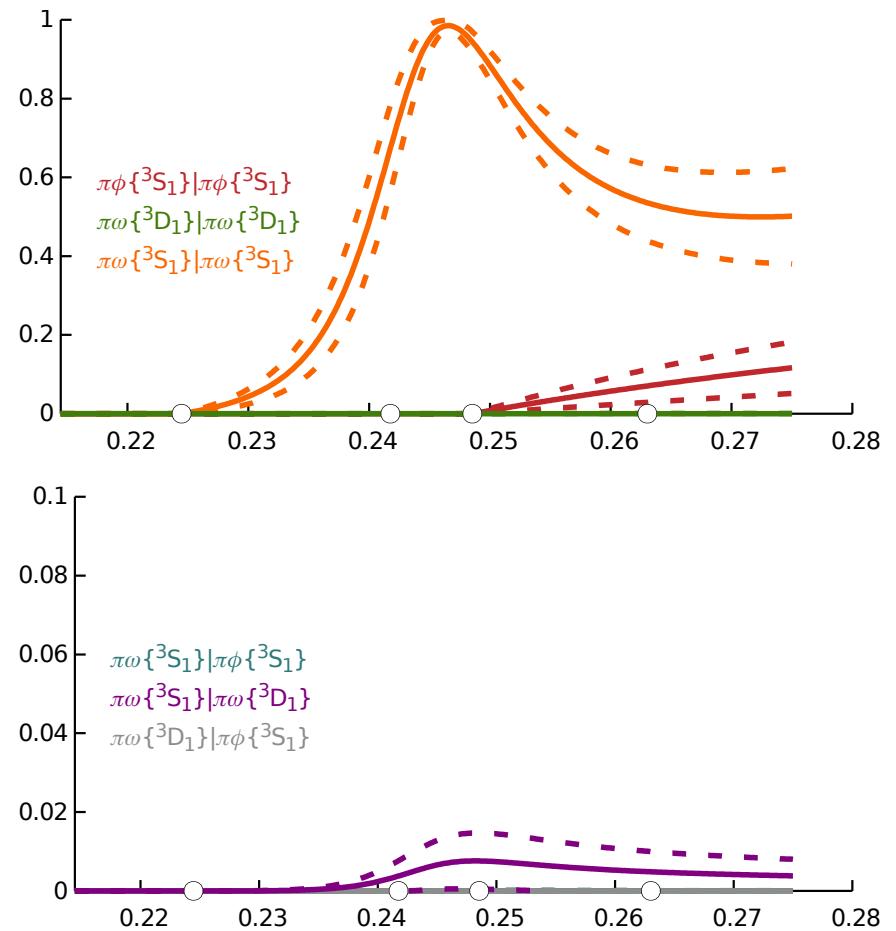
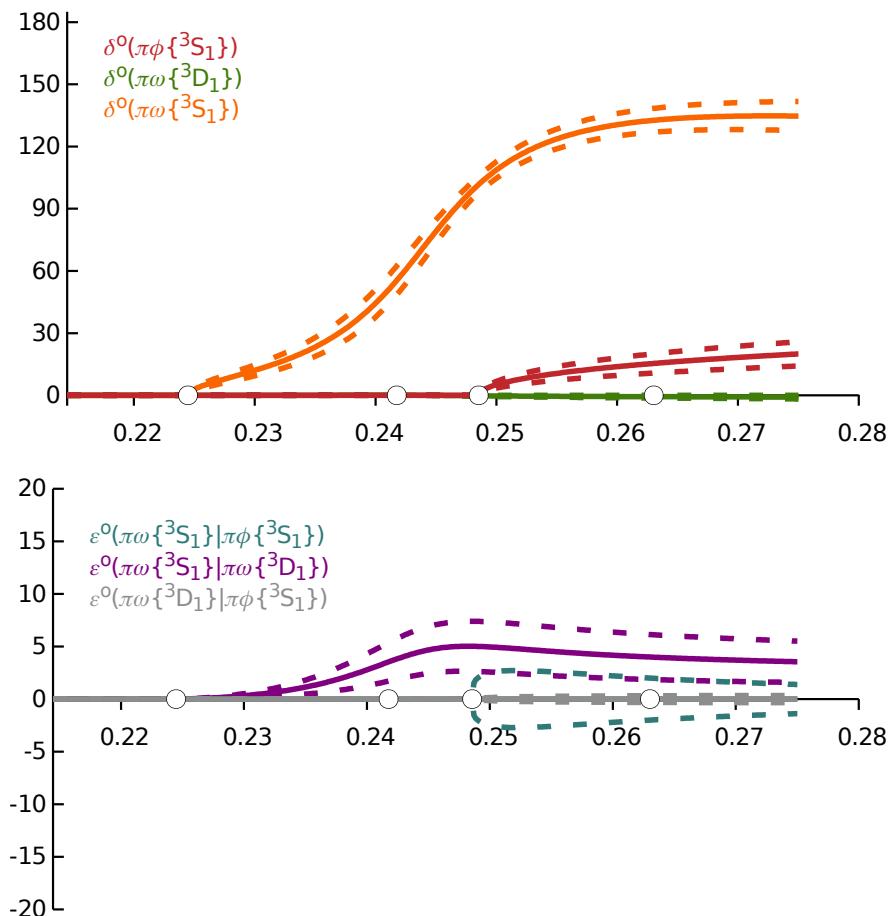
```

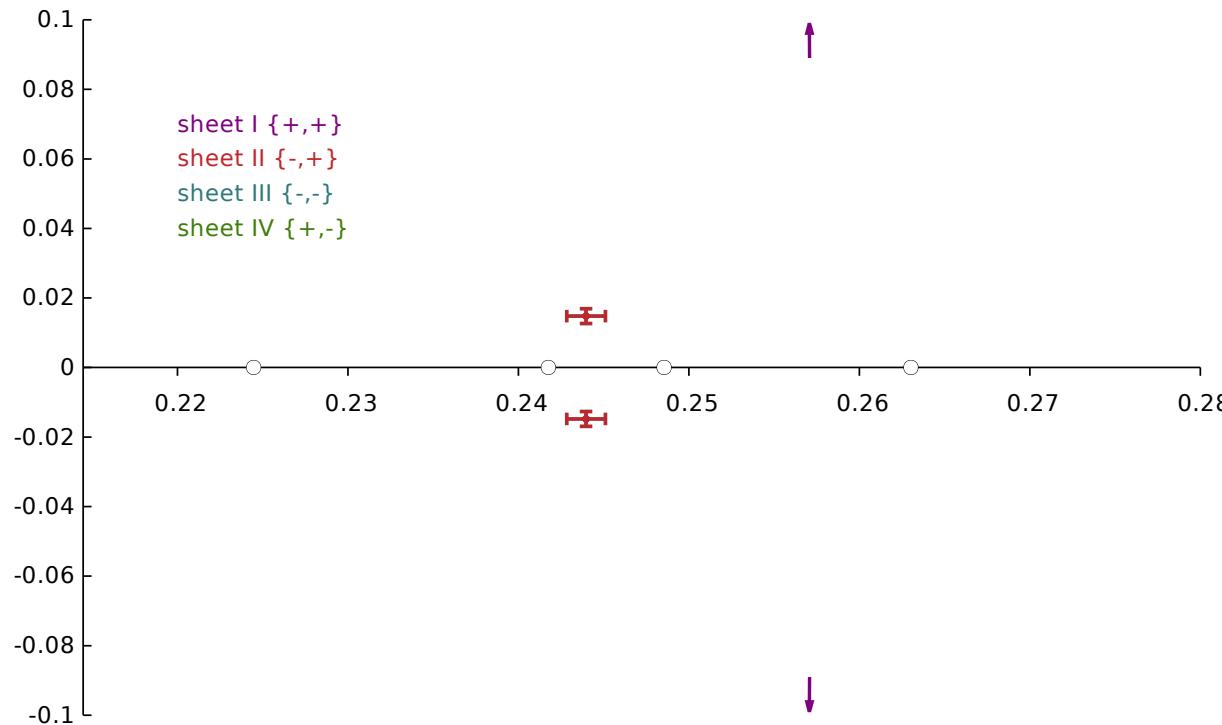
1 Successful Parameterizations

g_re= 0.0963 +/- 0.0055	g_re= -0.0000 +/- 0.0000	g_re= -0.0026 +/- 0.0018
g_im= -0.0189 +/- 0.0071	g_im= 0.0000 +/- 0.0000	g_im= -0.0047 +/- 0.0031
corr= [0.16]	corr= [0.06]	corr= [0.92]
----- ----- -----		
Br = 0.9723 +/- 0.0220	Br = 0.0000 +/- 0.0000	Br = 0.0029 +/- 0.0038

2 Unphysical Parameterizations

2.1 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1+G1_3s1.gorder0_3s1_3d1_3S1.irho





parameter values

```

minimised with chisq/nDoF = 36.06 / (36 - 7) = 1.24
=====
JP1+_g_pi:omega/3^D_1_pole0 | 0.99610 +/- 0.53535 | 1.00 0.75 -0.00 -0.18 0.05 -0.03 -0.07
JP1+_g_pi:omega/3^S_1_pole0 | 0.10524 +/- 0.0091525 | 1.00 -0.01 -0.38 0.22 -0.01 -0.15
JP1+_g_pi:phi/3^S_1_pole0 | 1.5477e-06 +/- 0.011046 | 1.00 0.00 -0.00 0.00 -0.04
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^S_1_order | 1.4004 +/- 0.8417 | 1.00 -0.96 -0.03 0.05
JP1+_gamma_pi:omega/3^S_1|pi:omega/3^S_1_order | -33.012 +/- 15.389 | 1.00 0.09 -0.04
JP1+_gamma_pi:phi/3^S_1|pi:phi/3^S_1_order0 | 0.92714 +/- 0.28285 | 1.00 -0.30
JP1+_m_pole0 | 0.24656 +/- 0.00067665 | 1.00
=====
```

pole singularities

```

pi:omega[+] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.25707 +/- 0.011603)
+ (i/2)*(+0.17385 +/- 0.052196) [ 0.59]

s_pole = (0.058527 +/- 0.0049009)
+ i*(+0.044693 +/- 0.014711) [-0.09]

pi:omega | pi:phi |
=====|=====
k_re= 0.0763 +/- 0.0114 | k_re= 0.0631 +/- 0.0126 |
k_im= 0.0681 +/- 0.0147 | k_im= 0.0762 +/- 0.0143 |
```

```

corr= [ 0.79] | corr= [ 0.80] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1943 +/- 0.0284 | |g|= 0.0001 +/- 0.0016 | |g|= 0.0148 +/- 0.0102 |
arg(g)/pi= -0.0990 +/- 0.0181 | arg(g)/pi= -0.3710 +/- 11.1949 | arg(g)/pi= -0.5219 +/- 0.0339 |
-----|-----|-----
g_re= 0.1850 +/- 0.0304 | g_re= -0.0000 +/- 0.0024 | g_re= -0.0010 +/- 0.0013 |
g_im= -0.0595 +/- 0.0021 | g_im= 0.0000 +/- 0.0012 | g_im= -0.0148 +/- 0.0102 |
corr= [ 0.89] | corr= [ 1.00] | corr= [-0.23] |
-----|-----|-----
Br = 0.3923 +/- 0.0306 | Br = 0.0000 +/- 0.0000 | Br = 0.0023 +/- 0.0029 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.25707 +/- 0.011603)  

+ (i/2)*(-0.17385 +/- 0.052196) [-0.59]  

s_pole = (0.058527 +/- 0.0049009)  

+ i*(-0.044693 +/- 0.014711) [ 0.09]  

pi:omega | pi:phi |
=====|=====
k_re= -0.0763 +/- 0.0114 | k_re= -0.0631 +/- 0.0126 |
k_im= 0.0681 +/- 0.0147 | k_im= 0.0762 +/- 0.0143 |
corr= [-0.79] | corr= [-0.80] |
-----|-----|-----  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1943 +/- 0.0284 | |g|= 0.0001 +/- 0.0016 | |g|= 0.0148 +/- 0.0102 |
arg(g)/pi= 0.0990 +/- 0.0181 | arg(g)/pi= 0.3732 +/- 11.1486 | arg(g)/pi= 0.5219 +/- 0.0339 |
-----|-----|-----
g_re= 0.1850 +/- 0.0304 | g_re= -0.0000 +/- 0.0024 | g_re= -0.0010 +/- 0.0013 |
g_im= 0.0595 +/- 0.0021 | g_im= 0.0000 +/- 0.0012 | g_im= 0.0148 +/- 0.0102 |
corr= [-0.89] | corr= [-1.00] | corr= [ 0.23] |
-----|-----|-----
Br = 0.3923 +/- 0.0306 | Br = 0.0000 +/- 0.0000 | Br = 0.0023 +/- 0.0029 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.25707 +/- 0.011603)  

+ (i/2)*(+0.17385 +/- 0.052196) [ 0.59]  

s_pole = (0.058526 +/- 0.0049009)  

+ i*(+0.044693 +/- 0.014711) [-0.09]  

pi:omega | pi:phi |
=====|=====
k_re= 0.0763 +/- 0.0114 | k_re= -0.0631 +/- 0.0126 |
k_im= 0.0681 +/- 0.0147 | k_im= -0.0762 +/- 0.0143 |
corr= [ 0.79] | corr= [ 0.80] |
-----|-----|-----  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1943 +/- 0.0284 | |g|= 0.0002 +/- 0.0027 | |g|= 0.0148 +/- 0.0102 |
arg(g)/pi= -0.0990 +/- 0.0181 | arg(g)/pi= 0.2981 +/- 11.1552 | arg(g)/pi= -0.5219 +/- 0.0339 |
-----|-----|-----
g_re= 0.1850 +/- 0.0304 | g_re= -0.0000 +/- 0.0035 | g_re= -0.0010 +/- 0.0013 |
g_im= -0.0595 +/- 0.0021 | g_im= 0.0000 +/- 0.0029 | g_im= -0.0148 +/- 0.0102 |
corr= [ 0.89] | corr= [-1.00] | corr= [-0.23] |
-----|-----|-----
```

2 Unphysical Parameterizations

```

-----|-----|-----|
Br = 0.3923 +/- 0.0306 | Br = 0.0000 +/- 0.0000 | Br = 0.0023 +/- 0.0029 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.25707 +/- 0.011603)  

+ (i/2)*(-0.17385 +/- 0.052196) [-0.59]  

s_pole = (0.058526 +/- 0.0049009)  

+ i*(-0.044693 +/- 0.014711) [ 0.09]  

pi:omega | pi:phi |
=====|=====
k_re= -0.0763 +/- 0.0114 | k_re= 0.0631 +/- 0.0126 |
k_im= 0.0681 +/- 0.0147 | k_im= -0.0762 +/- 0.0143 |
corr= [-0.79] | corr= [-0.80] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1943 +/- 0.0284 | |g|= 0.0002 +/- 0.0027 | |g|= 0.0148 +/- 0.0102 |
arg(g)/pi= 0.0990 +/- 0.0181 | arg(g)/pi= -0.2959 +/- 11.1746 | arg(g)/pi= 0.5219 +/- 0.0339 |
g_re= 0.1850 +/- 0.0304 | g_re= -0.0000 +/- 0.0035 | g_re= -0.0010 +/- 0.0013 |
g_im= 0.0595 +/- 0.0021 | g_im= -0.0000 +/- 0.0029 | g_im= 0.0148 +/- 0.0102 |
corr= [-0.89] | corr= [ 1.00] | corr= [ 0.23] |
-----|-----|-----|
Br = 0.3923 +/- 0.0306 | Br = 0.0000 +/- 0.0000 | Br = 0.0023 +/- 0.0029 |

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.24397 +/- 0.001135)  

+ (i/2)*(+0.014784 +/- 0.0021108) [-0.51]  

s_pole = (0.059466 +/- 0.00056198)  

+ i*(+0.0036069 +/- 0.00050653) [-0.51]  

pi:omega | pi:phi |
=====|=====
k_re= -0.0454 +/- 0.0012 | k_re= 0.0138 +/- 0.0013 |
k_im= -0.0089 +/- 0.0013 | k_im= 0.0257 +/- 0.0022 |
corr= [-0.51] | corr= [ 0.19] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0930 +/- 0.0073 | |g|= 0.0003 +/- 0.0054 | |g|= 0.0083 +/- 0.0041 |
arg(g)/pi= 0.0790 +/- 0.0219 | arg(g)/pi= -0.4301 +/- 11.1776 | arg(g)/pi= 0.1429 +/- 0.0246 |
g_re= 0.0902 +/- 0.0072 | g_re= -0.0000 +/- 0.0088 | g_re= 0.0074 +/- 0.0036 |
g_im= 0.0228 +/- 0.0064 | g_im= -0.0000 +/- 0.0014 | g_im= 0.0036 +/- 0.0022 |
corr= [ 0.05] | corr= [ 1.00] | corr= [ 0.97] |
-----|-----|-----|
Br = 0.8800 +/- 0.0337 | Br = 0.0000 +/- 0.0000 | Br = 0.0070 +/- 0.0064 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24397 +/- 0.001135)  

+ (i/2)*(-0.014784 +/- 0.0021108) [ 0.51]  

s_pole = (0.059466 +/- 0.00056198)  

+ i*(-0.0036069 +/- 0.00050653) [ 0.51]

```

```

pi:omega | pi:phi |
=====
k_re= 0.0454 +/- 0.0012 | k_re= -0.0138 +/- 0.0013 |
k_im= -0.0089 +/- 0.0013 | k_im= 0.0257 +/- 0.0022 |
corr= [ 0.51] | corr= [-0.19] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0930 +/- 0.0073 | |g|= 0.0003 +/- 0.0054 | |g|= 0.0083 +/- 0.0041 |
arg(g)/pi= -0.0790 +/- 0.0219 | arg(g)/pi= 0.4318 +/- 11.1508 | arg(g)/pi= -0.1429 +/- 0.0246 |
-----|-----|-----|
g_re= 0.0902 +/- 0.0072 | g_re= -0.0000 +/- 0.0088 | g_re= 0.0074 +/- 0.0036 |
g_im= -0.0228 +/- 0.0064 | g_im= 0.0000 +/- 0.0014 | g_im= -0.0036 +/- 0.0022 |
corr= [-0.05] | corr= [-1.00] | corr= [-0.97] |
-----|-----|-----|
Br = 0.8800 +/- 0.0337 | Br = 0.0000 +/- 0.0000 | Br = 0.0070 +/- 0.0064 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24397 +/- 0.0011398)
+ (i/2)*(+0.014784 +/- 0.0021632) [-0.52]

s_pole = (0.059465 +/- 0.00056461)
+ i*(+0.0036067 +/- 0.00051919) [-0.52]

pi:omega | pi:phi |
=====
k_re= -0.0454 +/- 0.0012 | k_re= -0.0138 +/- 0.0013 |
k_im= -0.0089 +/- 0.0014 | k_im= -0.0257 +/- 0.0022 |
corr= [-0.51] | corr= [ 0.21] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0930 +/- 0.0074 | |g|= 0.0005 +/- 0.0080 | |g|= 0.0083 +/- 0.0042 |
arg(g)/pi= 0.0790 +/- 0.0221 | arg(g)/pi= 0.4591 +/- 11.1530 | arg(g)/pi= 0.1429 +/- 0.0251 |
-----|-----|-----|
g_re= 0.0902 +/- 0.0074 | g_re= 0.0000 +/- 0.0132 | g_re= 0.0074 +/- 0.0036 |
g_im= 0.0228 +/- 0.0065 | g_im= -0.0000 +/- 0.0010 | g_im= 0.0036 +/- 0.0023 |
corr= [ 0.05] | corr= [-1.00] | corr= [ 0.97] |
-----|-----|-----|
Br = 0.8800 +/- 0.0337 | Br = 0.0000 +/- 0.0000 | Br = 0.0069 +/- 0.0065 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24397 +/- 0.0011398)
+ (i/2)*(-0.014784 +/- 0.0021632) [ 0.52]

s_pole = (0.059465 +/- 0.00056461)
+ i*(-0.0036067 +/- 0.00051919) [ 0.52]

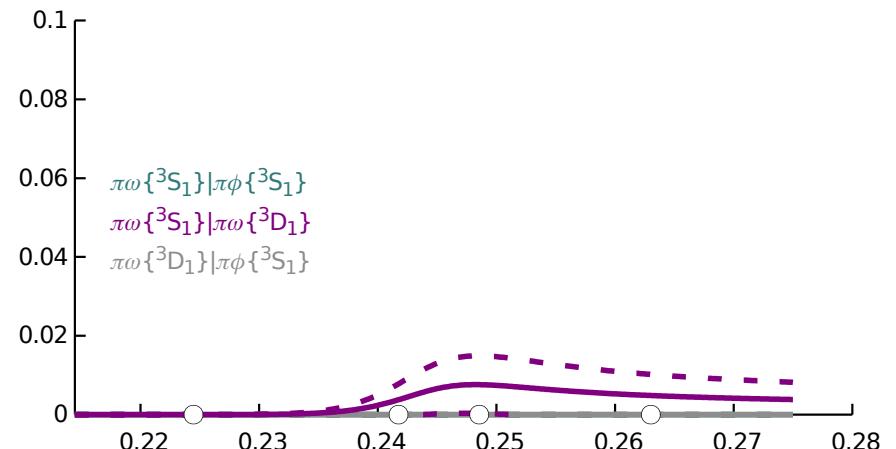
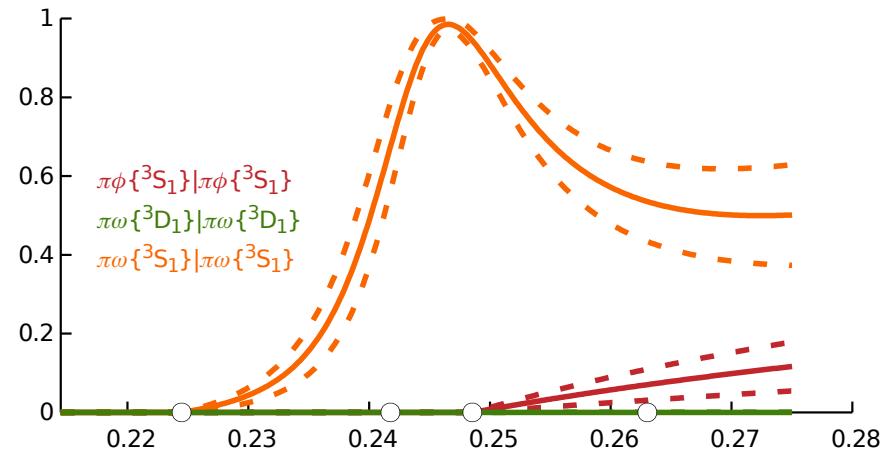
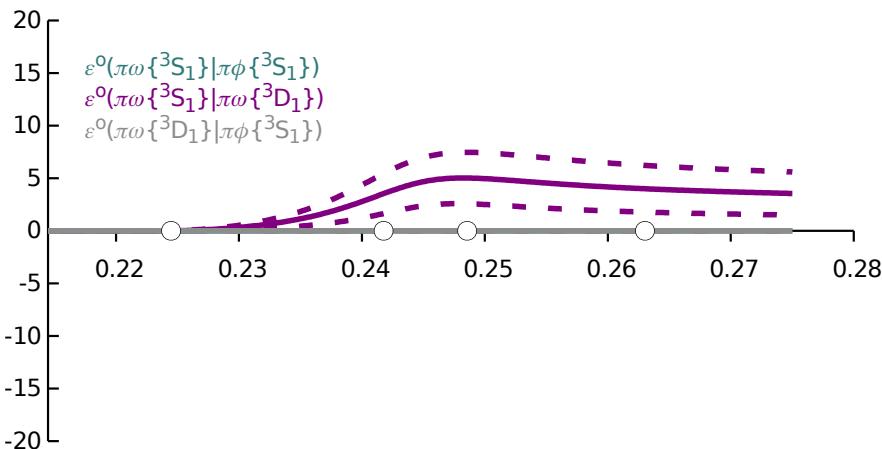
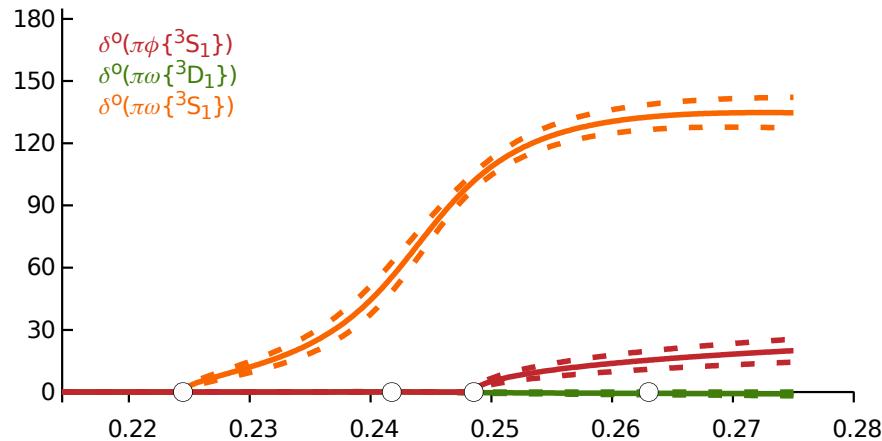
pi:omega | pi:phi |
=====
k_re= 0.0454 +/- 0.0012 | k_re= 0.0138 +/- 0.0013 |
k_im= -0.0089 +/- 0.0014 | k_im= -0.0257 +/- 0.0022 |
corr= [ 0.51] | corr= [-0.21] |

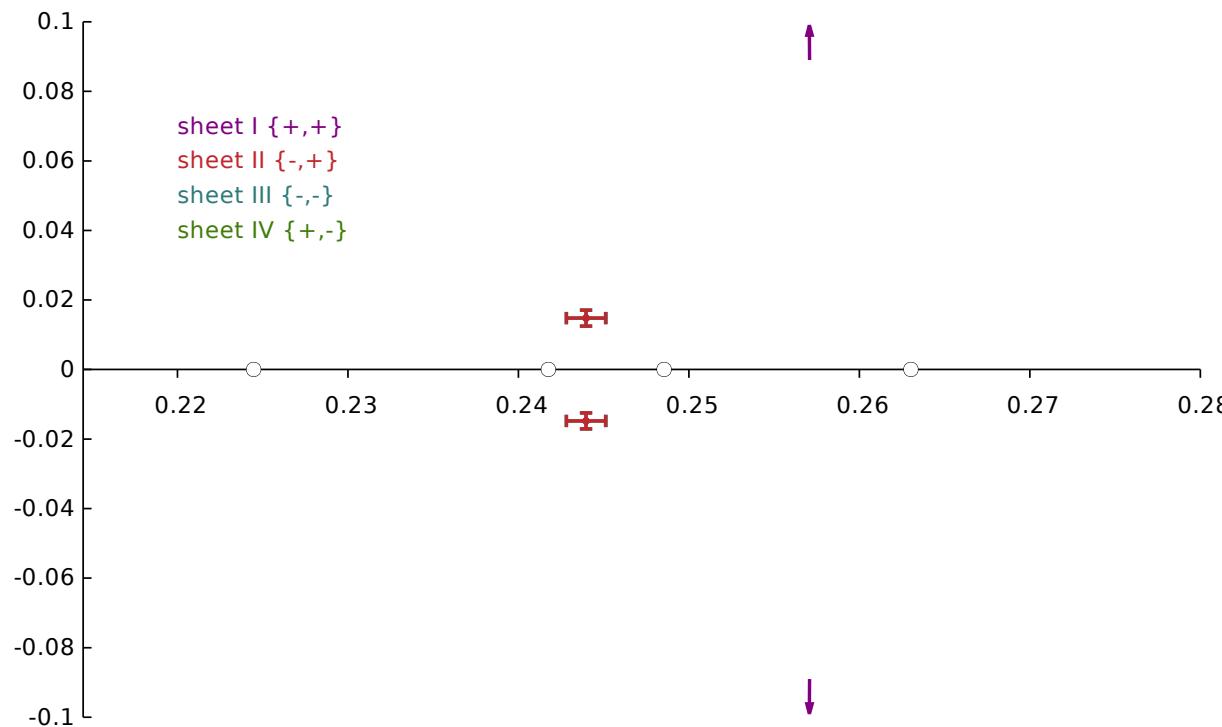
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0930 +/- 0.0074 | |g|= 0.0005 +/- 0.0080 | |g|= 0.0083 +/- 0.0042 |

```

$\arg(g)/\pi = -0.0790 \pm 0.0221$	$\arg(g)/\pi = -0.4576 \pm 11.1899$	$\arg(g)/\pi = -0.1429 \pm 0.0251$
$g_{\text{re}} = 0.0902 \pm 0.0074$	$g_{\text{re}} = 0.0000 \pm 0.0132$	$g_{\text{re}} = 0.0074 \pm 0.0036$
$g_{\text{im}} = -0.0228 \pm 0.0065$	$g_{\text{im}} = 0.0000 \pm 0.0010$	$g_{\text{im}} = -0.0036 \pm 0.0023$
$\text{corr} = [-0.05]$	$\text{corr} = [1.00]$	$\text{corr} = [-0.97]$
$\text{Br} = 0.8800 \pm 0.0337$	$\text{Br} = 0.0000 \pm 0.0000$	$\text{Br} = 0.0069 \pm 0.0065$

2.2 coupled_po_pp.3s1_3d1.pole+G0_3s1_3S1+G1_3s1.gorder0_3s1_3d1.irho





parameter values

```
minimised with chisq/nDoF = 36.06 / (36 - 6) = 1.20
```

JP1+_g_pi:omega/3^D_1_pole0	0.99621 +/- 0.53534	1.00 0.75 -0.18 0.05 -0.03 -0.07
JP1+_g_pi:omega/3^S_1_pole0	0.10524 +/- 0.0091527	1.00 -0.38 0.22 -0.01 -0.15
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde	1.3995 +/- 0.84205	1.00 -0.96 -0.03 0.05
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-32.994 +/- 15.396	1.00 0.09 -0.04
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.92718 +/- 0.28285	1.00 -0.30
JP1+_m_pole0	0.24656 +/- 0.00067624	1.00

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.25708 +/- 0.012193)
+ (i/2)*(+0.17392 +/- 0.055717) [ 0.62]
s_pole = (0.058525 +/- 0.0050058)
+ i*(+0.044712 +/- 0.015735) [-0.09]
```

pi:omega	pi:phi
k_re= 0.0763 +/- 0.0121	k_re= 0.0631 +/- 0.0134
k_im= 0.0681 +/- 0.0157	k_im= 0.0762 +/- 0.0152
corr= [0.80]	corr= [0.81]

2 Unphysical Parameterizations

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1943 +/- 0.0302 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0148 +/- 0.0107 |
arg(g)/pi= -0.0990 +/- 0.0194 | arg(g)/pi= 0.5990 +/- 0.0194 | arg(g)/pi= -0.5219 +/- 0.0358 |
-----|-----|-----
g_re= 0.1850 +/- 0.0324 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0010 +/- 0.0013 |
g_im= -0.0595 +/- 0.0022 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0148 +/- 0.0108 |
corr= [ 0.90] | corr= [-1.00] | corr= [-0.27] |
-----|-----|-----
Br = 0.3835 +/- 0.0321 | Br = 0.0000 +/- 0.0000 | Br = 0.0022 +/- 0.0029 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.25708 +/- 0.012193)
+ (i/2)*(-0.17392 +/- 0.055717) [-0.62]

s_pole = (0.058525 +/- 0.0050058)
+ i*(-0.044712 +/- 0.015735) [ 0.09]

pi:omega | pi:phi |
=====|=====
k_re= -0.0763 +/- 0.0121 | k_re= -0.0631 +/- 0.0134 |
k_im= 0.0681 +/- 0.0157 | k_im= 0.0762 +/- 0.0152 |
corr= [-0.80] | corr= [-0.81] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1943 +/- 0.0302 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0148 +/- 0.0107 |
arg(g)/pi= 0.0990 +/- 0.0194 | arg(g)/pi= 0.4010 +/- 0.0194 | arg(g)/pi= 0.5219 +/- 0.0358 |
-----|-----|-----
g_re= 0.1850 +/- 0.0324 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0010 +/- 0.0013 |
g_im= 0.0595 +/- 0.0022 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0148 +/- 0.0108 |
corr= [-0.90] | corr= [ 1.00] | corr= [ 0.27] |
-----|-----|-----
Br = 0.3835 +/- 0.0321 | Br = 0.0000 +/- 0.0000 | Br = 0.0022 +/- 0.0029 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.25708 +/- 0.012193)
+ (i/2)*(+0.17392 +/- 0.055717) [ 0.62]

s_pole = (0.058525 +/- 0.0050058)
+ i*(+0.044712 +/- 0.015735) [-0.09]

pi:omega | pi:phi |
=====|=====
k_re= 0.0763 +/- 0.0121 | k_re= -0.0631 +/- 0.0134 |
k_im= 0.0681 +/- 0.0157 | k_im= -0.0762 +/- 0.0152 |
corr= [ 0.80] | corr= [ 0.81] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1943 +/- 0.0302 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0148 +/- 0.0107 |
arg(g)/pi= -0.0990 +/- 0.0194 | arg(g)/pi= 0.5990 +/- 0.0194 | arg(g)/pi= -0.5219 +/- 0.0358 |
-----|-----|-----
g_re= 0.1850 +/- 0.0324 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0010 +/- 0.0013 |
g_im= -0.0595 +/- 0.0022 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0148 +/- 0.0108 |
corr= [ 0.90] | corr= [-1.00] | corr= [-0.27] |
-----|-----|-----

```

2 Unphysical Parameterizations

```

Br = 0.3835 +/- 0.0321 | Br = 0.0000 +/- 0.0000 | Br = 0.0022 +/- 0.0029 |

-- pi:omega[+] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.25708 +/- 0.012193)
+ (i/2)*(-0.17392 +/- 0.055717) [-0.62]

s_pole = (0.058525 +/- 0.0050058)
+ i*(-0.044712 +/- 0.015735) [ 0.09]

pi:omega | pi:phi |
=====|=====
k_re= -0.0763 +/- 0.0121 | k_re= 0.0631 +/- 0.0134 |
k_im= 0.0681 +/- 0.0157 | k_im= -0.0762 +/- 0.0152 |
corr= [-0.80] | corr= [-0.81] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1943 +/- 0.0302 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0148 +/- 0.0107 |
arg(g)/pi= 0.0990 +/- 0.0194 | arg(g)/pi= 0.4010 +/- 0.0194 | arg(g)/pi= 0.5219 +/- 0.0358 |
-----|-----|-----
g_re= 0.1850 +/- 0.0324 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0010 +/- 0.0013 |
g_im= 0.0595 +/- 0.0022 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0148 +/- 0.0108 |
corr= [-0.90] | corr= [ 1.00] | corr= [ 0.27] |

Br = 0.3835 +/- 0.0321 | Br = 0.0000 +/- 0.0000 | Br = 0.0022 +/- 0.0029 |

-- pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24397 +/- 0.0011434)
+ (i/2)*(+0.014781 +/- 0.0022969) [-0.56]

s_pole = (0.059465 +/- 0.00056759)
+ i*(+0.003606 +/- 0.00055108) [-0.56]

pi:omega | pi:phi |
=====|=====
k_re= -0.0454 +/- 0.0012 | k_re= 0.0138 +/- 0.0013 |
k_im= -0.0089 +/- 0.0015 | k_im= 0.0257 +/- 0.0023 |
corr= [-0.54] | corr= [ 0.29] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0930 +/- 0.0080 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0083 +/- 0.0043 |
arg(g)/pi= 0.0790 +/- 0.0230 | arg(g)/pi= 0.4210 +/- 0.0230 | arg(g)/pi= 0.1429 +/- 0.0268 |
-----|-----|-----
g_re= 0.0902 +/- 0.0080 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0074 +/- 0.0037 |
g_im= 0.0229 +/- 0.0067 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0023 |
corr= [ 0.04] | corr= [ 0.12] | corr= [ 0.97] |

Br = 0.8791 +/- 0.0349 | Br = 0.0000 +/- 0.0000 | Br = 0.0069 +/- 0.0066 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.24397 +/- 0.0011434)
+ (i/2)*(-0.014781 +/- 0.0022969) [ 0.56]

s_pole = (0.059465 +/- 0.00056759)
+ i*(-0.003606 +/- 0.00055108) [ 0.56]

```

2 Unphysical Parameterizations

```

pi:omega | pi:phi |
=====
k_re= 0.0454 +/- 0.0012 | k_re= -0.0138 +/- 0.0013 |
k_im= -0.0089 +/- 0.0015 | k_im= 0.0257 +/- 0.0023 |
corr= [ 0.54] | corr= [-0.29] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
lg= 0.0930 +/- 0.0080 | lg= 0.0000 +/- 0.0000 | lg= 0.0083 +/- 0.0043 |
arg(g)/pi= -0.0790 +/- 0.0230 | arg(g)/pi= 0.5790 +/- 0.0230 | arg(g)/pi= -0.1429 +/- 0.0268 |
g_re= 0.0902 +/- 0.0080 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0074 +/- 0.0037 |
g_im= -0.0229 +/- 0.0067 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0036 +/- 0.0023 |
corr= [-0.04] | corr= [-0.12] | corr= [-0.97] |

Br = 0.8791 +/- 0.0349 | Br = 0.0000 +/- 0.0000 | Br = 0.0069 +/- 0.0066 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24397 +/- 0.0011696)
+ (i/2)*(+0.014785 +/- 0.0023058) [-0.56]  

s_pole = (0.059465 +/- 0.0005805)
+ i*(+0.0036071 +/- 0.00055297) [-0.56]

pi:omega | pi:phi |
=====
k_re= -0.0454 +/- 0.0013 | k_re= -0.0138 +/- 0.0013 |
k_im= -0.0089 +/- 0.0015 | k_im= -0.0257 +/- 0.0024 |
corr= [-0.55] | corr= [ 0.28] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
lg= 0.0930 +/- 0.0080 | lg= 0.0000 +/- 0.0000 | lg= 0.0083 +/- 0.0044 |
arg(g)/pi= 0.0790 +/- 0.0228 | arg(g)/pi= 0.4210 +/- 0.0228 | arg(g)/pi= 0.1430 +/- 0.0269 |
g_re= 0.0902 +/- 0.0079 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0074 +/- 0.0037 |
g_im= 0.0228 +/- 0.0068 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0036 +/- 0.0024 |
corr= [ 0.09] | corr= [ 0.08] | corr= [ 0.97] |

Br = 0.8792 +/- 0.0349 | Br = 0.0000 +/- 0.0000 | Br = 0.0069 +/- 0.0067 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24397 +/- 0.0011696)
+ (i/2)*(-0.014785 +/- 0.0023058) [ 0.56]  

s_pole = (0.059465 +/- 0.0005805)
+ i*(-0.0036071 +/- 0.00055297) [ 0.56]

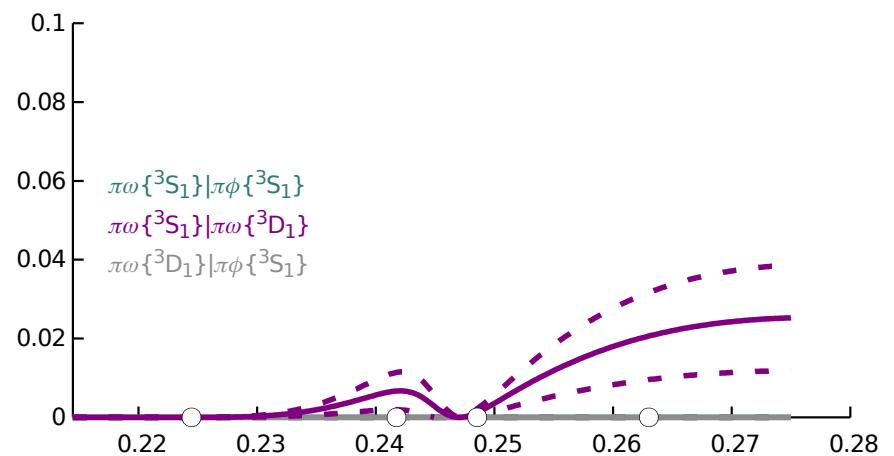
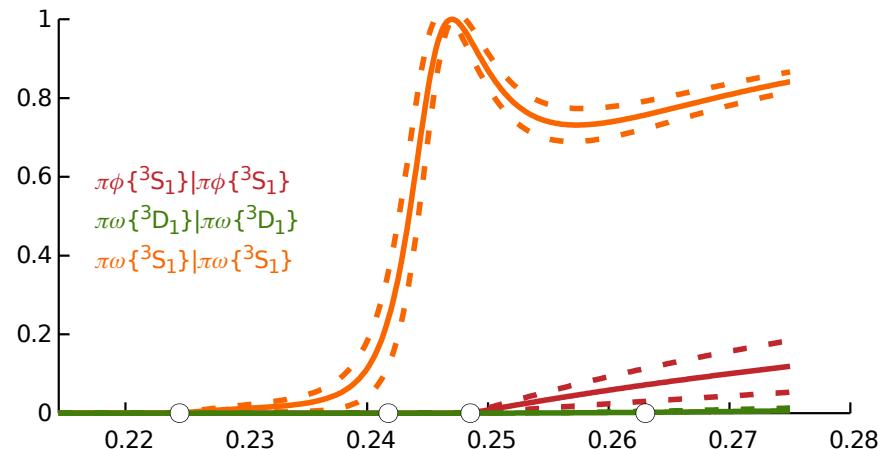
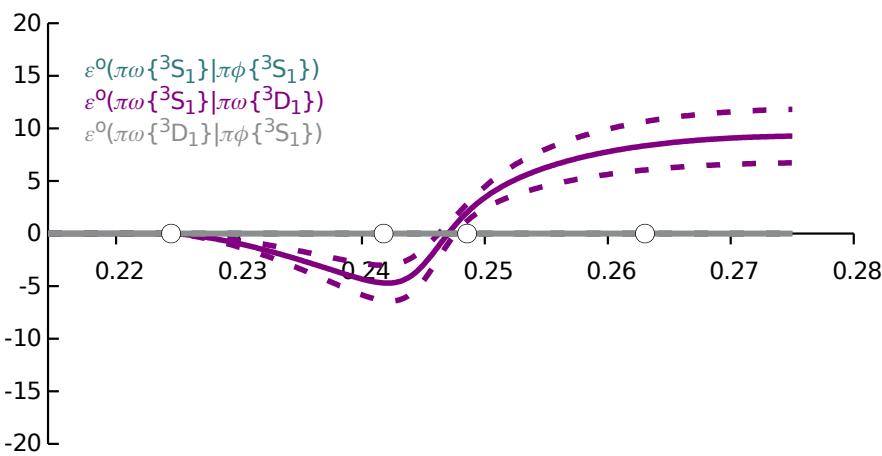
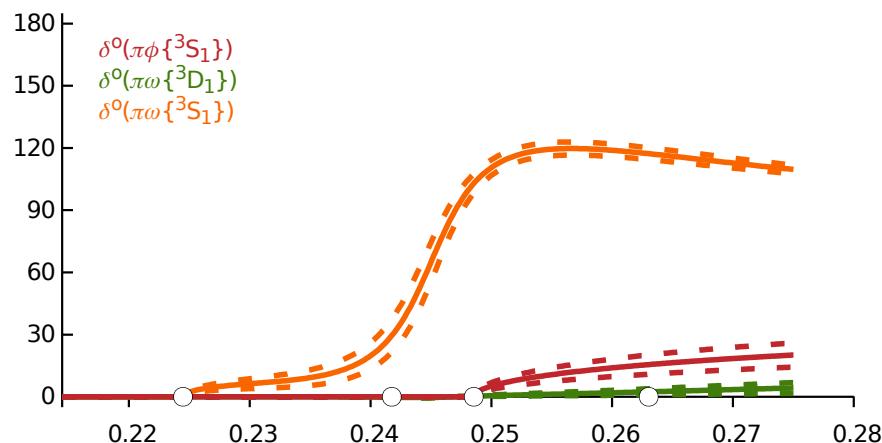
pi:omega | pi:phi |
=====
k_re= 0.0454 +/- 0.0013 | k_re= 0.0138 +/- 0.0013 |
k_im= -0.0089 +/- 0.0015 | k_im= -0.0257 +/- 0.0024 |
corr= [ 0.55] | corr= [-0.28] |

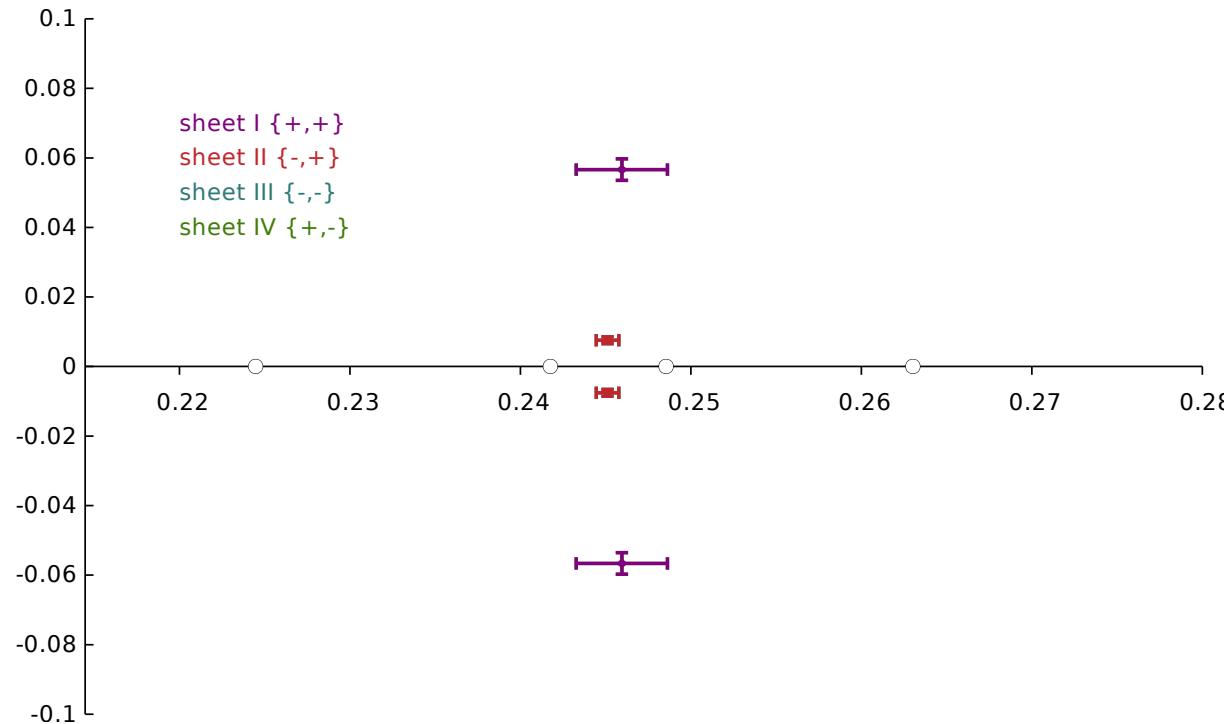
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
lg= 0.0930 +/- 0.0080 | lg= 0.0000 +/- 0.0000 | lg= 0.0083 +/- 0.0044 |
arg(g)/pi= -0.0790 +/- 0.0228 | arg(g)/pi= 0.5790 +/- 0.0228 | arg(g)/pi= -0.1430 +/- 0.0269 |

```

$g_{\text{re}} = 0.0902 \pm 0.0079$	$g_{\text{re}} = -0.0000 \pm 0.0000$	$g_{\text{re}} = 0.0074 \pm 0.0037$
$g_{\text{im}} = -0.0228 \pm 0.0068$	$g_{\text{im}} = 0.0000 \pm 0.0000$	$g_{\text{im}} = -0.0036 \pm 0.0024$
$\text{corr} = [-0.09]$	$\text{corr} = [-0.08]$	$\text{corr} = [-0.97]$
$\text{Br} = 0.8792 \pm 0.0349$	$\text{Br} = 0.0000 \pm 0.0000$	$\text{Br} = 0.0069 \pm 0.0067$

2.3 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1+G2_3s1.gorder0_3s1.irho





parameter values

```
minimised with chisq/nDoF = 33.27 / (36 - 7) = 1.15
```

JP1+_g_pi:omega/3^S_1_pole0		0.083497	+/-	0.0060229		1.00	-0.25	-0.19	-0.10	0.03	0.00	-0.05			
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_orde		-38.749	+/-	13.045		1.00	-0.21	0.06	0.39	-0.08	-0.15				
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde		-1.8786	+/-	0.42699		1.00	-0.44	-0.47	0.01	0.01					
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		182.15	+/-	8.4568		1.00	-0.47	0.03	-0.02						
JP1+_gamma_pi:omega/3^S_1 pi:phi/3^S_1_order0		-2883.3	+/-	170.62		1.00	0.04	-0.04							
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.93625	+/-	0.28474		1.00	-0.28								
JP1+_m_pole0		0.24702	+/-	0.00060479		1.00									

pole singularities

```
pi:omega[+] pi:phi[+] lower half-plane
sqrt(s)_pole = (0.24595 +/- 0.0026761)
+ (i/2)*(-0.056642 +/- 0.0031056) [-0.48]

s_pole = (0.05969 +/- 0.0012767)
+ i*(-0.013931 +/- 0.00084682) [-0.56]
```

pi:omega	pi:phi
k_re= -0.0531 +/- 0.0026	k_re= -0.0337 +/- 0.0026
k_im= 0.0295 +/- 0.0012	k_im= 0.0414 +/- 0.0014

```

corr= [-0.01] | corr= [ 0.45] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1215 +/- 0.0026 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0341 +/- 0.0088 |
arg(g)/pi= 0.1647 +/- 0.0050 |arg(g)/pi= 0.3353 +/- 0.0050 |arg(g)/pi= 0.2174 +/- 0.0252 |
-----
g_re= 0.1056 +/- 0.0018 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0265 +/- 0.0081 |
g_im= -0.0601 +/- 0.0027 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0215 +/- 0.0044 |
corr= [ 0.59] | corr= [-0.06] | corr= [ 0.87] |
-----
Br = 0.4056 +/- 0.0238 | Br = 0.0000 +/- 0.0000 | Br = 0.0320 +/- 0.0172 |

--  

pi:omega[+] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.24595 +/- 0.0026761)
+ (i/2)*(+0.056642 +/- 0.0031056) [ 0.48]

s_pole = (0.05969 +/- 0.0012767)
+ i*(+0.013931 +/- 0.00084682) [ 0.56]

pi:omega | pi:phi |
=====
k_re= 0.0531 +/- 0.0026 | k_re= 0.0337 +/- 0.0026 |
k_im= 0.0295 +/- 0.0012 | k_im= 0.0414 +/- 0.0014 |
corr= [ 0.01] | corr= [-0.45] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1215 +/- 0.0026 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0341 +/- 0.0088 |
arg(g)/pi= -0.1647 +/- 0.0050 |arg(g)/pi= 0.6647 +/- 0.0050 |arg(g)/pi= -0.2174 +/- 0.0252 |
-----
g_re= 0.1056 +/- 0.0018 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0265 +/- 0.0081 |
g_im= -0.0601 +/- 0.0027 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0215 +/- 0.0044 |
corr= [-0.59] | corr= [ 0.06] | corr= [-0.87] |
-----
Br = 0.4056 +/- 0.0238 | Br = 0.0000 +/- 0.0000 | Br = 0.0320 +/- 0.0172 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24595 +/- 0.0026761)
+ (i/2)*(+0.056642 +/- 0.0031056) [ 0.48]

s_pole = (0.05969 +/- 0.0012767)
+ i*(+0.013931 +/- 0.00084682) [ 0.56]

pi:omega | pi:phi |
=====
k_re= 0.0531 +/- 0.0026 | k_re= -0.0337 +/- 0.0026 |
k_im= 0.0295 +/- 0.0012 | k_im= -0.0414 +/- 0.0014 |
corr= [ 0.01] | corr= [-0.45] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1215 +/- 0.0026 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0341 +/- 0.0088 |
arg(g)/pi= -0.1647 +/- 0.0050 |arg(g)/pi= 0.6647 +/- 0.0050 |arg(g)/pi= -0.2174 +/- 0.0252 |
-----
g_re= 0.1056 +/- 0.0018 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0265 +/- 0.0081 |
g_im= -0.0601 +/- 0.0027 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0215 +/- 0.0044 |
corr= [-0.59] | corr= [ 0.06] | corr= [-0.87] |

```

2 Unphysical Parameterizations

```

-----+-----+-----+
Br = 0.4056 +/- 0.0238 | Br = 0.0000 +/- 0.0000 | Br = 0.0320 +/- 0.0172 |
-----+-----+-----+
-- pi:omega[+] pi:phi[-] lower half-plane
sqrt(s)_pole = (0.24595 +/- 0.0026761)
+ (i/2)*(-0.056642 +/- 0.0031056) [-0.48]
s_pole = (0.05969 +/- 0.0012767)
+ i*(-0.013931 +/- 0.00084682) [-0.56]
pi:omega | pi:phi |
=====+=====+=====
k_re= -0.0531 +/- 0.0026 | k_re= 0.0337 +/- 0.0026 |
k_im= 0.0295 +/- 0.0012 | k_im= -0.0414 +/- 0.0014 |
corr= [-0.01] | corr= [ 0.45] |
-----+-----+-----+
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====+=====+=====
|g|= 0.1215 +/- 0.0026 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0341 +/- 0.0088 |
arg(g)/pi= 0.1647 +/- 0.0050 | arg(g)/pi= 0.3353 +/- 0.0050 | arg(g)/pi= 0.2174 +/- 0.0252 |
-----+-----+-----+
g_re= 0.1056 +/- 0.0018 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0265 +/- 0.0081 |
g_im= 0.0601 +/- 0.0027 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0215 +/- 0.0044 |
corr= [ 0.59] | corr= [-0.06] | corr= [ 0.87] |
-----+-----+-----+
Br = 0.4056 +/- 0.0238 | Br = 0.0000 +/- 0.0000 | Br = 0.0320 +/- 0.0172 |
-----+-----+-----+
-- pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24511 +/- 0.00066447)
+ (i/2)*(+0.0075743 +/- 0.00098795) [-0.37]
s_pole = (0.060064 +/- 0.00032714)
+ i*(+0.0018565 +/- 0.00024033) [-0.36]
pi:omega | pi:phi |
=====+=====+=====
k_re= -0.0462 +/- 0.0008 | k_re= 0.0089 +/- 0.0009 |
k_im= -0.0045 +/- 0.0006 | k_im= 0.0206 +/- 0.0015 |
corr= [-0.40] | corr= [ 0.00] |
-----+-----+-----+
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====+=====+=====
|g|= 0.0631 +/- 0.0039 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0026 |
arg(g)/pi= 0.1203 +/- 0.0200 | arg(g)/pi= 0.3797 +/- 0.0200 | arg(g)/pi= 0.7080 +/- 0.0191 |
-----+-----+-----+
g_re= 0.0586 +/- 0.0044 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0049 +/- 0.0018 |
g_im= 0.0233 +/- 0.0033 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0064 +/- 0.0019 |
corr= [-0.37] | corr= [ 0.33] | corr= [-0.95] |
-----+-----+-----+
Br = 0.8064 +/- 0.0169 | Br = 0.0000 +/- 0.0000 | Br = 0.0130 +/- 0.0085 |
-----+-----+-----+
-- pi:omega[-] pi:phi[+] lower half-plane
sqrt(s)_pole = (0.24511 +/- 0.00066447)
+ (i/2)*(-0.0075743 +/- 0.00098795) [ 0.37]
s_pole = (0.060064 +/- 0.00032714)
+ i*(-0.0018565 +/- 0.00024033) [ 0.36]
```

```

pi:omega | pi:phi |
=====
k_re= 0.0462 +/- 0.0008 | k_re= -0.0089 +/- 0.0009 |
k_im= -0.0045 +/- 0.0006 | k_im= 0.0206 +/- 0.0015 |
corr= [ 0.40] | corr= [-0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0631 +/- 0.0039 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0026 |
arg(g)/pi= -0.1203 +/- 0.0200 | arg(g)/pi= 0.6203 +/- 0.0200 | arg(g)/pi= -0.7080 +/- 0.0191 |
-----|-----|-----|
g_re= 0.0586 +/- 0.0044 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0049 +/- 0.0018 |
g_im= -0.0233 +/- 0.0033 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0064 +/- 0.0019 |
corr= [ 0.37] | corr= [-0.33] | corr= [ 0.95] |
-----|-----|-----|
Br = 0.8064 +/- 0.0169 | Br = 0.0000 +/- 0.0000 | Br = 0.0130 +/- 0.0085 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24511 +/- 0.00066447)
+ (i/2)*(+0.0075743 +/- 0.00098795) [-0.37]

s_pole = (0.060064 +/- 0.00032714)
+ i*(+0.0018565 +/- 0.00024033) [-0.36]

pi:omega | pi:phi |
=====
k_re= -0.0462 +/- 0.0008 | k_re= -0.0089 +/- 0.0009 |
k_im= -0.0045 +/- 0.0006 | k_im= -0.0206 +/- 0.0015 |
corr= [-0.40] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0631 +/- 0.0039 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0026 |
arg(g)/pi= 0.1203 +/- 0.0200 | arg(g)/pi= 0.3797 +/- 0.0200 | arg(g)/pi= 0.7080 +/- 0.0191 |
-----|-----|-----|
g_re= 0.0586 +/- 0.0044 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0049 +/- 0.0018 |
g_im= 0.0233 +/- 0.0033 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0064 +/- 0.0019 |
corr= [-0.37] | corr= [ 0.33] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8064 +/- 0.0169 | Br = 0.0000 +/- 0.0000 | Br = 0.0130 +/- 0.0085 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24511 +/- 0.00066447)
+ (i/2)*(-0.0075743 +/- 0.00098795) [ 0.37]

s_pole = (0.060064 +/- 0.00032714)
+ i*(-0.0018565 +/- 0.00024033) [ 0.36]

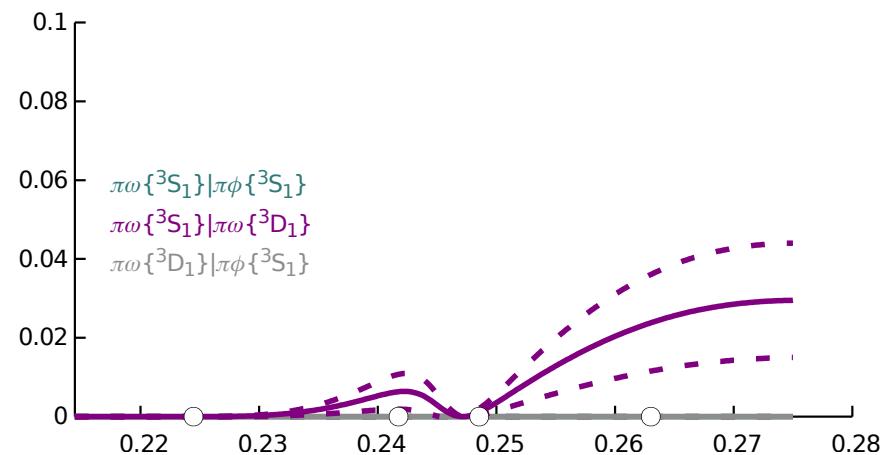
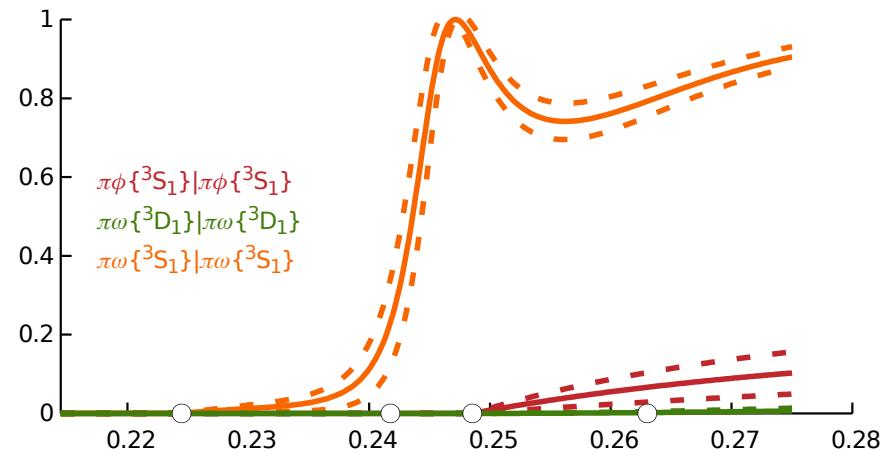
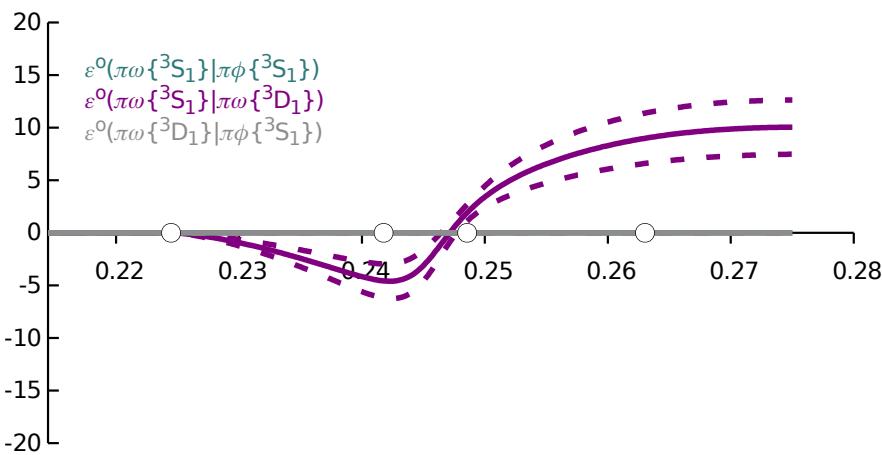
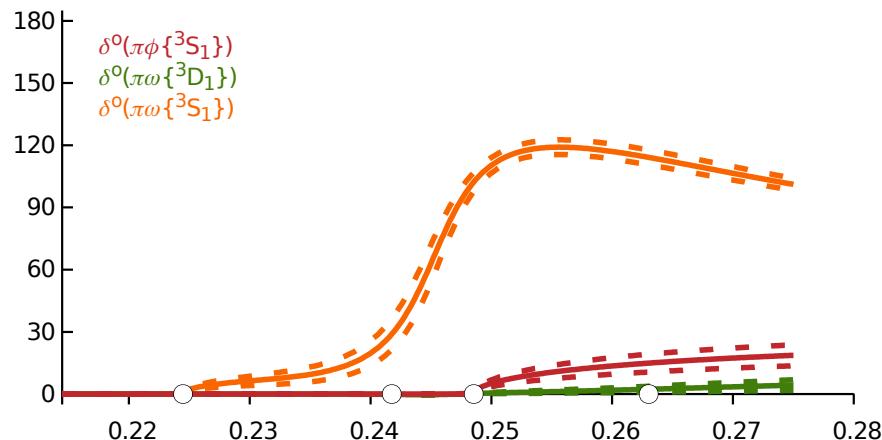
pi:omega | pi:phi |
=====
k_re= 0.0462 +/- 0.0008 | k_re= 0.0089 +/- 0.0009 |
k_im= -0.0045 +/- 0.0006 | k_im= -0.0206 +/- 0.0015 |
corr= [ 0.40] | corr= [-0.00] |

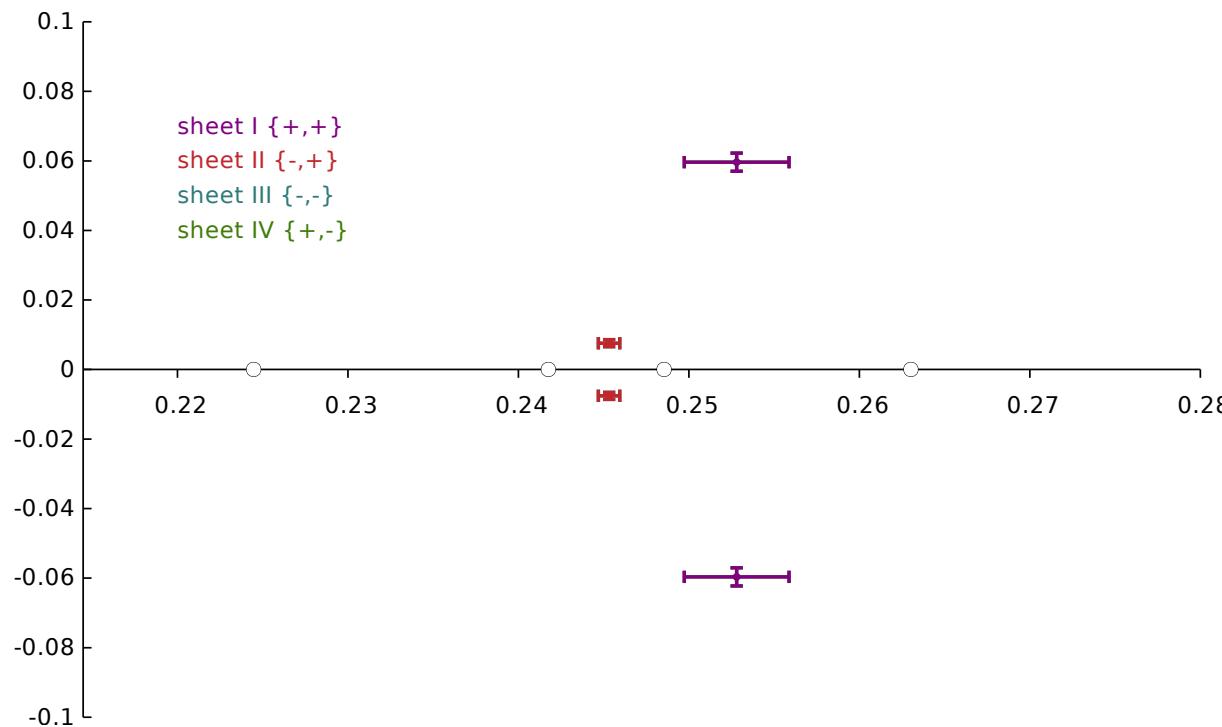
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0631 +/- 0.0039 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0026 |

```

$\arg(g)/\pi = -0.1203 \pm 0.0200$	$\arg(g)/\pi = 0.6203 \pm 0.0200$	$\arg(g)/\pi = -0.7080 \pm 0.0191$
$g_{re} = 0.0586 \pm 0.0044$	$g_{re} = -0.0000 \pm 0.0000$	$g_{re} = -0.0049 \pm 0.0018$
$g_{im} = -0.0233 \pm 0.0033$	$g_{im} = 0.0000 \pm 0.0000$	$g_{im} = -0.0064 \pm 0.0019$
corr = [0.37]	corr = [-0.33]	corr = [0.95]
$Br = 0.8064 \pm 0.0169$	$Br = 0.0000 \pm 0.0000$	$Br = 0.0130 \pm 0.0085$

2.4 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1+G2_3s1.gorder0_3s1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 33.28 / (36 - 7) = 1.15
```

JP1+_g_pi:omega/3^S_1_pole0		0.080358 +/- 0.0054111		1.00	-0.24	-0.22	-0.07	0.09	0.00	-0.04
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_orde		-36.122 +/- 12.164		1.00	-0.29	0.05	0.44	-0.09	-0.14	
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde		-2.3050 +/- 0.4453		1.00	-0.47	-0.50	-0.00	0.03		
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		181.29 +/- 8.5216		1.00	-0.44	0.02	-0.02			
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0		-2696.5 +/- 171.85		1.00	0.04	-0.05				
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.87190 +/- 0.2461		1.00	-0.17					
JP1+_m_pole0		0.24714 +/- 0.00056675		1.00						

pole singularities

```
pi:omega[+] pi:phi[+] lower half-plane

sqrt(s)_pole = ( 0.2528 +/- 0.0030699)
               + (i/2)*(-0.059651 +/- 0.0026119) [-0.41]

s_pole = (0.063017 +/- 0.0015221)
         + i*(-0.01508 +/- 0.00075364) [-0.56]
```

pi:omega	pi:phi
k_re= -0.0595 +/- 0.0028	k_re= -0.0399 +/- 0.0029
k_im= 0.0289 +/- 0.0011	k_im= 0.0388 +/- 0.0015

2 Unphysical Parameterizations

```

corr= [ 0.20]          |      corr= [ 0.60]          |
pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1422 +/- 0.0022 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0377 +/- 0.0097 |
arg(g)/pi= 0.2315 +/- 0.0078 | arg(g)/pi= 0.2685 +/- 0.0078 | arg(g)/pi= 0.2829 +/- 0.0231 |
-----|-----|-----|
g_re= 0.1062 +/- 0.0019 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0238 +/- 0.0078 |
g_im= 0.0945 +/- 0.0036 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0293 +/- 0.0065 |
corr= [-0.44]           | corr= [-0.55]           | corr= [ 0.93]           |
-----|-----|-----|
Br = 0.5801 +/- 0.0298 | Br = 0.0000 +/- 0.0000 | Br = 0.0408 +/- 0.0215 |

--  

pi:omega[+] pi:phi[+] upper half-plane  

sqrt(s)_pole = ( 0.2528 +/- 0.0030699)  

+ (i/2)*(+0.059651 +/- 0.0026119) [ 0.41]

s_pole = (0.063017 +/- 0.0015221)  

+ i*(+0.01508 +/- 0.00075364) [ 0.56]

pi:omega |      pi:phi |  

=====|=====|
k_re= 0.0595 +/- 0.0028 | k_re= 0.0399 +/- 0.0029 |
k_im= 0.0289 +/- 0.0011 | k_im= 0.0388 +/- 0.0015 |
corr= [-0.20]           | corr= [-0.60]           |
-----|-----|-----|
pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1422 +/- 0.0022 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0377 +/- 0.0097 |
arg(g)/pi= -0.2315 +/- 0.0078 | arg(g)/pi= 0.7315 +/- 0.0078 | arg(g)/pi= -0.2829 +/- 0.0231 |
-----|-----|-----|
g_re= 0.1062 +/- 0.0019 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0238 +/- 0.0078 |
g_im= -0.0945 +/- 0.0036 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0293 +/- 0.0065 |
corr= [ 0.44]           | corr= [ 0.55]           | corr= [-0.93]           |
-----|-----|-----|
Br = 0.5801 +/- 0.0298 | Br = 0.0000 +/- 0.0000 | Br = 0.0408 +/- 0.0215 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = ( 0.2528 +/- 0.0030699)  

+ (i/2)*(+0.059651 +/- 0.0026119) [ 0.41]

s_pole = (0.063017 +/- 0.0015221)  

+ i*(+0.01508 +/- 0.00075364) [ 0.56]

pi:omega |      pi:phi |  

=====|=====|
k_re= 0.0595 +/- 0.0028 | k_re= -0.0399 +/- 0.0029 |
k_im= 0.0289 +/- 0.0011 | k_im= -0.0388 +/- 0.0015 |
corr= [-0.20]           | corr= [-0.60]           |
-----|-----|-----|
pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1422 +/- 0.0022 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0377 +/- 0.0097 |
arg(g)/pi= -0.2315 +/- 0.0078 | arg(g)/pi= 0.7315 +/- 0.0078 | arg(g)/pi= -0.2829 +/- 0.0231 |
-----|-----|-----|
g_re= 0.1062 +/- 0.0019 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0238 +/- 0.0078 |
g_im= -0.0945 +/- 0.0036 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0293 +/- 0.0065 |
corr= [ 0.44]           | corr= [ 0.55]           | corr= [-0.93]           |
-----|-----|-----|

```

2 Unphysical Parameterizations

```

-----|-----|-----|
Br = 0.5801 +/- 0.0298 | Br = 0.0000 +/- 0.0000 | Br = 0.0408 +/- 0.0215 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = ( 0.2528 +/- 0.0030699)  

+ (i/2)*(-0.059651 +/- 0.0026119) [-0.41]  

s_pole = (0.063017 +/- 0.0015221)  

+ i*(-0.01508 +/- 0.00075364) [-0.56]  

pi:omega | pi:phi |
=====|=====
k_re= -0.0595 +/- 0.0028 | k_re= 0.0399 +/- 0.0029 |
k_im= 0.0289 +/- 0.0011 | k_im= -0.0388 +/- 0.0015 |
corr= [ 0.20] | corr= [ 0.60] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1422 +/- 0.0022 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0377 +/- 0.0097 |
arg(g)/pi= 0.2315 +/- 0.0078 | arg(g)/pi= 0.2685 +/- 0.0078 | arg(g)/pi= 0.2829 +/- 0.0231 |
g_re= 0.1062 +/- 0.0019 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0238 +/- 0.0078 |
g_im= 0.0945 +/- 0.0036 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0293 +/- 0.0065 |
corr= [-0.44] | corr= [-0.55] | corr= [ 0.93] |
-----|-----|-----|
Br = 0.5801 +/- 0.0298 | Br = 0.0000 +/- 0.0000 | Br = 0.0408 +/- 0.0215 |

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.24532 +/- 0.00062782)  

+ (i/2)*(+0.0075705 +/- 0.00099665) [-0.34]  

s_pole = (0.060169 +/- 0.00030934)  

+ i*(+0.0018572 +/- 0.00024292) [-0.33]  

pi:omega | pi:phi |
=====|=====
k_re= -0.0465 +/- 0.0007 | k_re= 0.0091 +/- 0.0010 |
k_im= -0.0045 +/- 0.0006 | k_im= 0.0202 +/- 0.0015 |
corr= [-0.37] | corr= [ 0.03] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0630 +/- 0.0039 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0079 +/- 0.0025 |
arg(g)/pi= 0.1141 +/- 0.0194 | arg(g)/pi= 0.3859 +/- 0.0194 | arg(g)/pi= 0.7059 +/- 0.0191 |
g_re= 0.0590 +/- 0.0045 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0048 +/- 0.0018 |
g_im= 0.0221 +/- 0.0031 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0063 +/- 0.0019 |
corr= [-0.40] | corr= [ 0.43] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8066 +/- 0.0168 | Br = 0.0000 +/- 0.0000 | Br = 0.0127 +/- 0.0082 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24532 +/- 0.00062782)  

+ (i/2)*(-0.0075705 +/- 0.00099665) [ 0.34]  

s_pole = (0.060169 +/- 0.00030934)  

+ i*(-0.0018572 +/- 0.00024292) [ 0.33]
```

```

pi:omega | pi:phi |
=====
k_re= 0.0465 +/- 0.0007 | k_re= -0.0091 +/- 0.0010 |
k_im= -0.0045 +/- 0.0006 | k_im= 0.0202 +/- 0.0015 |
corr= [ 0.37] | corr= [-0.03] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0630 +/- 0.0039 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0079 +/- 0.0025 |
arg(g)/pi= -0.1141 +/- 0.0194 | arg(g)/pi= 0.6141 +/- 0.0194 | arg(g)/pi= -0.7059 +/- 0.0191 |
-----|-----|-----|
g_re= 0.0590 +/- 0.0045 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0048 +/- 0.0018 |
g_im= -0.0221 +/- 0.0031 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0063 +/- 0.0019 |
corr= [ 0.40] | corr= [-0.43] | corr= [ 0.95] |
-----|-----|-----|
Br = 0.8066 +/- 0.0168 | Br = 0.0000 +/- 0.0000 | Br = 0.0127 +/- 0.0082 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24532 +/- 0.00062782)
+ (i/2)*(+0.0075705 +/- 0.00099665) [-0.34]

s_pole = (0.060169 +/- 0.00030934)
+ i*(+0.0018572 +/- 0.00024292) [-0.33]

pi:omega | pi:phi |
=====
k_re= -0.0465 +/- 0.0007 | k_re= -0.0091 +/- 0.0010 |
k_im= -0.0045 +/- 0.0006 | k_im= -0.0202 +/- 0.0015 |
corr= [-0.37] | corr= [ 0.03] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0630 +/- 0.0039 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0079 +/- 0.0025 |
arg(g)/pi= 0.1141 +/- 0.0194 | arg(g)/pi= 0.3859 +/- 0.0194 | arg(g)/pi= 0.7059 +/- 0.0191 |
-----|-----|-----|
g_re= 0.0590 +/- 0.0045 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0048 +/- 0.0018 |
g_im= 0.0221 +/- 0.0031 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0063 +/- 0.0019 |
corr= [-0.40] | corr= [ 0.43] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8066 +/- 0.0168 | Br = 0.0000 +/- 0.0000 | Br = 0.0127 +/- 0.0082 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24532 +/- 0.00062782)
+ (i/2)*(-0.0075705 +/- 0.00099665) [ 0.34]

s_pole = (0.060169 +/- 0.00030934)
+ i*(-0.0018572 +/- 0.00024292) [ 0.33]

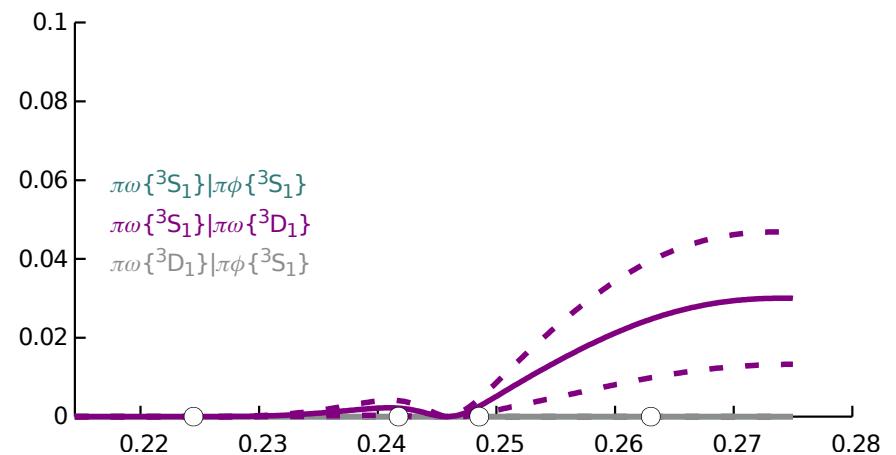
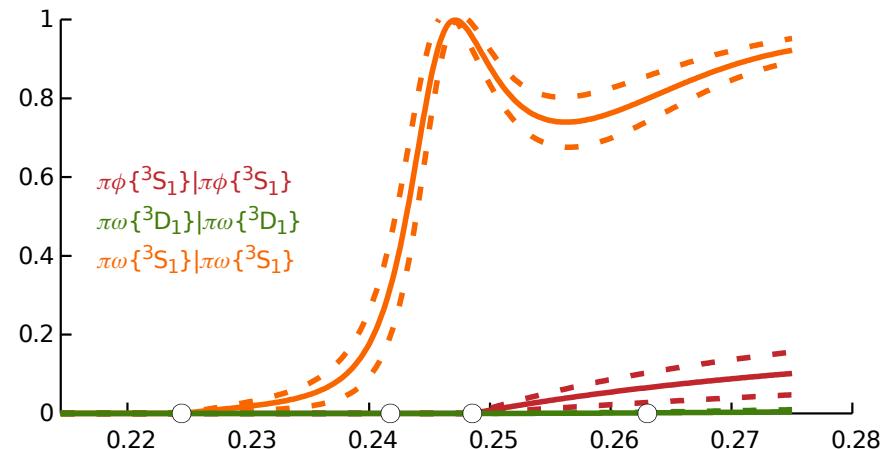
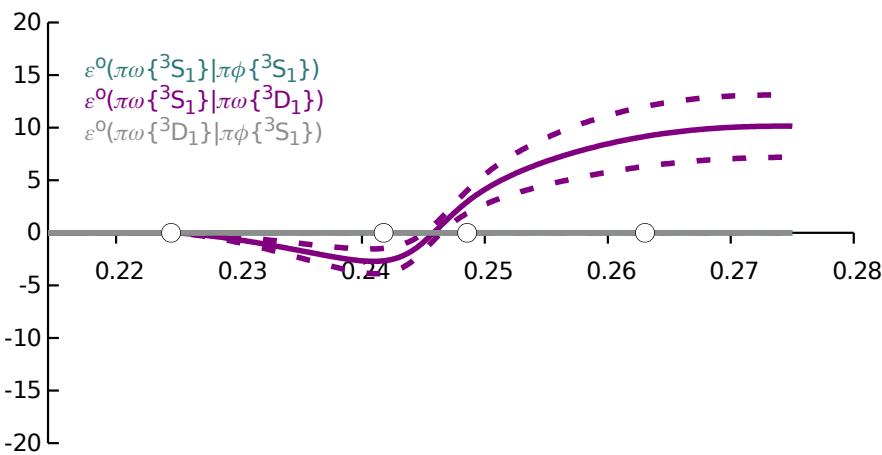
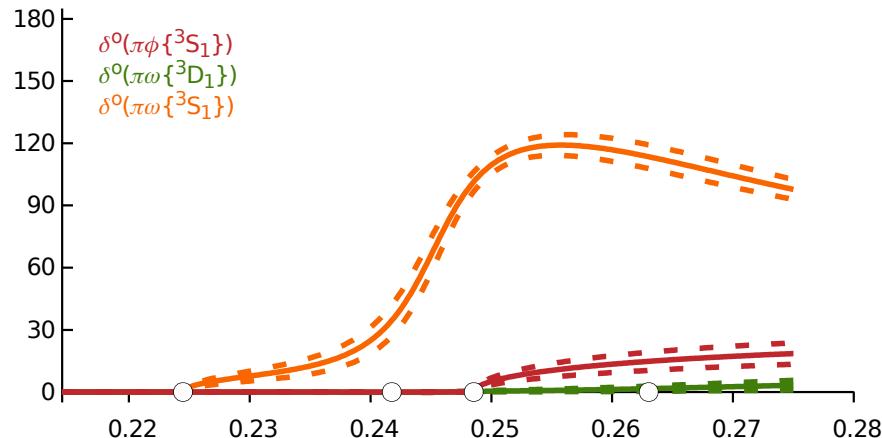
pi:omega | pi:phi |
=====
k_re= 0.0465 +/- 0.0007 | k_re= 0.0091 +/- 0.0010 |
k_im= -0.0045 +/- 0.0006 | k_im= -0.0202 +/- 0.0015 |
corr= [ 0.37] | corr= [-0.03] |

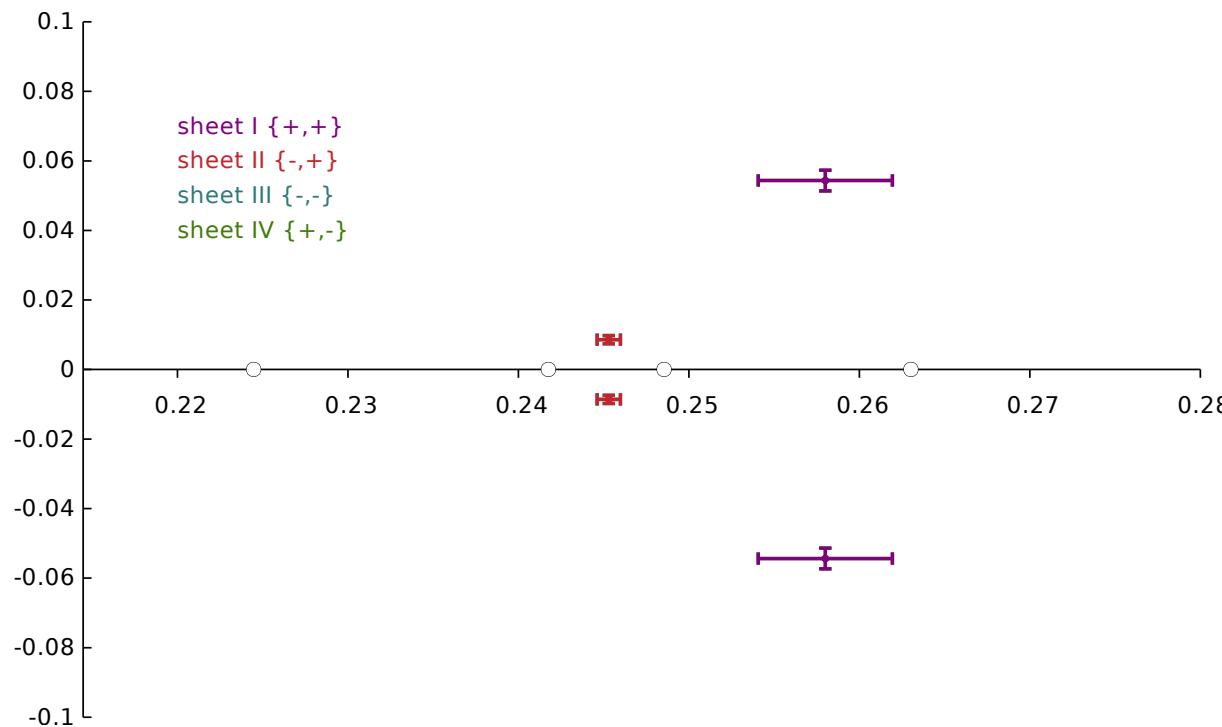
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0630 +/- 0.0039 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0079 +/- 0.0025 |

```

$\arg(g)/\pi = -0.1141 \pm 0.0194$	$\arg(g)/\pi = 0.6141 \pm 0.0194$	$\arg(g)/\pi = -0.7059 \pm 0.0191$
$g_{\text{re}} = 0.0590 \pm 0.0045$	$g_{\text{re}} = -0.0000 \pm 0.0000$	$g_{\text{re}} = -0.0048 \pm 0.0018$
$g_{\text{im}} = -0.0221 \pm 0.0031$	$g_{\text{im}} = 0.0000 \pm 0.0000$	$g_{\text{im}} = -0.0063 \pm 0.0019$
$\text{corr} = [0.40]$	$\text{corr} = [-0.43]$	$\text{corr} = [0.95]$
$\text{Br} = 0.8066 \pm 0.0168$	$\text{Br} = 0.0000 \pm 0.0000$	$\text{Br} = 0.0127 \pm 0.0082$

2.5 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1+G2_3s1.gorder0_3s1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 33.45 / (36 - 7) = 1.15
```

JP1+_g_pi:omega/3^S_1_pole0	0.076185 +/- 0.0052365	1.00	-0.05	-0.39	-0.04	0.39	0.13	-0.46	
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_orde	-27.465 +/- 10.958	1.00	-0.29	0.02	0.45	-0.03	-0.08		
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde	-2.8793 +/- 0.4829	1.00	-0.46	-0.46	-0.01	0.13			
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	179.07 +/- 9.5617	1.00	-0.51	0.02	0.01				
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-2387.3 +/- 180.34	1.00	0.05	-0.15					
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.93893 +/- 0.29637	1.00	-0.29						
JP1+_m_pole0	0.24583 +/- 0.00061697	1.00							

pole singularities

```
pi:omega[+] pi:phi[+] lower half-plane
sqrt(s)_pole = ( 0.258 +/- 0.0039337)
+ (i/2)*(-0.054362 +/- 0.0029824) [-0.39]
s_pole = (0.065827 +/- 0.0019996)
+ i*(-0.014026 +/- 0.00087529) [-0.56]
```

pi:omega	pi:phi
k_re= -0.0633 +/- 0.0035	k_re= -0.0431 +/- 0.0038
k_im= 0.0254 +/- 0.0012	k_im= 0.0340 +/- 0.0018

```

corr= [ 0.19] | corr= [ 0.61] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1332 +/- 0.0029 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0338 +/- 0.0101 |
arg(g)/pi= 0.2775 +/- 0.0082 |arg(g)/pi= 0.2225 +/- 0.0082 |arg(g)/pi= 0.3290 +/- 0.0254 |
-----|-----|-----|
g_re= 0.0857 +/- 0.0018 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0173 +/- 0.0070 |
g_im= -0.1020 +/- 0.0041 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0290 +/- 0.0078 |
corr= [-0.40] | corr= [-0.06] | corr= [ 0.93] |
-----|-----|-----|
Br = 0.5882 +/- 0.0320 | Br = 0.0000 +/- 0.0000 | Br = 0.0378 +/- 0.0230 |

--  

pi:omega[+] pi:phi[+] upper half-plane  

sqrt(s)_pole = ( 0.258 +/- 0.0039337)  

+ (i/2)*(+0.054362 +/- 0.0029824) [ 0.39]

s_pole = (0.065827 +/- 0.0019996)  

+ i*(+0.014026 +/- 0.00087529) [ 0.56]

pi:omega | pi:phi |  

=====|=====|
k_re= 0.0633 +/- 0.0035 | k_re= 0.0431 +/- 0.0038 |
k_im= 0.0254 +/- 0.0012 | k_im= 0.0340 +/- 0.0018 |
corr= [-0.19] | corr= [-0.61] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1332 +/- 0.0029 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0338 +/- 0.0101 |
arg(g)/pi= -0.2775 +/- 0.0082 |arg(g)/pi= 0.7775 +/- 0.0082 |arg(g)/pi= -0.3290 +/- 0.0254 |
-----|-----|-----|
g_re= 0.0857 +/- 0.0018 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0173 +/- 0.0070 |
g_im= -0.1020 +/- 0.0041 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0290 +/- 0.0078 |
corr= [ 0.40] | corr= [ 0.06] | corr= [-0.93] |
-----|-----|-----|
Br = 0.5882 +/- 0.0320 | Br = 0.0000 +/- 0.0000 | Br = 0.0378 +/- 0.0230 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = ( 0.258 +/- 0.0039337)  

+ (i/2)*(+0.054362 +/- 0.0029824) [ 0.39]

s_pole = (0.065827 +/- 0.0019996)  

+ i*(+0.014026 +/- 0.00087529) [ 0.56]

pi:omega | pi:phi |  

=====|=====|
k_re= 0.0633 +/- 0.0035 | k_re= -0.0431 +/- 0.0038 |
k_im= 0.0254 +/- 0.0012 | k_im= -0.0340 +/- 0.0018 |
corr= [-0.19] | corr= [-0.61] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1332 +/- 0.0029 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0338 +/- 0.0101 |
arg(g)/pi= -0.2775 +/- 0.0082 |arg(g)/pi= 0.7775 +/- 0.0082 |arg(g)/pi= -0.3290 +/- 0.0254 |
-----|-----|-----|
g_re= 0.0857 +/- 0.0018 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0173 +/- 0.0070 |
g_im= -0.1020 +/- 0.0041 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0290 +/- 0.0078 |
corr= [ 0.40] | corr= [ 0.06] | corr= [-0.93] |
-----|-----|-----|
Br = 0.5882 +/- 0.0320 | Br = 0.0000 +/- 0.0000 | Br = 0.0378 +/- 0.0230 |

```

2 Unphysical Parameterizations

```

-----|-----|-----|
Br = 0.5882 +/- 0.0320 | Br = 0.0000 +/- 0.0000 | Br = 0.0378 +/- 0.0230 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = ( 0.258 +/- 0.0039337)  

+ (i/2)*(-0.054362 +/- 0.0029824) [-0.39]  

s_pole = (0.065827 +/- 0.0019996)  

+ i*(-0.014026 +/- 0.00087529) [-0.56]

pi:omega | pi:phi |
=====|=====
k_re= -0.0633 +/- 0.0035 | k_re= 0.0431 +/- 0.0038 |
k_im= 0.0254 +/- 0.0012 | k_im= -0.0340 +/- 0.0018 |
corr= [ 0.19] | corr= [ 0.61] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1332 +/- 0.0029 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0338 +/- 0.0101 |
arg(g)/pi= 0.2775 +/- 0.0082 | arg(g)/pi= 0.2225 +/- 0.0082 | arg(g)/pi= 0.3290 +/- 0.0254 |
-----|-----|-----|
g_re= 0.0857 +/- 0.0018 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0173 +/- 0.0070 |
g_im= 0.1020 +/- 0.0041 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0290 +/- 0.0078 |
corr= [-0.40] | corr= [-0.06] | corr= [ 0.93] |
-----|-----|-----|
Br = 0.5882 +/- 0.0320 | Br = 0.0000 +/- 0.0000 | Br = 0.0378 +/- 0.0230 |

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = ( 0.2453 +/- 0.00068214)  

+ (i/2)*(+0.0085951 +/- 0.0011888) [-0.27]  

s_pole = (0.060152 +/- 0.00033608)  

+ i*(+0.0021084 +/- 0.00029008) [-0.27]

pi:omega | pi:phi |
=====|=====
k_re= -0.0465 +/- 0.0008 | k_re= 0.0101 +/- 0.0011 |
k_im= -0.0051 +/- 0.0007 | k_im= 0.0207 +/- 0.0015 |
corr= [-0.29] | corr= [ 0.04] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0669 +/- 0.0047 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0065 +/- 0.0024 |
arg(g)/pi= 0.0984 +/- 0.0240 | arg(g)/pi= 0.4016 +/- 0.0240 | arg(g)/pi= 0.6200 +/- 0.0231 |
-----|-----|-----|
g_re= 0.0637 +/- 0.0055 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0024 +/- 0.0012 |
g_im= 0.0203 +/- 0.0041 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0060 +/- 0.0021 |
corr= [-0.52] | corr= [ 0.46] | corr= [-0.94] |
-----|-----|-----|
Br = 0.8005 +/- 0.0212 | Br = 0.0000 +/- 0.0000 | Br = 0.0075 +/- 0.0056 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = ( 0.2453 +/- 0.00068214)  

+ (i/2)*(-0.0085951 +/- 0.0011888) [ 0.27]  

s_pole = (0.060152 +/- 0.00033608)  

+ i*(-0.0021084 +/- 0.00029008) [ 0.27]

```

```

pi:omega | pi:phi |
=====
k_re= 0.0465 +/- 0.0008 | k_re= -0.0101 +/- 0.0011 |
k_im= -0.0051 +/- 0.0007 | k_im= 0.0207 +/- 0.0015 |
corr= [ 0.29] | corr= [-0.04] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0669 +/- 0.0047 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0065 +/- 0.0024 |
arg(g)/pi= -0.0984 +/- 0.0240 | arg(g)/pi= 0.5984 +/- 0.0240 | arg(g)/pi= -0.6200 +/- 0.0231 |
-----|-----|-----|
g_re= 0.0637 +/- 0.0055 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0024 +/- 0.0012 |
g_im= -0.0203 +/- 0.0041 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0060 +/- 0.0021 |
corr= [ 0.52] | corr= [-0.46] | corr= [ 0.94] |
-----|-----|-----|
Br = 0.8005 +/- 0.0212 | Br = 0.0000 +/- 0.0000 | Br = 0.0075 +/- 0.0056 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = ( 0.2453 +/- 0.00068214 )
+ (i/2)*(+0.0085951 +/- 0.0011888) [-0.27]

s_pole = (0.060152 +/- 0.00033608)
+ i*(+0.0021084 +/- 0.00029008) [-0.27]

pi:omega | pi:phi |
=====
k_re= -0.0465 +/- 0.0008 | k_re= -0.0101 +/- 0.0011 |
k_im= -0.0051 +/- 0.0007 | k_im= -0.0207 +/- 0.0015 |
corr= [-0.29] | corr= [ 0.04] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0669 +/- 0.0047 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0065 +/- 0.0024 |
arg(g)/pi= 0.0984 +/- 0.0240 | arg(g)/pi= 0.4016 +/- 0.0240 | arg(g)/pi= 0.6200 +/- 0.0231 |
-----|-----|-----|
g_re= 0.0637 +/- 0.0055 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0024 +/- 0.0012 |
g_im= 0.0203 +/- 0.0041 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0060 +/- 0.0021 |
corr= [-0.52] | corr= [ 0.46] | corr= [-0.94] |
-----|-----|-----|
Br = 0.8005 +/- 0.0212 | Br = 0.0000 +/- 0.0000 | Br = 0.0075 +/- 0.0056 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = ( 0.2453 +/- 0.00068214 )
+ (i/2)*(-0.0085951 +/- 0.0011888) [ 0.27]

s_pole = (0.060152 +/- 0.00033608)
+ i*(-0.0021084 +/- 0.00029008) [ 0.27]

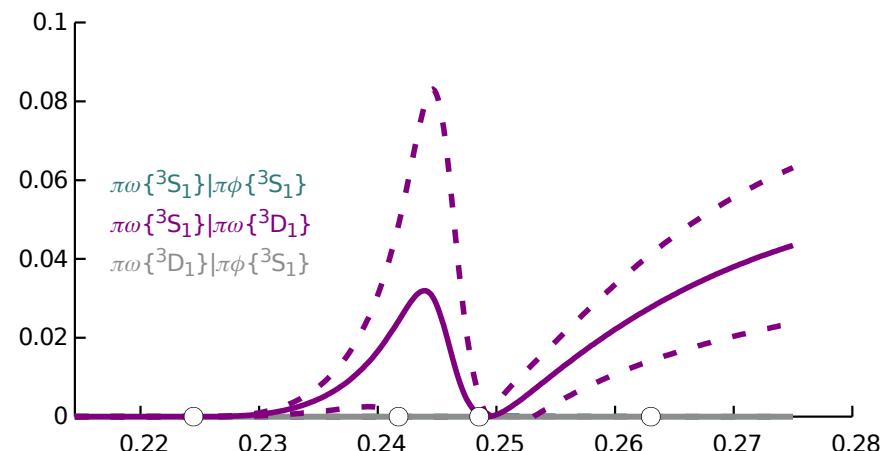
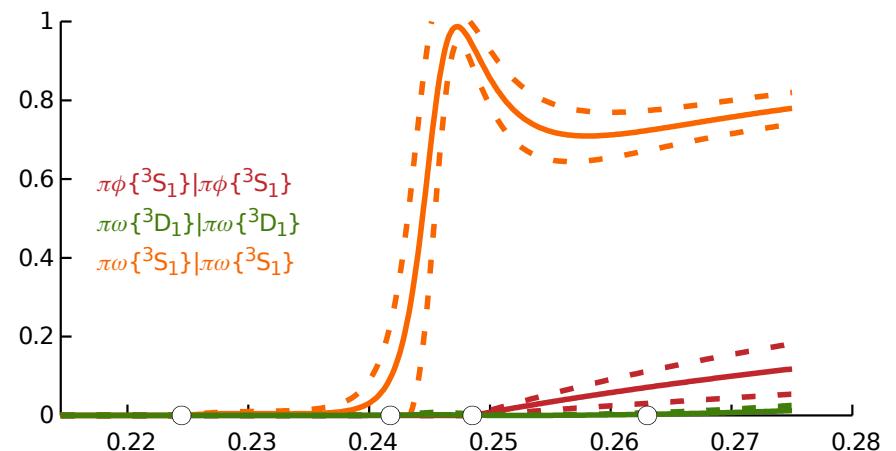
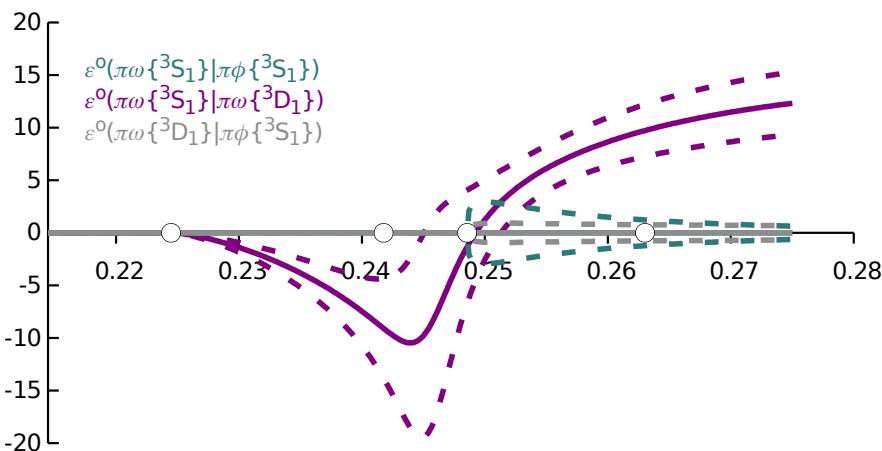
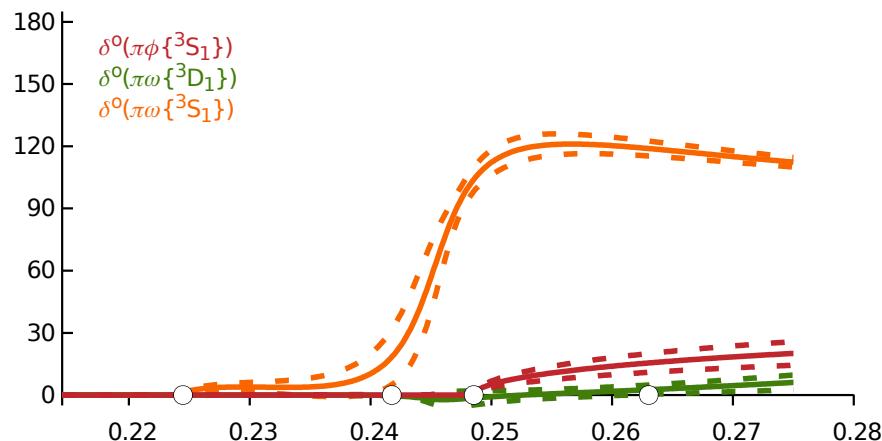
pi:omega | pi:phi |
=====
k_re= 0.0465 +/- 0.0008 | k_re= 0.0101 +/- 0.0011 |
k_im= -0.0051 +/- 0.0007 | k_im= -0.0207 +/- 0.0015 |
corr= [ 0.29] | corr= [-0.04] |

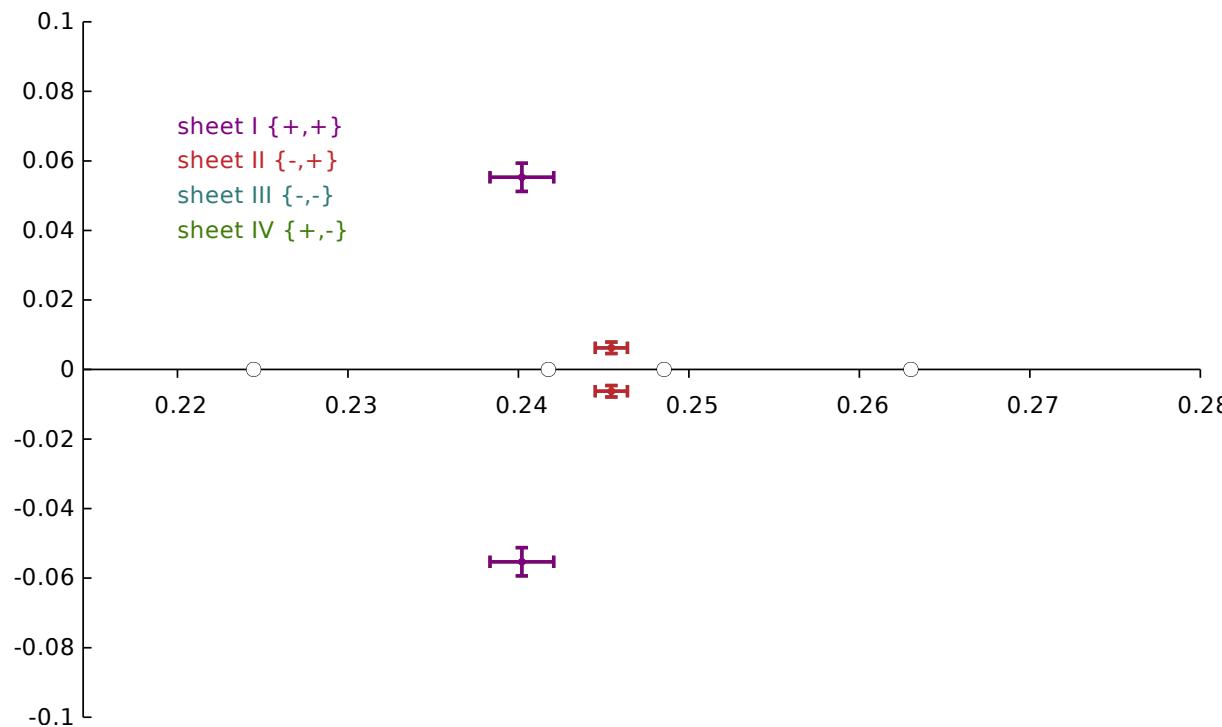
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0669 +/- 0.0047 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0065 +/- 0.0024 |

```

$\arg(g)/\pi = -0.0984 \pm 0.0240$	$\arg(g)/\pi = 0.5984 \pm 0.0240$	$\arg(g)/\pi = -0.6200 \pm 0.0231$
$g_{\text{re}} = 0.0637 \pm 0.0055$	$g_{\text{re}} = -0.0000 \pm 0.0000$	$g_{\text{re}} = -0.0024 \pm 0.0012$
$g_{\text{im}} = -0.0203 \pm 0.0041$	$g_{\text{im}} = 0.0000 \pm 0.0000$	$g_{\text{im}} = -0.0060 \pm 0.0021$
$\text{corr} = [0.52]$	$\text{corr} = [-0.46]$	$\text{corr} = [0.94]$
$\text{Br} = 0.8005 \pm 0.0212$	$\text{Br} = 0.0000 \pm 0.0000$	$\text{Br} = 0.0075 \pm 0.0056$

2.6 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3d1_3S1.irho





parameter values

minimised with chisq/nDoF = 32.91 / (36 - 8) = 1.18

JP1+_g_pi:omega/3^D_1_pole0	-0.68305 +/- 0.96363	1.00 0.91 -0.03 0.38 -0.23 -0.02 -0.07 -0.11
JP1+_g_pi:omega/3^S_1_pole0	0.076070 +/- 0.014463	1.00 -0.03 0.24 -0.27 -0.04 -0.06 -0.15
JP1+_g_pi:phi/3^S_1_pole0	-1.5893e-06 +/- 0.012991	1.00 0.00 0.01 0.00 -0.01 -0.06
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order	-49.282 +/- 13.536	1.00 -0.24 0.30 -0.12 -0.16
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	8.0064 +/- 0.5651	1.00 -0.91 0.02 0.04
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-158.42 +/- 10.981	1.00 0.04 -0.02
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.93319 +/- 0.28313	1.00 -0.25
JP1+_m_pole0	0.24712 +/- 0.00054717	1.00

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = ( 0.2402 +/- 0.0018646)
  + (i/2)*(+0.055298 +/- 0.0040575) [ 0.05]
s_pole = (0.056932 +/- 0.00089714)
  + i*(+0.013283 +/- 0.0009852) [ 0.03]
```

```
pi:omega | pi:phi |
=====
k_re= 0.0479 +/- 0.0018 | k_re= 0.0291 +/- 0.0018 |
```

2 Unphysical Parameterizations

```

k_im= 0.0309 +/- 0.0019 |      k_im= 0.0444 +/- 0.0018 |
corr= [ 0.10]           |      corr= [ 0.09]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1272 +/- 0.0037 |      |g|= 0.0001 +/- 0.0019 |      |g|= 0.0394 +/- 0.0083 |
arg(g)/pi= -0.1319 +/- 0.0039 |arg(g)/pi= 0.4997 +/- 11.1461 |arg(g)/pi= -0.0993 +/- 0.0151 |
-----|-----|-----|
g_re= 0.1165 +/- 0.0037 |      g_re= 0.0000 +/- 0.0031 |      g_re= 0.0375 +/- 0.0080 |
g_im= -0.0512 +/- 0.0017 |      g_im= 0.0000 +/- 0.0003 |      g_im= -0.0121 +/- 0.0031 |
corr= [-0.49]           |      corr= [-1.00]           |      corr= [-0.77]           |
-----|-----|-----|
Br = 0.4043 +/- 0.0333 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0387 +/- 0.0183 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = ( 0.2402 +/- 0.0018646)
+ (i/2)*(-0.055298 +/- 0.0040575) [-0.05]

s_pole = (0.056932 +/- 0.00089714)
+ i*(-0.013283 +/- 0.0009852) [-0.03]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0479 +/- 0.0018 |      k_re= -0.0291 +/- 0.0018 |
k_im= 0.0309 +/- 0.0019 |      k_im= 0.0444 +/- 0.0018 |
corr= [-0.10]           |      corr= [-0.09]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1272 +/- 0.0037 |      |g|= 0.0001 +/- 0.0019 |      |g|= 0.0394 +/- 0.0083 |
arg(g)/pi= 0.1319 +/- 0.0039 |arg(g)/pi= -0.4997 +/- 11.1461 |arg(g)/pi= 0.0993 +/- 0.0151 |
-----|-----|-----|
g_re= 0.1165 +/- 0.0037 |      g_re= 0.0000 +/- 0.0031 |      g_re= 0.0375 +/- 0.0080 |
g_im= 0.0512 +/- 0.0017 |      g_im= -0.0000 +/- 0.0003 |      g_im= 0.0121 +/- 0.0031 |
corr= [ 0.49]           |      corr= [ 1.00]           |      corr= [ 0.77]           |
-----|-----|-----|
Br = 0.4043 +/- 0.0333 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0387 +/- 0.0183 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = ( 0.2402 +/- 0.0018646)
+ (i/2)*(+0.055298 +/- 0.0040575) [ 0.05]

s_pole = (0.056932 +/- 0.00089714)
+ i*(+0.013283 +/- 0.00098521) [ 0.03]

pi:omega |      pi:phi |
=====|=====
k_re= 0.0479 +/- 0.0018 |      k_re= -0.0291 +/- 0.0018 |
k_im= 0.0309 +/- 0.0019 |      k_im= -0.0444 +/- 0.0018 |
corr= [ 0.10]           |      corr= [ 0.09]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1272 +/- 0.0037 |      |g|= 0.0002 +/- 0.0035 |      |g|= 0.0394 +/- 0.0083 |
arg(g)/pi= -0.1319 +/- 0.0039 |arg(g)/pi= 0.3203 +/- 11.1547 |arg(g)/pi= -0.0993 +/- 0.0151 |
-----|-----|-----|
g_re= 0.1165 +/- 0.0037 |      g_re= 0.0000 +/- 0.0045 |      g_re= 0.0375 +/- 0.0080 |
g_im= -0.0512 +/- 0.0017 |      g_im= -0.0000 +/- 0.0035 |      g_im= -0.0121 +/- 0.0031 |

```

2 Unphysical Parameterizations

```

corr= [-0.49] | corr= [-1.00] | corr= [-0.77] |
-----|-----|-----|
Br = 0.4043 +/- 0.0333 | Br = 0.0000 +/- 0.0000 | Br = 0.0387 +/- 0.0183 |

-- pi:omega[+] pi:phi[-] lower half-plane

sqrt(s)_pole = ( 0.2402 +/- 0.0018646)
+ (i/2)*(-0.055298 +/- 0.0040575) [-0.05]

s_pole = (0.056932 +/- 0.00089714)
+ i*(-0.013283 +/- 0.00098521) [-0.03]

pi:omega | pi:phi |
=====|=====
k_re= -0.0479 +/- 0.0018 | k_re= 0.0291 +/- 0.0018 |
k_im= 0.0309 +/- 0.0019 | k_im= -0.0444 +/- 0.0018 |
corr= [-0.10] | corr= [-0.09] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1272 +/- 0.0037 | |g|= 0.0002 +/- 0.0035 | |g|= 0.0394 +/- 0.0083 |
arg(g)/pi= 0.1319 +/- 0.0039 | arg(g)/pi= -0.3203 +/- 11.1547 | arg(g)/pi= 0.0993 +/- 0.0151 |
|-----|-----|-----|
g_re= 0.1165 +/- 0.0037 | g_re= 0.0000 +/- 0.0045 | g_re= 0.0375 +/- 0.0080 |
g_im= 0.0512 +/- 0.0017 | g_im= 0.0000 +/- 0.0035 | g_im= 0.0121 +/- 0.0031 |
corr= [ 0.49] | corr= [ 1.00] | corr= [ 0.77] |

Br = 0.4043 +/- 0.0333 | Br = 0.0000 +/- 0.0000 | Br = 0.0387 +/- 0.0183 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.19876 +/- 0.001701)
+ (i/2)*(-3.3264e-15 +/- 1.6595e-12) [ 0.00]

s_pole = (0.039504 +/- 0.00067616)
+ i*(-6.6133e-16 +/- 3.2993e-13) [ 0.00]

pi:omega | pi:phi |
=====|=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0470 +/- 0.0014 | k_im= 0.0620 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1251 +/- 0.0040 | |g|= 0.0001 +/- 0.0010 | |g|= 0.0270 +/- 0.0071 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0301 +/- 11.1037 | arg(g)/pi= 0.5000 +/- 0.0000 |
|-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1251 +/- 0.0040 | g_im= -0.0000 +/- 0.0017 | g_im= 0.0270 +/- 0.0071 |
corr= [-1.00] | corr= [-0.19] | corr= [-0.48] |

Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24545 +/- 0.00094332)
+ (i/2)*(+0.0062427 +/- 0.0016376) [-0.81]

s_pole = (0.060236 +/- 0.00046723)

```

2 Unphysical Parameterizations

```

+ i*(+0.0015323 +/- 0.00039719) [-0.81]

pi:omega | pi:phi |
=====
k_re= -0.0466 +/- 0.0011 | k_re= 0.0079 +/- 0.0012 |
k_im= -0.0037 +/- 0.0010 | k_im= 0.0193 +/- 0.0027 |
corr= [-0.81] | corr= [ 0.60] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0575 +/- 0.0080 | |g|= 0.0004 +/- 0.0066 | |g|= 0.0132 +/- 0.0070 |
arg(g)/pi= 0.1382 +/- 0.0156 | arg(g)/pi= -0.4558 +/- 11.1485 | arg(g)/pi= 0.8338 +/- 0.1066 |
-----|-----|-----|
g_re= 0.0522 +/- 0.0071 | g_re= -0.0000 +/- 0.0108 | g_re= -0.0115 +/- 0.0081 |
g_im= 0.0242 +/- 0.0046 | g_im= 0.0000 +/- 0.0005 | g_im= 0.0066 +/- 0.0019 |
corr= [ 0.74] | corr= [ 1.00] | corr= [ 0.05] |
-----|-----|-----|
Br = 0.8185 +/- 0.0283 | Br = 0.0000 +/- 0.0000 | Br = 0.0434 +/- 0.0553 |

-- pi:omega[] pi:phi[] lower half-plane

sqrt(s)_pole = (0.24545 +/- 0.00094332)
+ (i/2)*(-0.0062427 +/- 0.0016376) [ 0.81]

s_pole = (0.060236 +/- 0.00046723)
+ i*(-0.0015323 +/- 0.00039719) [ 0.81]

pi:omega | pi:phi |
=====
k_re= 0.0466 +/- 0.0011 | k_re= -0.0079 +/- 0.0012 |
k_im= -0.0037 +/- 0.0010 | k_im= 0.0193 +/- 0.0027 |
corr= [ 0.81] | corr= [-0.60] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0575 +/- 0.0080 | |g|= 0.0004 +/- 0.0066 | |g|= 0.0132 +/- 0.0070 |
arg(g)/pi= -0.1382 +/- 0.0156 | arg(g)/pi= 0.4558 +/- 11.1485 | arg(g)/pi= -0.8338 +/- 0.1066 |
-----|-----|-----|
g_re= 0.0522 +/- 0.0071 | g_re= -0.0000 +/- 0.0108 | g_re= -0.0115 +/- 0.0081 |
g_im= -0.0242 +/- 0.0046 | g_im= 0.0000 +/- 0.0005 | g_im= -0.0066 +/- 0.0019 |
corr= [-0.74] | corr= [-1.00] | corr= [-0.05] |
-----|-----|-----|
Br = 0.8185 +/- 0.0283 | Br = 0.0000 +/- 0.0000 | Br = 0.0434 +/- 0.0553 |

-- pi:omega[] pi:phi[] lower half-plane

sqrt(s)_pole = (0.19876 +/- 0.001701)
+ (i/2)*(-1.1432e-15 +/- 5.6566e-13) [ 0.00]

s_pole = (0.039504 +/- 0.00067617)
+ i*(-2.2727e-16 +/- 1.1246e-13) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0470 +/- 0.0014 | k_im= -0.0620 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
```

2 Unphysical Parameterizations

```

|g|= 0.1251 +/- 0.0040 | |g|= 0.0002 +/- 0.0040 | |g|= 0.0270 +/- 0.0071 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0300 +/- 11.1362 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1251 +/- 0.0040 | g_im= -0.0000 +/- 0.0065 | g_im= 0.0270 +/- 0.0071 |
corr= [-1.00] | corr= [-0.62] | corr= [-0.48] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24545 +/- 0.00094351)
+ (i/2)*(+0.0062429 +/- 0.0016377) [-0.81]  

s_pole = (0.060236 +/- 0.00046733)
+ i*(+0.0015323 +/- 0.00039722) [-0.81]  

pi:omega | pi:phi |
=====|=====
k_re= -0.0466 +/- 0.0011 | k_re= -0.0079 +/- 0.0012 |
k_im= -0.0037 +/- 0.0010 | k_im= -0.0193 +/- 0.0027 |
corr= [-0.81] | corr= [ 0.60] |
-----|-----|-----|
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0575 +/- 0.0080 | |g|= 0.0005 +/- 0.0088 | |g|= 0.0132 +/- 0.0070 |
arg(g)/pi= 0.1382 +/- 0.0156 | arg(g)/pi= 0.4441 +/- 11.1474 | arg(g)/pi= 0.8338 +/- 0.1066 |
-----|-----|-----|
g_re= 0.0522 +/- 0.0071 | g_re= -0.0000 +/- 0.0145 | g_re= -0.0115 +/- 0.0081 |
g_im= 0.0242 +/- 0.0046 | g_im= 0.0000 +/- 0.0012 | g_im= 0.0066 +/- 0.0019 |
corr= [ 0.74] | corr= [-1.00] | corr= [ 0.05] |
-----|-----|-----|
Br = 0.8185 +/- 0.0283 | Br = 0.0000 +/- 0.0000 | Br = 0.0434 +/- 0.0553 |  

--  

pi:omega[-] pi:phi[-] lower half-plane  

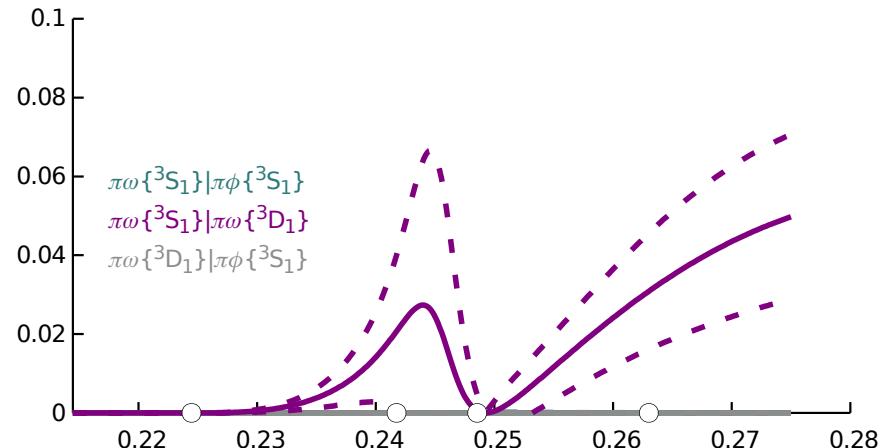
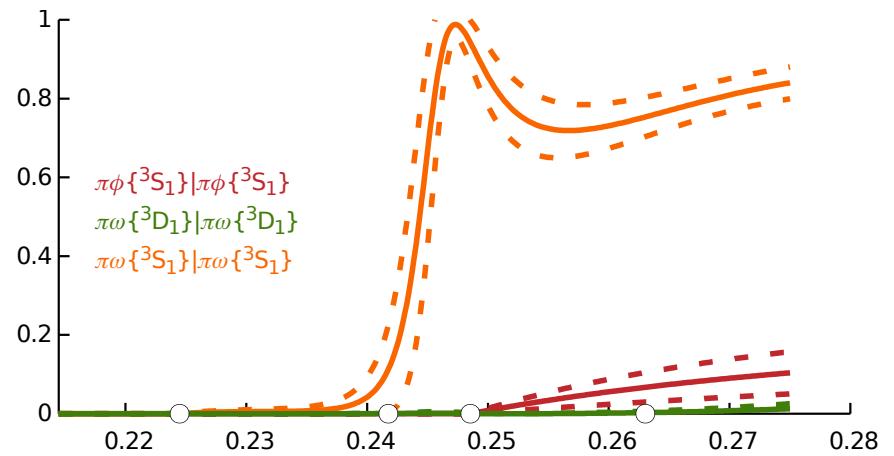
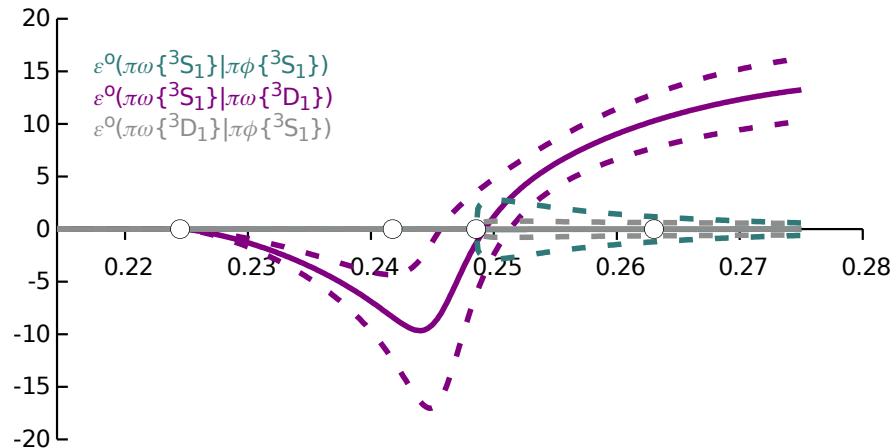
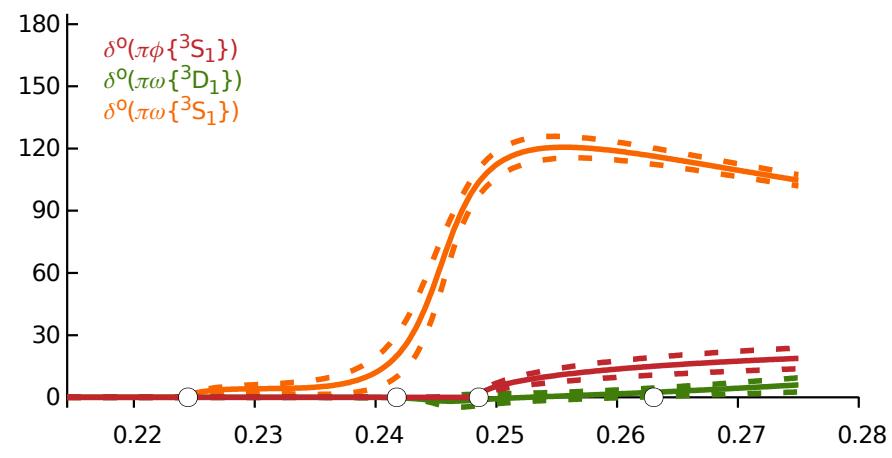
sqrt(s)_pole = (0.24545 +/- 0.00094351)
+ (i/2)*(-0.0062429 +/- 0.0016377) [ 0.81]  

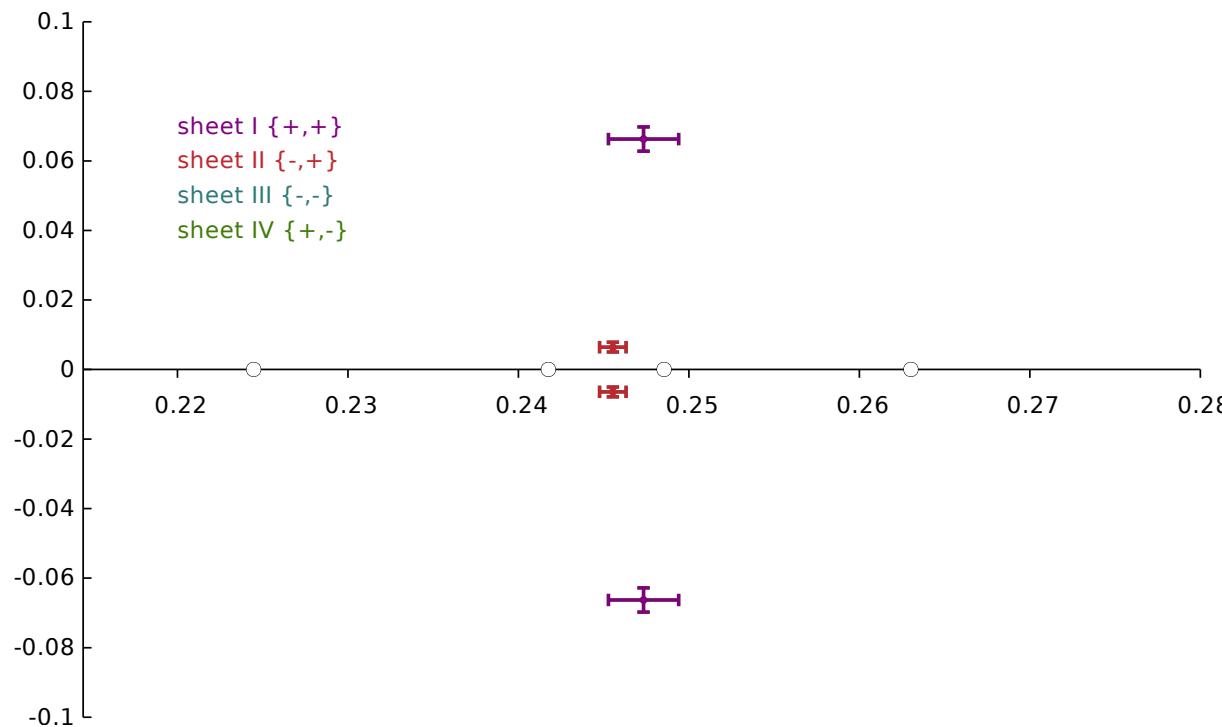
s_pole = (0.060236 +/- 0.00046733)
+ i*(-0.0015323 +/- 0.00039722) [ 0.81]  

pi:omega | pi:phi |
=====|=====
k_re= 0.0466 +/- 0.0011 | k_re= 0.0079 +/- 0.0012 |
k_im= -0.0037 +/- 0.0010 | k_im= -0.0193 +/- 0.0027 |
corr= [ 0.81] | corr= [-0.60] |
-----|-----|-----|
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0575 +/- 0.0080 | |g|= 0.0005 +/- 0.0088 | |g|= 0.0132 +/- 0.0070 |
arg(g)/pi= -0.1382 +/- 0.0156 | arg(g)/pi= -0.4441 +/- 11.1474 | arg(g)/pi= -0.8338 +/- 0.1066 |
-----|-----|-----|
g_re= 0.0522 +/- 0.0071 | g_re= -0.0000 +/- 0.0145 | g_re= -0.0115 +/- 0.0081 |
g_im= -0.0242 +/- 0.0046 | g_im= -0.0000 +/- 0.0012 | g_im= -0.0066 +/- 0.0019 |
corr= [-0.74] | corr= [ 1.00] | corr= [-0.05] |
-----|-----|-----|
Br = 0.8185 +/- 0.0283 | Br = 0.0000 +/- 0.0000 | Br = 0.0434 +/- 0.0553 |

```

2.7 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3d1_3S1.pole0_sub





parameter values

minimised with chisq/nDoF = 32.81 / (36 - 8) = 1.17

JP1+_g_pi:omega/3^D_1_pole0	-0.63114 +/- 0.85627	1.00 0.89 -0.06 0.32 -0.23 -0.08 -0.12 0.14
JP1+_g_pi:omega/3^S_1_pole0	0.074363 +/- 0.011753	1.00 -0.07 0.15 -0.29 -0.10 -0.11 0.11
JP1+_g_pi:phi/3^S_1_pole0	-0.00013699 +/- 0.010827	1.00 0.00 0.02 0.01 -0.04 -0.08
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order	-44.862 +/- 11.88	1.00 -0.14 0.25 -0.15 -0.11
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	6.8060 +/- 0.35295	1.00 -0.85 0.05 -0.04
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-134.83 +/- 6.8744	1.00 0.06 -0.06
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.87762 +/- 0.24824	1.00 -0.18
JP1+_m_pole0	0.24716 +/- 0.00056812	1.00

pole singularities

```

pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24734 +/- 0.0020586)
  + (i/2)*(+0.066284 +/- 0.0034993) [ 0.05]

s_pole = (0.060079 +/- 0.001019)
  + i*(+0.016395 +/- 0.00088305) [ 0.09]

pi:omega |          pi:phi |
=====
k_re= 0.0558 +/- 0.0018 |   k_re= 0.0374 +/- 0.0018 |

```

2 Unphysical Parameterizations

```

k_im= 0.0332 +/- 0.0015 |      k_im= 0.0442 +/- 0.0016 |
corr= [-0.07]           |      corr= [-0.14]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1598 +/- 0.0040 |      |g|= 0.0001 +/- 0.0016 |      |g|= 0.0489 +/- 0.0098 |
arg(g)/pi= -0.1996 +/- 0.0031 |arg(g)/pi= 0.3774 +/- 11.2886 |arg(g)/pi= -0.1572 +/- 0.0133 |
-----|-----|-----|
g_re= 0.1294 +/- 0.0032 |      g_re= 0.0000 +/- 0.0025 |      g_re= 0.0431 +/- 0.0088 |
g_im= -0.0938 +/- 0.0029 |      g_im= 0.0000 +/- 0.0000 |      g_im= -0.0232 +/- 0.0047 |
corr= [-0.76]           |      corr= [-0.88]           |      corr= [-0.88]           |

Br = 0.6120 +/- 0.0301 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0574 +/- 0.0252 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24734 +/- 0.0020586)
+ (i/2)*(-0.066284 +/- 0.0034993) [-0.05]

s_pole = (0.060079 +/- 0.001019)
+ i*(-0.016395 +/- 0.00088305) [-0.09]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0558 +/- 0.0018 |      k_re= -0.0374 +/- 0.0018 |
k_im= 0.0332 +/- 0.0015 |      k_im= 0.0442 +/- 0.0016 |
corr= [ 0.07]           |      corr= [ 0.14]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1598 +/- 0.0040 |      |g|= 0.0001 +/- 0.0016 |      |g|= 0.0489 +/- 0.0098 |
arg(g)/pi= 0.1996 +/- 0.0031 |arg(g)/pi= -0.3774 +/- 11.2886 |arg(g)/pi= 0.1572 +/- 0.0133 |
-----|-----|-----|
g_re= 0.1294 +/- 0.0032 |      g_re= 0.0000 +/- 0.0025 |      g_re= 0.0431 +/- 0.0088 |
g_im= 0.0938 +/- 0.0029 |      g_im= 0.0000 +/- 0.0000 |      g_im= 0.0232 +/- 0.0047 |
corr= [ 0.76]           |      corr= [ 0.88]           |      corr= [ 0.88]           |

Br = 0.6120 +/- 0.0301 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0574 +/- 0.0252 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24734 +/- 0.0020586)
+ (i/2)*(-0.066284 +/- 0.0034994) [-0.05]

s_pole = (0.060079 +/- 0.001019)
+ i*(-0.016395 +/- 0.00088308) [-0.09]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0558 +/- 0.0018 |      k_re= 0.0374 +/- 0.0018 |
k_im= 0.0332 +/- 0.0015 |      k_im= -0.0442 +/- 0.0016 |
corr= [ 0.07]           |      corr= [ 0.14]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1598 +/- 0.0040 |      |g|= 0.0001 +/- 0.0026 |      |g|= 0.0489 +/- 0.0098 |
arg(g)/pi= 0.1996 +/- 0.0031 |arg(g)/pi= -0.1666 +/- 10.9516 |arg(g)/pi= 0.1572 +/- 0.0133 |
-----|-----|-----|
g_re= 0.1294 +/- 0.0032 |      g_re= 0.0000 +/- 0.0029 |      g_re= 0.0431 +/- 0.0088 |
g_im= 0.0938 +/- 0.0029 |      g_im= 0.0000 +/- 0.0027 |      g_im= 0.0232 +/- 0.0047 |

```

2 Unphysical Parameterizations

```

corr= [ 0.76] | corr= [ 1.00] | corr= [ 0.88]
-----|-----|-----|
Br = 0.6120 +/- 0.0302 | Br = 0.0000 +/- 0.0000 | Br = 0.0574 +/- 0.0252 |

-- pi:omega[+] pi:phi[-] upper half-plane
sqrt(s)_pole = (0.24734 +/- 0.0020586)
+ (i/2)*(+0.066284 +/- 0.0034994) [ 0.05]

s_pole = (0.060079 +/- 0.001019)
+ i*(+0.016395 +/- 0.00088308) [ 0.09]

pi:omega | pi:phi |
=====|=====
k_re= 0.0558 +/- 0.0018 | k_re= -0.0374 +/- 0.0018 |
k_im= 0.0332 +/- 0.0015 | k_im= -0.0442 +/- 0.0016 |
corr= [-0.07] | corr= [-0.14] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1598 +/- 0.0040 | |g|= 0.0001 +/- 0.0026 | |g|= 0.0489 +/- 0.0098 |
arg(g)/pi= -0.1996 +/- 0.0031 | arg(g)/pi= 0.1666 +/- 10.9516 | arg(g)/pi= -0.1572 +/- 0.0133 |
|-----|-----|-----|
g_re= 0.1294 +/- 0.0032 | g_re= 0.0000 +/- 0.0029 | g_re= 0.0431 +/- 0.0088 |
g_im= -0.0938 +/- 0.0029 | g_im= -0.0000 +/- 0.0027 | g_im= -0.0232 +/- 0.0047 |
corr= [-0.76] | corr= [-1.00] | corr= [-0.88] |

Br = 0.6120 +/- 0.0302 | Br = 0.0000 +/- 0.0000 | Br = 0.0574 +/- 0.0252 |

-- pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.27725 +/- 0.010217)
+ (i/2)*(+0.24382 +/- 0.071801) [ 0.96]

s_pole = (0.062003 +/- 0.0037425)
+ i*(+0.067602 +/- 0.022303) [-0.88]

pi:omega | pi:phi |
=====|=====
k_re= -0.0948 +/- 0.0115 | k_re= 0.0833 +/- 0.0131 |
k_im= -0.0852 +/- 0.0191 | k_im= 0.0924 +/- 0.0189 |
corr= [ 0.98] | corr= [ 0.99] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0550 +/- 0.0053 | |g|= 0.0000 +/- 0.0008 | |g|= 0.1886 +/- 0.0230 |
arg(g)/pi= 0.5395 +/- 0.0342 | arg(g)/pi= 0.3172 +/- 10.9610 | arg(g)/pi= -0.4817 +/- 0.0359 |
|-----|-----|-----|
g_re= -0.0068 +/- 0.0053 | g_re= 0.0000 +/- 0.0012 | g_re= 0.0109 +/- 0.0226 |
g_im= 0.0546 +/- 0.0059 | g_im= -0.0000 +/- 0.0003 | g_im= -0.1882 +/- 0.0217 |
corr= [ 0.82] | corr= [-0.99] | corr= [-1.00] |

Br = 0.0248 +/- 0.0133 | Br = 0.0000 +/- 0.0000 | Br = 0.2912 +/- 0.0354 |

-- pi:omega[-] pi:phi[+] lower half-plane
sqrt(s)_pole = (0.27725 +/- 0.010217)
+ (i/2)*(-0.24382 +/- 0.071801) [-0.96]

s_pole = (0.062003 +/- 0.0037425)

```

2 Unphysical Parameterizations

```

+ i*(-0.067602 +/- 0.022303) [ 0.88]

pi:omega | pi:phi |
=====
k_re= 0.0948 +/- 0.0115 | k_re= -0.0833 +/- 0.0131 |
k_im= -0.0852 +/- 0.0191 | k_im= 0.0924 +/- 0.0189 |
corr= [-0.98] | corr= [-0.99] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====
|g|= 0.0550 +/- 0.0053 | |g|= 0.0000 +/- 0.0008 | |g|= 0.1886 +/- 0.0230 |
arg(g)/pi= -0.5395 +/- 0.0342 | arg(g)/pi= -0.3172 +/- 10.9610 | arg(g)/pi= 0.4817 +/- 0.0359 |
-----|-----|-----|
g_re= -0.0068 +/- 0.0053 | g_re= 0.0000 +/- 0.0012 | g_re= 0.0109 +/- 0.0226 |
g_im= -0.0546 +/- 0.0059 | g_im= 0.0000 +/- 0.0003 | g_im= 0.1882 +/- 0.0217 |
corr= [-0.82] | corr= [ 0.99] | corr= [ 1.00] |
-----|-----|-----|
Br = 0.0248 +/- 0.0133 | Br = 0.0000 +/- 0.0000 | Br = 0.2912 +/- 0.0354 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.20342 +/- 0.0013984)
+ (i/2)*(-3.2321e-15 +/- 1.6321e-12) [ 0.00]

s_pole = (0.041381 +/- 0.00056894)
+ i*(-6.576e-16 +/- 3.3207e-13) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0430 +/- 0.0013 | k_im= 0.0600 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1016 +/- 0.0037 | |g|= 0.0001 +/- 0.0013 | |g|= 0.0224 +/- 0.0058 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.1003 +/- 10.8879 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1016 +/- 0.0037 | g_im= -0.0000 +/- 0.0021 | g_im= 0.0224 +/- 0.0058 |
corr= [-1.00] | corr= [-0.24] | corr= [-0.27] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24554 +/- 0.00078055)
+ (i/2)*(+0.0064303 +/- 0.0014011) [-0.69]

s_pole = (0.060278 +/- 0.00038644)
+ i*(+0.0015789 +/- 0.00034056) [-0.69]

pi:omega | pi:phi |
=====
k_re= -0.0467 +/- 0.0009 | k_re= 0.0082 +/- 0.0011 |
k_im= -0.0038 +/- 0.0009 | k_im= 0.0192 +/- 0.0022 |
corr= [-0.70] | corr= [ 0.46] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
```

2 Unphysical Parameterizations

```

|g|= 0.0584 +/- 0.0065 | |g|= 0.0004 +/- 0.0065 | |g|= 0.0126 +/- 0.0061 |
arg(g)/pi= 0.1295 +/- 0.0150 | arg(g)/pi= -0.5837 +/- 10.9431 | arg(g)/pi= 0.8320 +/- 0.1043 |
-----|-----|-----|
g_re= 0.0536 +/- 0.0057 | g_re= -0.0001 +/- 0.0100 | g_re= -0.0109 +/- 0.0071 |
g_im= 0.0231 +/- 0.0042 | g_im= -0.0000 +/- 0.0005 | g_im= 0.0063 +/- 0.0019 |
corr= [ 0.71] | corr= [ 1.00] | corr= [ 0.11] |
-----|-----|-----|
Br = 0.8194 +/- 0.0214 | Br = 0.0000 +/- 0.0000 | Br = 0.0381 +/- 0.0434 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24554 +/- 0.00078055)
+ (i/2)*(-0.0064303 +/- 0.0014011) [ 0.69]  

s_pole = (0.060278 +/- 0.00038644)
+ i*(-0.0015789 +/- 0.00034056) [ 0.69]

pi:omega | pi:phi |
=====|=====
k_re= 0.0467 +/- 0.0009 | k_re= -0.0082 +/- 0.0011 |
k_im= -0.0038 +/- 0.0009 | k_im= 0.0192 +/- 0.0022 |
corr= [ 0.70] | corr= [-0.46] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0584 +/- 0.0065 | |g|= 0.0004 +/- 0.0065 | |g|= 0.0126 +/- 0.0061 |
arg(g)/pi= -0.1295 +/- 0.0150 | arg(g)/pi= 0.5837 +/- 10.9431 | arg(g)/pi= -0.8320 +/- 0.1043 |
-----|-----|-----|
g_re= 0.0536 +/- 0.0057 | g_re= -0.0001 +/- 0.0100 | g_re= -0.0109 +/- 0.0071 |
g_im= -0.0231 +/- 0.0042 | g_im= -0.0000 +/- 0.0005 | g_im= -0.0063 +/- 0.0019 |
corr= [-0.71] | corr= [-1.00] | corr= [-0.11] |
-----|-----|-----|
Br = 0.8194 +/- 0.0214 | Br = 0.0000 +/- 0.0000 | Br = 0.0381 +/- 0.0434 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.27725 +/- 0.010217)
+ (i/2)*(+0.24382 +/- 0.071801) [ 0.96]  

s_pole = (0.062003 +/- 0.0037425)
+ i*(+0.067602 +/- 0.022303) [-0.88]

pi:omega | pi:phi |
=====|=====
k_re= -0.0948 +/- 0.0115 | k_re= -0.0833 +/- 0.0131 |
k_im= -0.0852 +/- 0.0191 | k_im= -0.0924 +/- 0.0189 |
corr= [ 0.98] | corr= [ 0.99] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0550 +/- 0.0053 | |g|= 0.0000 +/- 0.0009 | |g|= 0.1886 +/- 0.0230 |
arg(g)/pi= 0.5395 +/- 0.0342 | arg(g)/pi= -0.0327 +/- 10.9784 | arg(g)/pi= -0.4817 +/- 0.0359 |
-----|-----|-----|
g_re= -0.0068 +/- 0.0053 | g_re= 0.0000 +/- 0.0003 | g_re= 0.0109 +/- 0.0226 |
g_im= 0.0546 +/- 0.0059 | g_im= -0.0000 +/- 0.0013 | g_im= -0.1882 +/- 0.0217 |
corr= [ 0.82] | corr= [-0.99] | corr= [-1.00] |
-----|-----|-----|
Br = 0.0248 +/- 0.0133 | Br = 0.0000 +/- 0.0000 | Br = 0.2912 +/- 0.0354 |

--  

pi:omega[-] pi:phi[-] upper half-plane

```

2 Unphysical Parameterizations

```

sqrt(s)_pole = (0.20342 +/- 0.0013984)
  + (i/2)*(+2.3447e-16 +/- 6.0429e-14) [ 0.00]

s_pole = (0.041381 +/- 0.00056896)
  + i*(+4.7691e-17 +/- 1.2294e-14) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0430 +/- 0.0013 | k_im= -0.0600 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1016 +/- 0.0037 | |g|= 0.0004 +/- 0.0075 | |g|= 0.0224 +/- 0.0058 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.1001 +/- 10.9322 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1016 +/- 0.0037 | g_im= -0.0001 +/- 0.0114 | g_im= 0.0224 +/- 0.0058 |
corr= [-1.00] | corr= [-0.83] | corr= [-0.27] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.27725 +/- 0.010217)
  + (i/2)*(-0.24382 +/- 0.071801) [-0.96]

s_pole = (0.062003 +/- 0.0037425)
  + i*(-0.067602 +/- 0.022303) [ 0.88]

pi:omega | pi:phi |
=====
k_re= 0.0948 +/- 0.0115 | k_re= 0.0833 +/- 0.0131 |
k_im= -0.0852 +/- 0.0191 | k_im= -0.0924 +/- 0.0189 |
corr= [-0.98] | corr= [-0.99] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*)
=====
|g|= 0.0550 +/- 0.0053 | |g|= 0.0000 +/- 0.0009 | |g|= 0.1886 +/- 0.0230 |
arg(g)/pi= -0.5395 +/- 0.0342 | arg(g)/pi= 0.0336 +/- 10.9575 | arg(g)/pi= 0.4817 +/- 0.0359 |
-----|-----|-----|
g_re= -0.0068 +/- 0.0053 | g_re= 0.0000 +/- 0.0003 | g_re= 0.0109 +/- 0.0226 |
g_im= -0.0546 +/- 0.0059 | g_im= 0.0000 +/- 0.0013 | g_im= 0.1882 +/- 0.0217 |
corr= [-0.82] | corr= [ 0.99] | corr= [ 1.00] |
-----|-----|-----|
Br = 0.0248 +/- 0.0133 | Br = 0.0000 +/- 0.0000 | Br = 0.2912 +/- 0.0354 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24554 +/- 0.00078084)
  + (i/2)*(+0.0064305 +/- 0.0014015) [-0.69]

s_pole = (0.060278 +/- 0.00038659)
  + i*(+0.0015789 +/- 0.00034065) [-0.69]

pi:omega | pi:phi |
=====
k_re= -0.0467 +/- 0.0009 | k_re= -0.0082 +/- 0.0011 |
k_im= -0.0038 +/- 0.0009 | k_im= -0.0192 +/- 0.0022 |

```

2 Unphysical Parameterizations

```

corr= [-0.70] | corr= [ 0.46] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0584 +/- 0.0065 | |g|= 0.0005 +/- 0.0088 | |g|= 0.0126 +/- 0.0061 |
arg(g)/pi= 0.1295 +/- 0.0150 |arg(g)/pi= 0.5722 +/- 10.9412 |arg(g)/pi= 0.8320 +/- 0.1043 |
-----
g_re= 0.0536 +/- 0.0057 | g_re= -0.0002 +/- 0.0134 | g_re= -0.0109 +/- 0.0071 |
g_im= 0.0231 +/- 0.0042 | g_im= 0.0000 +/- 0.0012 | g_im= 0.0063 +/- 0.0019 |
corr= [ 0.71] | corr= [-1.00] | corr= [ 0.11] |
-----
Br = 0.8194 +/- 0.0214 | Br = 0.0000 +/- 0.0000 | Br = 0.0381 +/- 0.0434 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24554 +/- 0.00078084)  

+ (i/2)*(-0.0064305 +/- 0.0014015) [ 0.69]  

s_pole = (0.060278 +/- 0.00038659)  

+ i*(-0.0015789 +/- 0.00034065) [ 0.69]

pi:omega | pi:phi |  

=====|=====
k_re= 0.0467 +/- 0.0009 | k_re= 0.0082 +/- 0.0011 |  

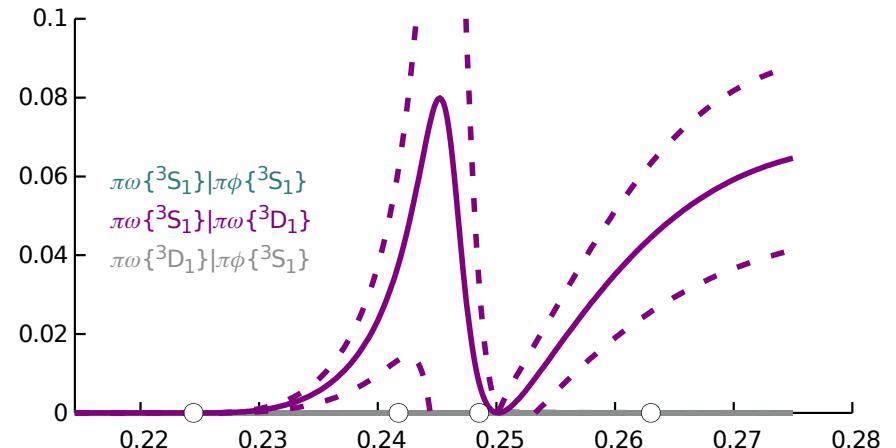
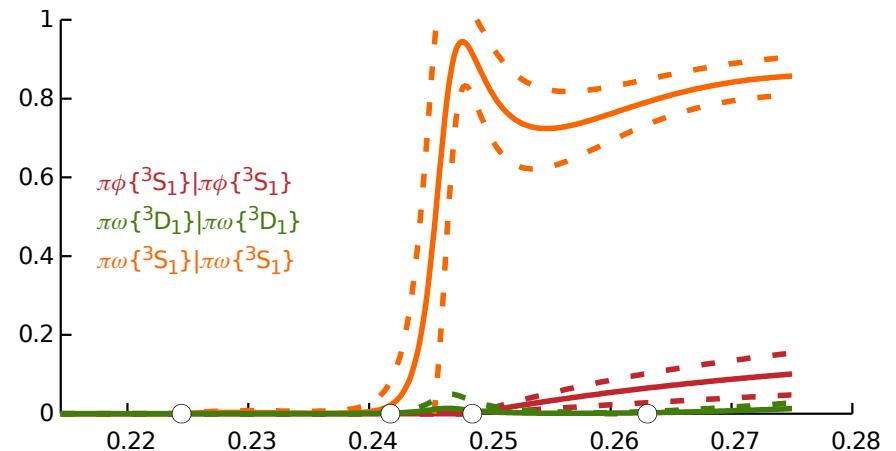
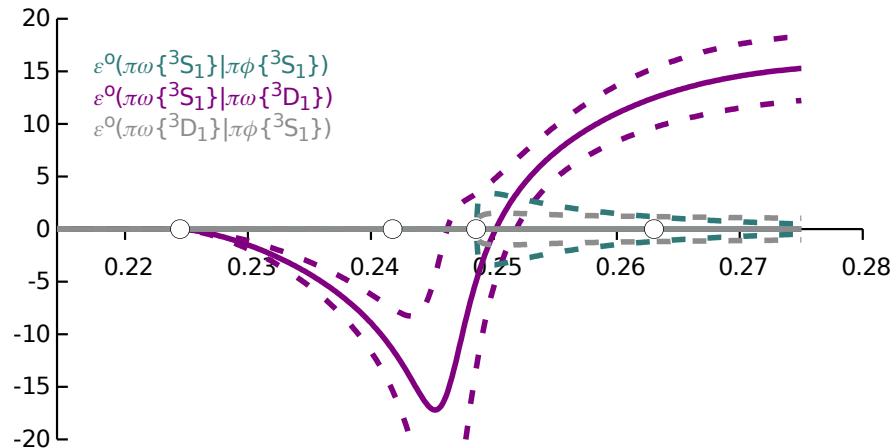
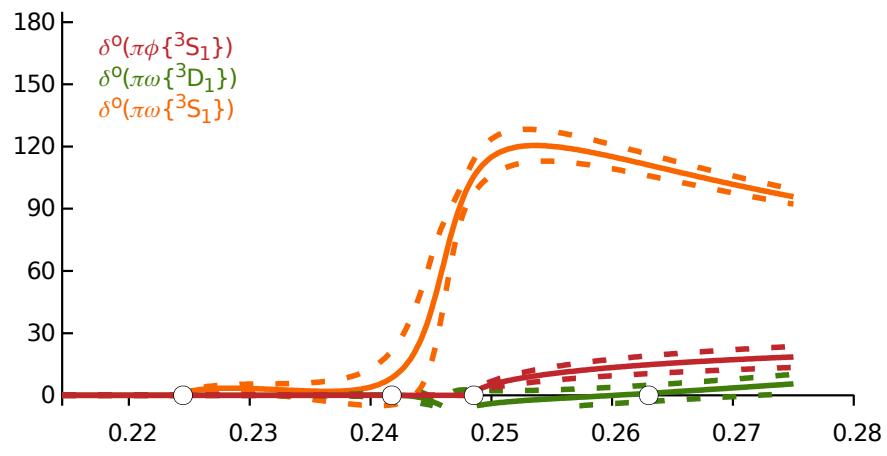
k_im= -0.0038 +/- 0.0009 | k_im= -0.0192 +/- 0.0022 |  

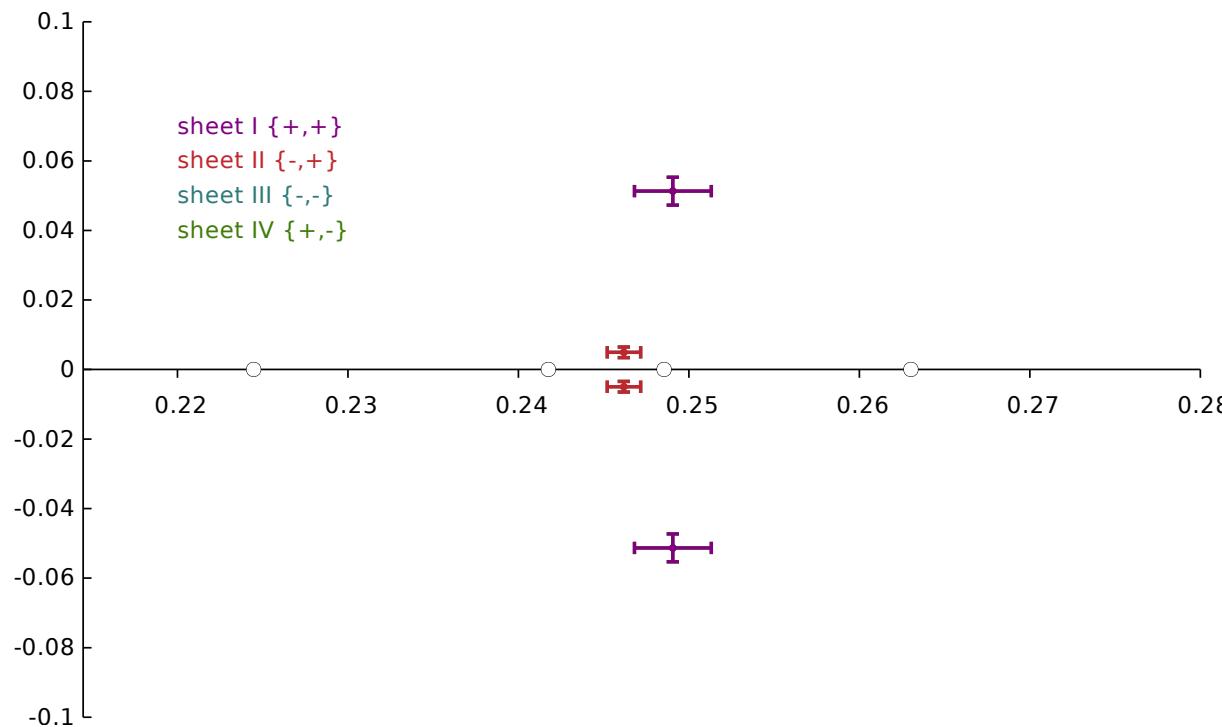
corr= [ 0.70] | corr= [-0.46] |  

-----
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0584 +/- 0.0065 | |g|= 0.0005 +/- 0.0088 | |g|= 0.0126 +/- 0.0061 |
arg(g)/pi= -0.1295 +/- 0.0150 |arg(g)/pi= -0.5722 +/- 10.9412 |arg(g)/pi= -0.8320 +/- 0.1043 |
-----
g_re= 0.0536 +/- 0.0057 | g_re= -0.0002 +/- 0.0134 | g_re= -0.0109 +/- 0.0071 |
g_im= -0.0231 +/- 0.0042 | g_im= -0.0000 +/- 0.0012 | g_im= -0.0063 +/- 0.0019 |
corr= [-0.71] | corr= [ 1.00] | corr= [-0.11] |
-----
Br = 0.8194 +/- 0.0214 | Br = 0.0000 +/- 0.0000 | Br = 0.0381 +/- 0.0434 |

```

2.8 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3d1_3S1.threshold_sub





parameter values

minimised with chisq/nDoF = 31.74 / (36 - 8) = 1.13

JP1+_g_pi:omega/3^D_1_pole0	-1.5754 +/- 1.1522	1.00 0.93 -0.04 0.40 -0.23 0.08 -0.03 -0.58
JP1+_g_pi:omega/3^S_1_pole0	0.056120 +/- 0.013546	1.00 -0.05 0.26 -0.31 0.13 0.01 -0.67
JP1+_g_pi:phi/3^S_1_pole0	-1.0156e-05 +/- 0.013765	1.00 0.00 0.01 -0.00 -0.02 -0.03
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order	-49.510 +/- 11.958	1.00 -0.29 0.37 -0.08 -0.23
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	7.1524 +/- 0.556	1.00 -0.95 -0.00 0.20
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-137.29 +/- 10.628	1.00 0.05 -0.10
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.93591 +/- 0.29484	1.00 -0.20
JP1+_m_pole0	0.24655 +/- 0.00064837	1.00

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24906 +/- 0.0022514)
  + (i/2)*(+0.051312 +/- 0.0040097) [ 0.28]
s_pole = (0.061375 +/- 0.0010967)
  + i*(+0.01278 +/- 0.0010375) [ 0.30]
```

pi:omega	pi:phi
k_re= 0.0551 +/- 0.0022	k_re= 0.0345 +/- 0.0025

2 Unphysical Parameterizations

```

k_im= 0.0262 +/- 0.0017 |      k_im= 0.0374 +/- 0.0018 |
corr= [ 0.17]           |      corr= [-0.02]          |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1424 +/- 0.0042 |      |g|= 0.0001 +/- 0.0017 |      |g|= 0.0482 +/- 0.0083 |
arg(g)/pi= -0.2299 +/- 0.0045 |arg(g)/pi= -0.5163 +/- 11.3389 |arg(g)/pi= -0.1920 +/- 0.0116 |
-----|-----|-----|
g_re= 0.1069 +/- 0.0033 |      g_re= 0.0000 +/- 0.0028 |      g_re= 0.0397 +/- 0.0068 |
g_im= -0.0942 +/- 0.0033 |      g_im= 0.0000 +/- 0.0001 |      g_im= -0.0273 +/- 0.0052 |
corr= [-0.63]           |      corr= [ 0.93]          |      corr= [-0.91]         |
-----|-----|-----|
Br = 0.6437 +/- 0.0497 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0736 +/- 0.0295 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24906 +/- 0.0022514)
+ (i/2)*(-0.051312 +/- 0.0040097) [-0.28]

s_pole = (0.061375 +/- 0.0010967)
+ i*(-0.01278 +/- 0.0010375) [-0.30]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0551 +/- 0.0022 |      k_re= -0.0345 +/- 0.0025 |
k_im= 0.0262 +/- 0.0017 |      k_im= 0.0374 +/- 0.0018 |
corr= [-0.17]           |      corr= [ 0.02]          |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1424 +/- 0.0042 |      |g|= 0.0001 +/- 0.0017 |      |g|= 0.0482 +/- 0.0083 |
arg(g)/pi= 0.2299 +/- 0.0045 |arg(g)/pi= 0.5163 +/- 11.3389 |arg(g)/pi= 0.1920 +/- 0.0116 |
-----|-----|-----|
g_re= 0.1069 +/- 0.0033 |      g_re= 0.0000 +/- 0.0028 |      g_re= 0.0397 +/- 0.0068 |
g_im= 0.0942 +/- 0.0033 |      g_im= -0.0000 +/- 0.0001 |      g_im= 0.0273 +/- 0.0052 |
corr= [ 0.63]           |      corr= [-0.93]          |      corr= [ 0.91]         |
-----|-----|-----|
Br = 0.6437 +/- 0.0497 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0736 +/- 0.0295 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24906 +/- 0.0022514)
+ (i/2)*(-0.051312 +/- 0.0040097) [-0.28]

s_pole = (0.061375 +/- 0.0010967)
+ i*(-0.01278 +/- 0.0010375) [-0.30]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0551 +/- 0.0022 |      k_re= 0.0345 +/- 0.0025 |
k_im= 0.0262 +/- 0.0017 |      k_im= -0.0374 +/- 0.0018 |
corr= [-0.17]           |      corr= [ 0.02]          |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1424 +/- 0.0042 |      |g|= 0.0001 +/- 0.0026 |      |g|= 0.0482 +/- 0.0083 |
arg(g)/pi= 0.2299 +/- 0.0045 |arg(g)/pi= -0.3391 +/- 11.1546 |arg(g)/pi= 0.1920 +/- 0.0116 |
-----|-----|-----|
g_re= 0.1069 +/- 0.0033 |      g_re= 0.0000 +/- 0.0035 |      g_re= 0.0397 +/- 0.0068 |
g_im= 0.0942 +/- 0.0033 |      g_im= 0.0000 +/- 0.0024 |      g_im= 0.0273 +/- 0.0052 |

```

2 Unphysical Parameterizations

```

corr= [ 0.63] | corr= [ 1.00] | corr= [ 0.91]
-----|-----|-----|
Br = 0.6437 +/- 0.0497 | Br = 0.0000 +/- 0.0000 | Br = 0.0736 +/- 0.0295 |

-- pi:omega[+] pi:phi[-] upper half-plane
sqrt(s)_pole = (0.24906 +/- 0.0022514)
+ (i/2)*(+0.051312 +/- 0.0040097) [ 0.28]

s_pole = (0.061375 +/- 0.0010967)
+ i*(+0.01278 +/- 0.0010375) [ 0.30]

pi:omega | pi:phi |
=====|=====
k_re= 0.0551 +/- 0.0022 | k_re= -0.0345 +/- 0.0025 |
k_im= 0.0262 +/- 0.0017 | k_im= -0.0374 +/- 0.0018 |
corr= [ 0.17] | corr= [-0.02] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1424 +/- 0.0042 | |g|= 0.0001 +/- 0.0026 | |g|= 0.0482 +/- 0.0083 |
arg(g)/pi= -0.2299 +/- 0.0045 | arg(g)/pi= 0.3391 +/- 11.1546 | arg(g)/pi= -0.1920 +/- 0.0116 |
-----|-----|-----|
g_re= 0.1069 +/- 0.0033 | g_re= 0.0000 +/- 0.0035 | g_re= 0.0397 +/- 0.0068 |
g_im= -0.0942 +/- 0.0033 | g_im= -0.0000 +/- 0.0024 | g_im= -0.0273 +/- 0.0052 |
corr= [-0.63] | corr= [-1.00] | corr= [-0.91] |

Br = 0.6437 +/- 0.0497 | Br = 0.0000 +/- 0.0000 | Br = 0.0736 +/- 0.0295 |

-- pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.27188 +/- 0.010619)
+ (i/2)*(+0.23968 +/- 0.064676) [ 0.91]

s_pole = (0.059553 +/- 0.0035147)
+ i*(+0.065165 +/- 0.019921) [-0.68]

pi:omega | pi:phi |
=====|=====
k_re= -0.0914 +/- 0.0113 | k_re= 0.0797 +/- 0.0127 |
k_im= -0.0849 +/- 0.0170 | k_im= 0.0923 +/- 0.0168 |
corr= [ 0.96] | corr= [ 0.97] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0573 +/- 0.0069 | |g|= 0.0001 +/- 0.0018 | |g|= 0.1817 +/- 0.0204 |
arg(g)/pi= 0.5491 +/- 0.0320 | arg(g)/pi= 0.4223 +/- 13.1689 | arg(g)/pi= -0.4684 +/- 0.0327 |
-----|-----|-----|
g_re= -0.0088 +/- 0.0055 | g_re= 0.0000 +/- 0.0030 | g_re= 0.0180 +/- 0.0206 |
g_im= 0.0566 +/- 0.0071 | g_im= -0.0000 +/- 0.0000 | g_im= -0.1808 +/- 0.0185 |
corr= [ 0.21] | corr= [-0.76] | corr= [-1.00] |

Br = 0.0268 +/- 0.0125 | Br = 0.0000 +/- 0.0000 | Br = 0.2692 +/- 0.0317 |

-- pi:omega[-] pi:phi[+] lower half-plane
sqrt(s)_pole = (0.27188 +/- 0.010619)
+ (i/2)*(-0.23968 +/- 0.064676) [-0.91]

s_pole = (0.059553 +/- 0.0035147)

```

2 Unphysical Parameterizations

```

+ i*(-0.065165 +/- 0.019921) [ 0.68]

pi:omega | pi:phi |
=====
k_re= 0.0914 +/- 0.0113 | k_re= -0.0797 +/- 0.0127 |
k_im= -0.0849 +/- 0.0170 | k_im= 0.0923 +/- 0.0168 |
corr= [-0.96] | corr= [-0.97] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====
|g|= 0.0573 +/- 0.0069 | |g|= 0.0001 +/- 0.0018 | |g|= 0.1817 +/- 0.0204 |
arg(g)/pi= -0.5491 +/- 0.0320 | arg(g)/pi= -0.4223 +/- 13.1689 | arg(g)/pi= 0.4684 +/- 0.0327 |
-----|-----|-----|
g_re= -0.0088 +/- 0.0055 | g_re= 0.0000 +/- 0.0030 | g_re= 0.0180 +/- 0.0206 |
g_im= -0.0566 +/- 0.0071 | g_im= 0.0000 +/- 0.0000 | g_im= 0.1808 +/- 0.0185 |
corr= [-0.21] | corr= [ 0.76] | corr= [ 1.00] |
-----|-----|-----|
Br = 0.0268 +/- 0.0125 | Br = 0.0000 +/- 0.0000 | Br = 0.2692 +/- 0.0317 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.20196 +/- 0.0014676)
+ (i/2)*(-1.1041e-16 +/- 5.6455e-14) [ 0.00]

s_pole = (0.040787 +/- 0.00059281)
+ i*(-2.2299e-17 +/- 1.1404e-14) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0443 +/- 0.0013 | k_im= 0.0607 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1067 +/- 0.0037 | |g|= 0.0001 +/- 0.0011 | |g|= 0.0251 +/- 0.0056 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0293 +/- 11.1046 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1067 +/- 0.0037 | g_im= -0.0000 +/- 0.0017 | g_im= 0.0251 +/- 0.0056 |
corr= [-1.00] | corr= [-0.19] | corr= [-0.25] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000

-- pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24619 +/- 0.00097563)
+ (i/2)*(+0.0049355 +/- 0.0015193) [-0.84]

s_pole = (0.060604 +/- 0.00048354)
+ i*(+0.0012151 +/- 0.00037003) [-0.84]

pi:omega | pi:phi |
=====
k_re= -0.0474 +/- 0.0011 | k_re= 0.0071 +/- 0.0011 |
k_im= -0.0029 +/- 0.0009 | k_im= 0.0169 +/- 0.0031 |
corr= [-0.84] | corr= [ 0.56] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
```

2 Unphysical Parameterizations

```

|g|= 0.0497 +/- 0.0099 | |g|= 0.0004 +/- 0.0073 | |g|= 0.0181 +/- 0.0091 |
arg(g)/pi= 0.1332 +/- 0.0209 |arg(g)/pi= -0.4510 +/- 11.1485 |arg(g)/pi= 0.8829 +/- 0.0875 |
-----|-----|-----|
g_re= 0.0454 +/- 0.0085 | g_re= -0.0000 +/- 0.0119 | g_re= -0.0169 +/- 0.0101 |
g_im= 0.0202 +/- 0.0059 | g_im= -0.0000 +/- 0.0007 | g_im= 0.0065 +/- 0.0022 |
corr= [ 0.82] | corr= [ 1.00] | corr= [ 0.47] |
-----|-----|-----|
Br = 0.7812 +/- 0.0852 | Br = 0.0000 +/- 0.0000 | Br = 0.1035 +/- 0.1310 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24619 +/- 0.00097563)
+ (i/2)*(-0.0049355 +/- 0.0015193) [ 0.84]  

s_pole = (0.060604 +/- 0.00048354)
+ i*(-0.0012151 +/- 0.00037003) [ 0.84]

pi:omega | pi:phi |
=====|=====
k_re= 0.0474 +/- 0.0011 | k_re= -0.0071 +/- 0.0011 |
k_im= -0.0029 +/- 0.0009 | k_im= 0.0169 +/- 0.0031 |
corr= [ 0.84] | corr= [-0.56] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0497 +/- 0.0099 | |g|= 0.0004 +/- 0.0073 | |g|= 0.0181 +/- 0.0091 |
arg(g)/pi= -0.1332 +/- 0.0209 |arg(g)/pi= 0.4510 +/- 11.1485 |arg(g)/pi= -0.8829 +/- 0.0875 |
-----|-----|-----|
g_re= 0.0454 +/- 0.0085 | g_re= -0.0000 +/- 0.0119 | g_re= -0.0169 +/- 0.0101 |
g_im= -0.0202 +/- 0.0059 | g_im= -0.0000 +/- 0.0007 | g_im= -0.0065 +/- 0.0022 |
corr= [-0.82] | corr= [-1.00] | corr= [-0.47] |
-----|-----|-----|
Br = 0.7812 +/- 0.0852 | Br = 0.0000 +/- 0.0000 | Br = 0.1035 +/- 0.1310 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.27188 +/- 0.010619)
+ (i/2)*(+0.23968 +/- 0.064676) [ 0.91]  

s_pole = (0.059553 +/- 0.0035147)
+ i*(+0.065165 +/- 0.019921) [-0.68]

pi:omega | pi:phi |
=====|=====
k_re= -0.0914 +/- 0.0113 | k_re= -0.0797 +/- 0.0127 |
k_im= -0.0849 +/- 0.0170 | k_im= -0.0923 +/- 0.0168 |
corr= [ 0.96] | corr= [ 0.97] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0573 +/- 0.0069 | |g|= 0.0001 +/- 0.0021 | |g|= 0.1817 +/- 0.0204 |
arg(g)/pi= 0.5491 +/- 0.0320 |arg(g)/pi= 0.1764 +/- 11.1605 |arg(g)/pi= -0.4684 +/- 0.0327 |
-----|-----|-----|
g_re= -0.0088 +/- 0.0055 | g_re= 0.0000 +/- 0.0015 | g_re= 0.0180 +/- 0.0206 |
g_im= 0.0566 +/- 0.0071 | g_im= -0.0000 +/- 0.0030 | g_im= -0.1808 +/- 0.0185 |
corr= [ 0.21] | corr= [-1.00] | corr= [-1.00] |
-----|-----|-----|
Br = 0.0268 +/- 0.0125 | Br = 0.0000 +/- 0.0000 | Br = 0.2692 +/- 0.0317 |

--  

pi:omega[-] pi:phi[-] upper half-plane

```

2 Unphysical Parameterizations

```

sqrt(s)_pole = (0.24619 +/- 0.00097583)
  + (i/2)*(+0.0049357 +/- 0.0015195) [-0.84]

s_pole = (0.060604 +/- 0.00048363)
  + i*(+0.0012151 +/- 0.00037006) [-0.84]

pi:omega | pi:phi |
=====
k_re= -0.0474 +/- 0.0011 | k_re= -0.0071 +/- 0.0011 |
k_im= -0.0029 +/- 0.0009 | k_im= -0.0169 +/- 0.0031 |
corr= [-0.84] | corr= [ 0.56] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0497 +/- 0.0099 | |g|= 0.0005 +/- 0.0094 | |g|= 0.0181 +/- 0.0091 |
arg(g)/pi= 0.1332 +/- 0.0209 | arg(g)/pi= 0.4519 +/- 11.1470 | arg(g)/pi= 0.8829 +/- 0.0875 |
-----|-----|-----|
g_re= 0.0454 +/- 0.0085 | g_re= -0.0000 +/- 0.0154 | g_re= -0.0169 +/- 0.0101 |
g_im= 0.0202 +/- 0.0059 | g_im= 0.0000 +/- 0.0009 | g_im= 0.0065 +/- 0.0022 |
corr= [ 0.82] | corr= [-1.00] | corr= [ 0.47] |
-----|-----|-----|
Br = 0.7812 +/- 0.0852 | Br = 0.0000 +/- 0.0000 | Br = 0.1035 +/- 0.1310 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.20196 +/- 0.0014677)
  + (i/2)*(+2.1953e-14 +/- 1.087e-11) [ 0.00]

s_pole = (0.040787 +/- 0.00059283)
  + i*(+4.4345e-15 +/- 2.1958e-12) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0443 +/- 0.0013 | k_im= -0.0607 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1067 +/- 0.0037 | |g|= 0.0003 +/- 0.0059 | |g|= 0.0251 +/- 0.0056 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0299 +/- 11.1407 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1067 +/- 0.0037 | g_im= -0.0000 +/- 0.0096 | g_im= 0.0251 +/- 0.0056 |
corr= [-1.00] | corr= [-0.78] | corr= [-0.25] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.27188 +/- 0.010619)
  + (i/2)*(-0.23968 +/- 0.064676) [-0.91]

s_pole = (0.059553 +/- 0.0035147)
  + i*(-0.065165 +/- 0.019921) [ 0.68]

pi:omega | pi:phi |
=====
k_re= 0.0914 +/- 0.0113 | k_re= 0.0797 +/- 0.0127 |
k_im= -0.0849 +/- 0.0170 | k_im= -0.0923 +/- 0.0168 |

```

2 Unphysical Parameterizations

```

corr= [-0.96] | corr= [-0.97] |
pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0573 +/- 0.0069 | |g|= 0.0001 +/- 0.0021 | |g|= 0.1817 +/- 0.0204 |
arg(g)/pi= -0.5491 +/- 0.0320 | arg(g)/pi= -0.1764 +/- 11.1605 | arg(g)/pi= 0.4684 +/- 0.0327 |
-----|-----|-----
g_re= -0.0088 +/- 0.0055 | g_re= 0.0000 +/- 0.0015 | g_re= 0.0180 +/- 0.0206 |
g_im= -0.0566 +/- 0.0071 | g_im= 0.0000 +/- 0.0030 | g_im= 0.1808 +/- 0.0185 |
corr= [-0.21] | corr= [ 1.00] | corr= [ 1.00] |
-----|-----|-----
Br = 0.0268 +/- 0.0125 | Br = 0.0000 +/- 0.0000 | Br = 0.2692 +/- 0.0317 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24619 +/- 0.00097583)  

+ (i/2)*(-0.0049357 +/- 0.0015195) [ 0.84]  

s_pole = (0.060604 +/- 0.00048363)  

+ i*(-0.0012151 +/- 0.00037006) [ 0.84]  

pi:omega | pi:phi |  

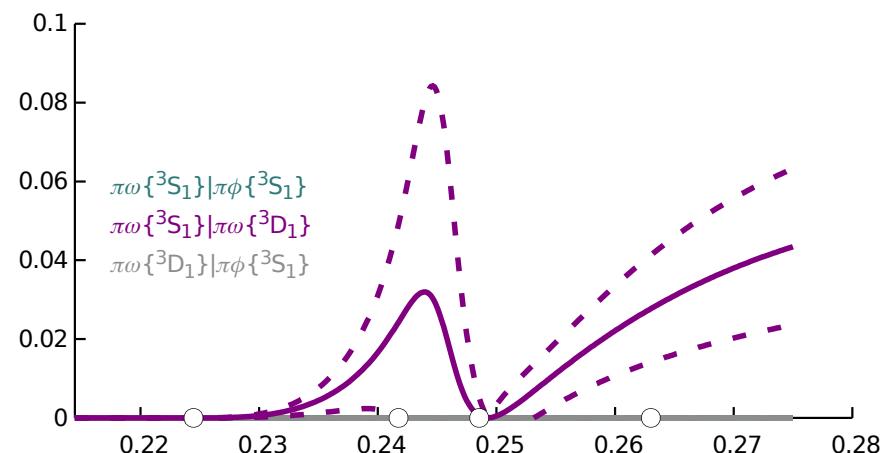
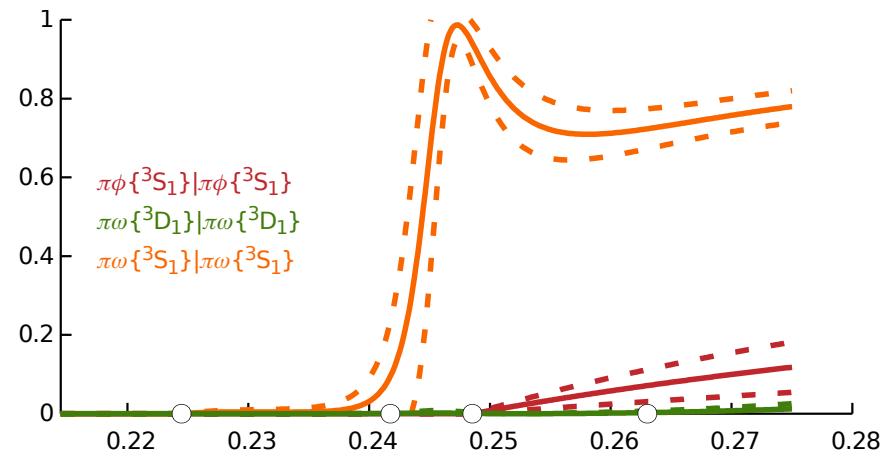
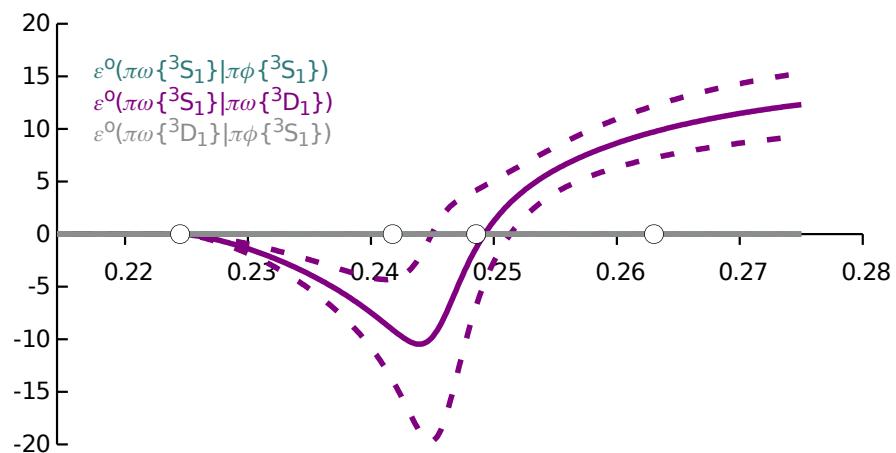
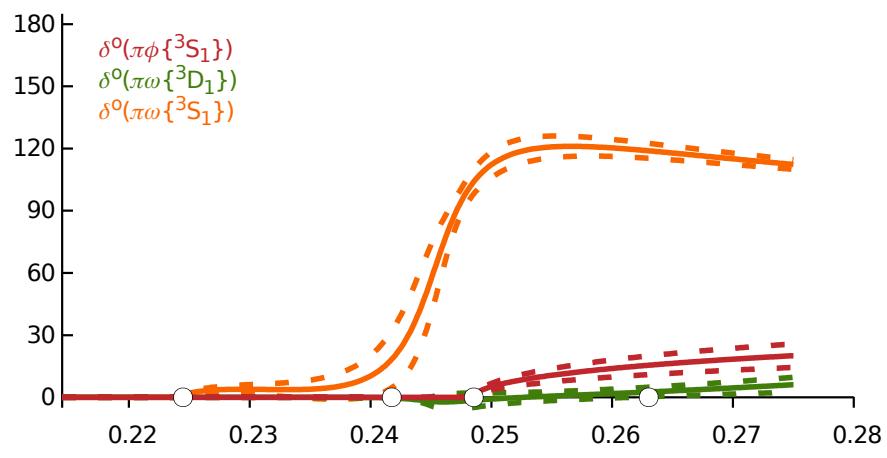
=====|=====|
k_re= 0.0474 +/- 0.0011 | k_re= 0.0071 +/- 0.0011 |
k_im= -0.0029 +/- 0.0009 | k_im= -0.0169 +/- 0.0031 |
corr= [ 0.84] | corr= [-0.56] |  

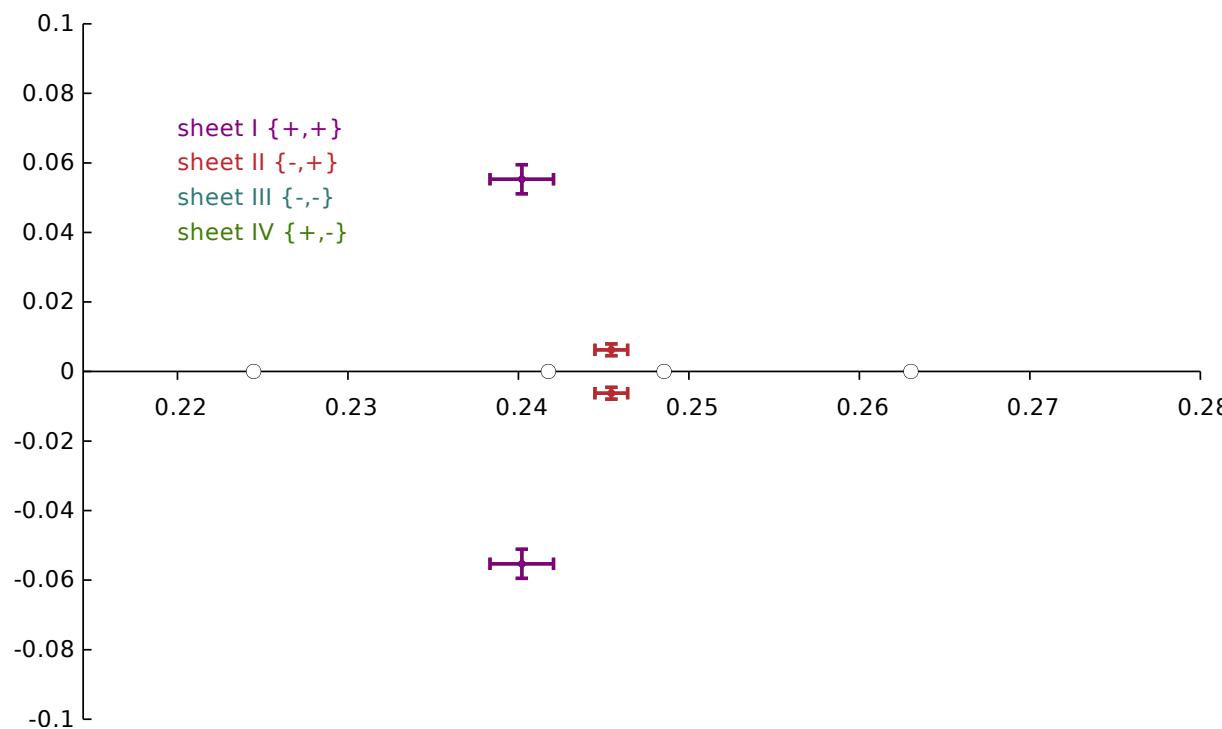
-----|-----|-----  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0497 +/- 0.0099 | |g|= 0.0005 +/- 0.0094 | |g|= 0.0181 +/- 0.0091 |
arg(g)/pi= -0.1332 +/- 0.0209 | arg(g)/pi= -0.4519 +/- 11.1470 | arg(g)/pi= -0.8829 +/- 0.0875 |
-----|-----|-----
g_re= 0.0454 +/- 0.0085 | g_re= -0.0000 +/- 0.0154 | g_re= -0.0169 +/- 0.0101 |
g_im= -0.0202 +/- 0.0059 | g_im= -0.0000 +/- 0.0009 | g_im= -0.0065 +/- 0.0022 |
corr= [-0.82] | corr= [ 1.00] | corr= [-0.47] |
-----|-----|-----
Br = 0.7812 +/- 0.0852 | Br = 0.0000 +/- 0.0000 | Br = 0.1035 +/- 0.1310 |

```

2.9 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3d1+gorder1_3s1.irho





parameter values

```
minimised with chisq/nDoF = 32.91 / (36 - 8) = 1.18
```

JP1+_g_pi:omega/3^D_1_pole0_order0		-0.68322	+/-	0.98264		1.00	0.14	0.24	0.33	-0.23	-0.02	-0.07	-0.12						
JP1+_g_pi:omega/3^S_1_pole0_order0		0.12065	+/-	0.034824		1.00	-0.91	0.03	-0.13	-0.08	-0.01	-0.02							
JP1+_g_pi:omega/3^S_1_pole0_order1		-0.73003	+/-	0.58369		1.00	0.06	0.02	0.06	-0.01	-0.04								
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order		-48.781	+/-	13.294		1.00	-0.23	0.31	-0.12	-0.16									
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order		7.8618	+/-	0.56821		1.00	-0.90	0.02	0.04										
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order		-157.86	+/-	11.022		1.00	0.04	-0.02											
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.93320	+/-	0.28312		1.00	-0.25												
JP1+_m_pole0		0.24712	+/-	0.00054685		1.00													

pole singularities

```
pi:omega[] pi:phi[] upper half-plane

sqrt(s)_pole = ( 0.2402 +/- 0.0018612)
  + (i/2)*(+0.055303 +/- 0.0042018) [ 0.03]

s_pole = (0.056932 +/- 0.00089839)
  + i*(+0.013284 +/- 0.0010174) [-0.00]

          pi:omega |           pi:phi |
=====|=====
k_re= 0.0479 +/- 0.0018 | k_re= 0.0291 +/- 0.0018 |
```

2 Unphysical Parameterizations

```

k_im= 0.0309 +/- 0.0020 |      k_im= 0.0444 +/- 0.0018 |
corr= [ 0.11]           |      corr= [ 0.12]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1272 +/- 0.0037 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0394 +/- 0.0084 |
arg(g)/pi= -0.1319 +/- 0.0039 |arg(g)/pi= 0.6319 +/- 0.0039 |arg(g)/pi= -0.0993 +/- 0.0148 |
-----|-----|-----|
g_re= 0.1165 +/- 0.0037 |      g_re= -0.0000 +/- 0.0000 |      g_re= 0.0375 +/- 0.0080 |
g_im= -0.0512 +/- 0.0017 |      g_im= 0.0000 +/- 0.0000 |      g_im= -0.0121 +/- 0.0031 |
corr= [-0.49]           |      corr= [-0.71]           |      corr= [-0.78]           |
-----|-----|-----|
Br = 0.4041 +/- 0.0345 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0387 +/- 0.0184 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = ( 0.2402 +/- 0.0018612)
+ (i/2)*(-0.055303 +/- 0.0042018) [-0.03]

s_pole = (0.056932 +/- 0.00089839)
+ i*(-0.013284 +/- 0.0010174) [ 0.00]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0479 +/- 0.0018 |      k_re= -0.0291 +/- 0.0018 |
k_im= 0.0309 +/- 0.0020 |      k_im= 0.0444 +/- 0.0018 |
corr= [-0.11]           |      corr= [-0.12]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1272 +/- 0.0037 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0394 +/- 0.0084 |
arg(g)/pi= 0.1319 +/- 0.0039 |arg(g)/pi= 0.3681 +/- 0.0039 |arg(g)/pi= 0.0993 +/- 0.0148 |
-----|-----|-----|
g_re= 0.1165 +/- 0.0037 |      g_re= 0.0000 +/- 0.0000 |      g_re= 0.0375 +/- 0.0080 |
g_im= 0.0512 +/- 0.0017 |      g_im= 0.0000 +/- 0.0000 |      g_im= 0.0121 +/- 0.0031 |
corr= [ 0.49]           |      corr= [ 0.71]           |      corr= [ 0.78]           |
-----|-----|-----|
Br = 0.4041 +/- 0.0345 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0387 +/- 0.0184 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = ( 0.2402 +/- 0.0018612)
+ (i/2)*(+0.055303 +/- 0.0042018) [ 0.03]

s_pole = (0.056932 +/- 0.00089839)
+ i*(+0.013284 +/- 0.0010174) [-0.00]

pi:omega |      pi:phi |
=====|=====
k_re= 0.0479 +/- 0.0018 |      k_re= -0.0291 +/- 0.0018 |
k_im= 0.0309 +/- 0.0020 |      k_im= -0.0444 +/- 0.0018 |
corr= [ 0.11]           |      corr= [ 0.12]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1272 +/- 0.0037 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0394 +/- 0.0084 |
arg(g)/pi= -0.1319 +/- 0.0039 |arg(g)/pi= 0.6319 +/- 0.0039 |arg(g)/pi= -0.0993 +/- 0.0148 |
-----|-----|-----|
g_re= 0.1165 +/- 0.0037 |      g_re= -0.0000 +/- 0.0000 |      g_re= 0.0375 +/- 0.0080 |
g_im= -0.0512 +/- 0.0017 |      g_im= 0.0000 +/- 0.0000 |      g_im= -0.0121 +/- 0.0031 |

```

2 Unphysical Parameterizations

```

corr= [-0.49] | corr= [-0.71] | corr= [-0.78]
-----|-----|-----|
Br = 0.4041 +/- 0.0345 | Br = 0.0000 +/- 0.0000 | Br = 0.0387 +/- 0.0184 |

-- pi:omega[+] pi:phi[-] lower half-plane

sqrt(s)_pole = ( 0.2402 +/- 0.0018612)
+ (i/2)*(-0.055303 +/- 0.0042018) [-0.03]

s_pole = (0.056932 +/- 0.00089839)
+ i*(-0.013284 +/- 0.0010174) [ 0.00]

pi:omega | pi:phi |
=====|=====
k_re= -0.0479 +/- 0.0018 | k_re= 0.0291 +/- 0.0018 |
k_im= 0.0309 +/- 0.0020 | k_im= -0.0444 +/- 0.0018 |
corr= [-0.11] | corr= [-0.12] | 

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1272 +/- 0.0037 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0394 +/- 0.0084 |
arg(g)/pi= 0.1319 +/- 0.0039 | arg(g)/pi= 0.3681 +/- 0.0039 | arg(g)/pi= 0.0993 +/- 0.0148 |
-----|-----|-----|
g_re= 0.1165 +/- 0.0037 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0375 +/- 0.0080 |
g_im= 0.0512 +/- 0.0017 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0121 +/- 0.0031 |
corr= [ 0.49] | corr= [ 0.71] | corr= [ 0.78] |
-----|-----|-----|
Br = 0.4041 +/- 0.0345 | Br = 0.0000 +/- 0.0000 | Br = 0.0387 +/- 0.0184 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.19875 +/- 0.0017434)
+ (i/2)*(-3.0966e-15 +/- 1.5467e-12) [ 0.00]

s_pole = (0.039503 +/- 0.00069304)
+ i*(-6.1558e-16 +/- 3.0748e-13) [ 0.00]

pi:omega | pi:phi |
=====|=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0470 +/- 0.0014 | k_im= 0.0620 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] | 

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1251 +/- 0.0040 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0270 +/- 0.0071 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1251 +/- 0.0040 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0270 +/- 0.0071 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.49] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24545 +/- 0.00096149)
+ (i/2)*(+0.0062435 +/- 0.0016873) [-0.82]

s_pole = (0.060236 +/- 0.00047631)

```

2 Unphysical Parameterizations

```

+ i*(+0.0015325 +/- 0.00040926) [-0.82]

pi:omega | pi:phi |
=====
k_re= -0.0466 +/- 0.0011 | k_re= 0.0079 +/- 0.0012 |
k_im= -0.0037 +/- 0.0010 | k_im= 0.0193 +/- 0.0027 |
corr= [-0.82] | corr= [ 0.62] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0575 +/- 0.0083 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0132 +/- 0.0071 |
arg(g)/pi= 0.1382 +/- 0.0156 |arg(g)/pi= 0.3618 +/- 0.0156 |arg(g)/pi= 0.8338 +/- 0.1085 |
-----|-----|-----|
g_re= 0.0522 +/- 0.0073 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0115 +/- 0.0082 |
g_im= 0.0242 +/- 0.0047 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0066 +/- 0.0019 |
corr= [ 0.75] | corr= [ 0.66] | corr= [ 0.06] |
-----|-----|-----|
Br = 0.8184 +/- 0.0287 | Br = 0.0000 +/- 0.0000 | Br = 0.0434 +/- 0.0564 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.24545 +/- 0.00096149)
+ (i/2)*(-0.0062435 +/- 0.0016873) [ 0.82]

s_pole = (0.060236 +/- 0.00047631)
+ i*(-0.0015325 +/- 0.00040926) [ 0.82]

pi:omega | pi:phi |
=====
k_re= 0.0466 +/- 0.0011 | k_re= -0.0079 +/- 0.0012 |
k_im= -0.0037 +/- 0.0010 | k_im= 0.0193 +/- 0.0027 |
corr= [ 0.82] | corr= [-0.62] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0575 +/- 0.0083 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0132 +/- 0.0071 |
arg(g)/pi= -0.1382 +/- 0.0156 |arg(g)/pi= 0.6382 +/- 0.0156 |arg(g)/pi= -0.8338 +/- 0.1085 |
-----|-----|-----|
g_re= 0.0522 +/- 0.0073 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0115 +/- 0.0082 |
g_im= -0.0242 +/- 0.0047 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0066 +/- 0.0019 |
corr= [-0.75] | corr= [-0.66] | corr= [-0.06] |
-----|-----|-----|
Br = 0.8184 +/- 0.0287 | Br = 0.0000 +/- 0.0000 | Br = 0.0434 +/- 0.0564 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.19875 +/- 0.0017434)
+ (i/2)*(-1.6036e-12 +/- 8.0261e-10) [-0.02]

s_pole = (0.039503 +/- 0.00069304)
+ i*(-3.1879e-13 +/- 1.5955e-10) [-0.02]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0470 +/- 0.0014 | k_im= -0.0620 +/- 0.0007 |
corr= [ 0.02] | corr= [ 0.02] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
```

2 Unphysical Parameterizations

```

|g|= 0.1251 +/- 0.0040 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0270 +/- 0.0071 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1251 +/- 0.0040 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0270 +/- 0.0071 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.49] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24545 +/- 0.00096149)  

+ (i/2)*(+0.0062435 +/- 0.0016873) [-0.82]  

s_pole = (0.060236 +/- 0.00047631)  

+ i*(+0.0015325 +/- 0.00040926) [-0.82]  

pi:omega | pi:phi |  

=====|=====|
k_re= -0.0466 +/- 0.0011 | k_re= -0.0079 +/- 0.0012 |
k_im= -0.0037 +/- 0.0010 | k_im= -0.0193 +/- 0.0027 |
corr= [-0.82] | corr= [ 0.62] |  

-----|-----|-----|
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====|
|g|= 0.0575 +/- 0.0083 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0132 +/- 0.0071 |
arg(g)/pi= 0.1382 +/- 0.0156 | arg(g)/pi= 0.3618 +/- 0.0156 | arg(g)/pi= 0.8338 +/- 0.1085 |
-----|-----|-----|
g_re= 0.0522 +/- 0.0073 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0115 +/- 0.0082 |
g_im= 0.0242 +/- 0.0047 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0066 +/- 0.0019 |
corr= [ 0.75] | corr= [ 0.66] | corr= [ 0.06] |
-----|-----|-----|
Br = 0.8184 +/- 0.0287 | Br = 0.0000 +/- 0.0000 | Br = 0.0434 +/- 0.0564 |  

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24545 +/- 0.00096149)  

+ (i/2)*(-0.0062435 +/- 0.0016873) [ 0.82]  

s_pole = (0.060236 +/- 0.00047631)  

+ i*(-0.0015325 +/- 0.00040926) [ 0.82]  

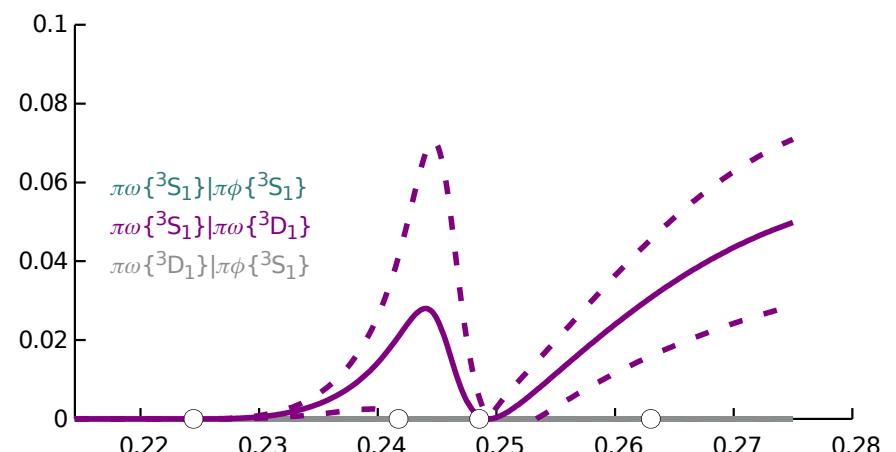
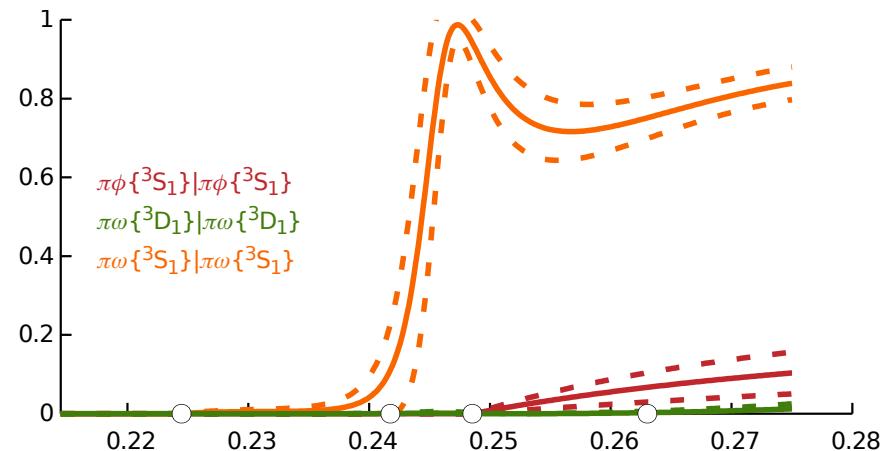
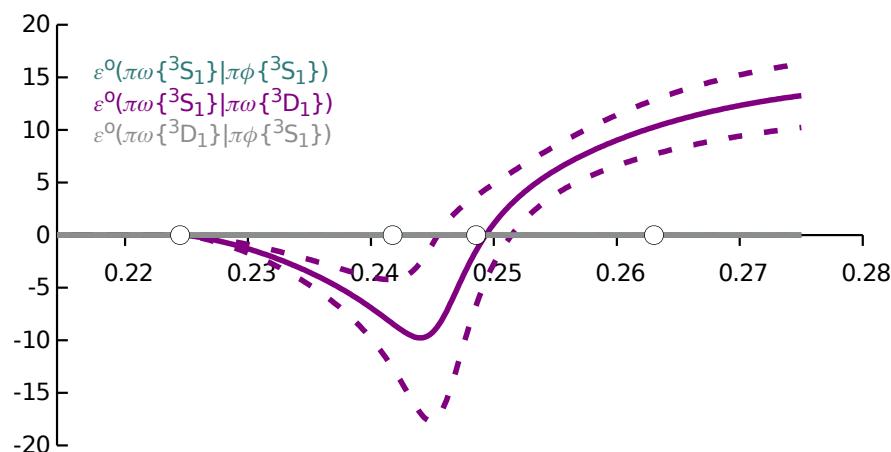
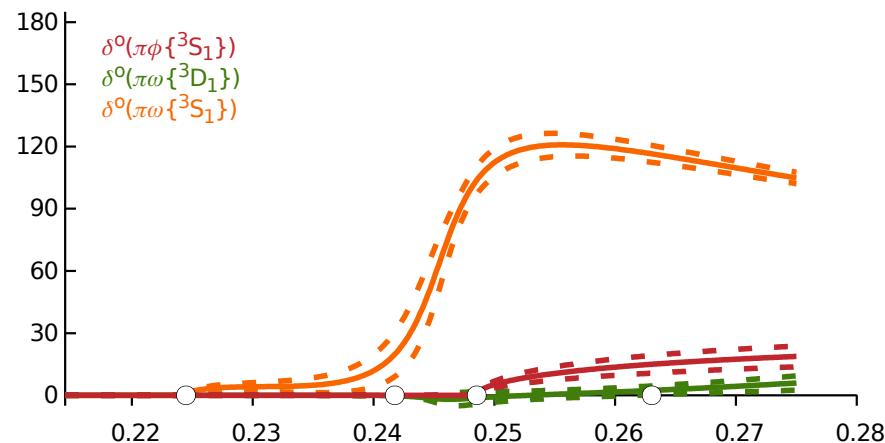
pi:omega | pi:phi |  

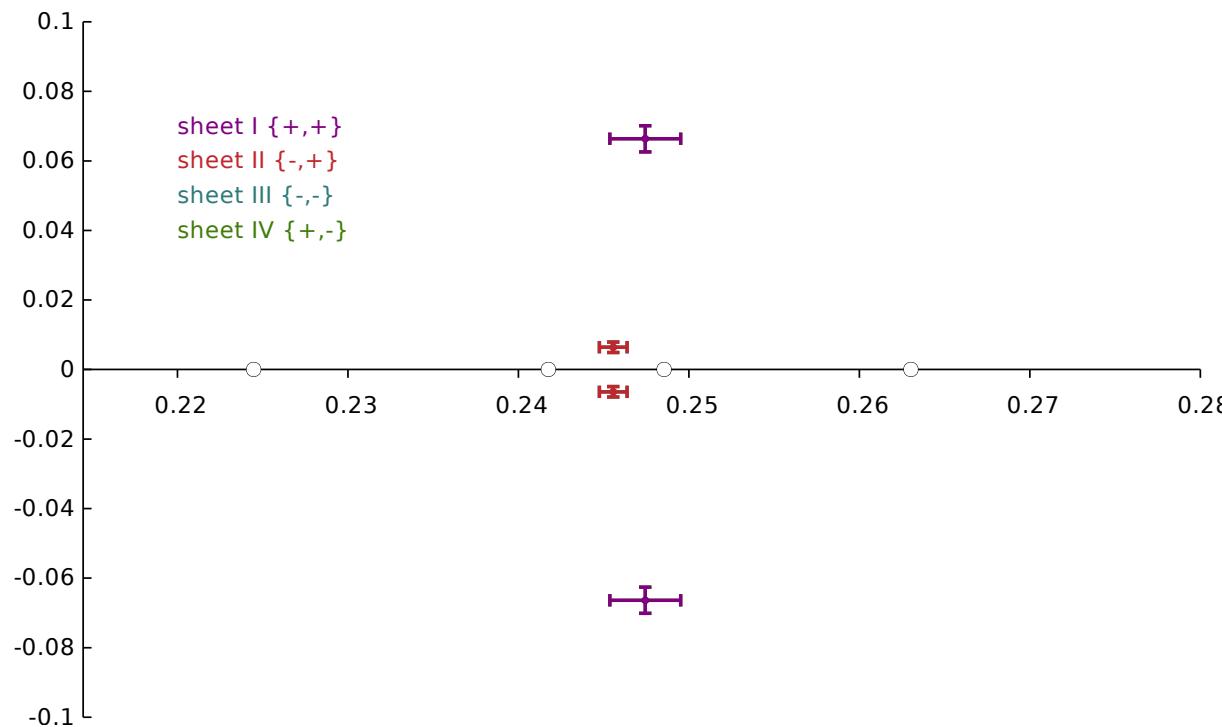
=====|=====|
k_re= 0.0466 +/- 0.0011 | k_re= 0.0079 +/- 0.0012 |
k_im= -0.0037 +/- 0.0010 | k_im= -0.0193 +/- 0.0027 |
corr= [ 0.82] | corr= [-0.62] |  

-----|-----|-----|
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====|
|g|= 0.0575 +/- 0.0083 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0132 +/- 0.0071 |
arg(g)/pi= -0.1382 +/- 0.0156 | arg(g)/pi= 0.6382 +/- 0.0156 | arg(g)/pi= -0.8338 +/- 0.1085 |
-----|-----|-----|
g_re= 0.0522 +/- 0.0073 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0115 +/- 0.0082 |
g_im= -0.0242 +/- 0.0047 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0066 +/- 0.0019 |
corr= [-0.75] | corr= [-0.66] | corr= [-0.06] |
-----|-----|-----|
Br = 0.8184 +/- 0.0287 | Br = 0.0000 +/- 0.0000 | Br = 0.0434 +/- 0.0564 |

```

2.10 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3d1+gorder1_3s1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 32.81 / (36 - 8) = 1.17
```

JP1+_g_pi:omega/3^D_1_pole0_order0	-0.64947 +/- 0.90553	1.00 0.08 0.22 0.29 -0.24 -0.07 -0.13 0.13
JP1+_g_pi:omega/3^S_1_pole0_order0	0.10805 +/- 0.036508	1.00 -0.94 0.01 -0.17 -0.13 -0.01 0.03
JP1+_g_pi:omega/3^S_1_pole0_order1	-0.55600 +/- 0.61415	1.00 0.04 0.07 0.10 -0.03 0.01
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order	-44.396 +/- 11.735	1.00 -0.13 0.25 -0.15 -0.11
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	6.6798 +/- 0.35871	1.00 -0.82 0.05 -0.04
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-133.94 +/- 6.9516	1.00 0.06 -0.06
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.87601 +/- 0.24811	1.00 -0.19
JP1+_m_pole0	0.24717 +/- 0.00056503	1.00

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24744 +/- 0.0020766)
  + (i/2)*(+0.066366 +/- 0.0037648) [ 0.02]
s_pole = (0.060126 +/- 0.0010333)
  + i*(+0.016422 +/- 0.0009438) [ 0.04]
```

```
pi:omega | pi:phi |
=====
k_re= 0.0559 +/- 0.0018 | k_re= 0.0375 +/- 0.0018 |
```

2 Unphysical Parameterizations

```

k_im= 0.0332 +/- 0.0017 |      k_im= 0.0442 +/- 0.0017 |
corr= [-0.05]           |      corr= [-0.09]          |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1599 +/- 0.0040 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0491 +/- 0.0099 |
arg(g)/pi= -0.1997 +/- 0.0033 |arg(g)/pi= 0.6997 +/- 0.0033 |arg(g)/pi= -0.1573 +/- 0.0130 |
-----|-----|-----|
g_re= 0.1295 +/- 0.0032 |      g_re= -0.0000 +/- 0.0000 |      g_re= 0.0432 +/- 0.0089 |
g_im= -0.0939 +/- 0.0030 |      g_im= 0.0000 +/- 0.0000 |      g_im= -0.0233 +/- 0.0048 |
corr= [-0.73]           |      corr= [-0.68]          |      corr= [-0.89]          |
-----|-----|-----|
Br = 0.6131 +/- 0.0322 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0577 +/- 0.0257 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24744 +/- 0.0020766)
+ (i/2)*(-0.066366 +/- 0.0037648) [-0.02]

s_pole = (0.060126 +/- 0.0010333)
+ i*(-0.016422 +/- 0.0009438) [-0.04]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0559 +/- 0.0018 |      k_re= -0.0375 +/- 0.0018 |
k_im= 0.0332 +/- 0.0017 |      k_im= 0.0442 +/- 0.0017 |
corr= [ 0.05]           |      corr= [ 0.09]          |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1599 +/- 0.0040 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0491 +/- 0.0099 |
arg(g)/pi= 0.1997 +/- 0.0033 |arg(g)/pi= 0.3003 +/- 0.0033 |arg(g)/pi= 0.1573 +/- 0.0130 |
-----|-----|-----|
g_re= 0.1295 +/- 0.0032 |      g_re= 0.0000 +/- 0.0000 |      g_re= 0.0432 +/- 0.0089 |
g_im= 0.0939 +/- 0.0030 |      g_im= 0.0000 +/- 0.0000 |      g_im= 0.0233 +/- 0.0048 |
corr= [ 0.73]           |      corr= [ 0.68]          |      corr= [ 0.89]          |
-----|-----|-----|
Br = 0.6131 +/- 0.0322 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0577 +/- 0.0257 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24744 +/- 0.0020766)
+ (i/2)*(-0.066366 +/- 0.0037648) [-0.02]

s_pole = (0.060126 +/- 0.0010333)
+ i*(-0.016422 +/- 0.0009438) [-0.04]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0559 +/- 0.0018 |      k_re= 0.0375 +/- 0.0018 |
k_im= 0.0332 +/- 0.0017 |      k_im= -0.0442 +/- 0.0017 |
corr= [ 0.05]           |      corr= [ 0.09]          |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1599 +/- 0.0040 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0491 +/- 0.0099 |
arg(g)/pi= 0.1997 +/- 0.0033 |arg(g)/pi= 0.3003 +/- 0.0033 |arg(g)/pi= 0.1573 +/- 0.0130 |
-----|-----|-----|
g_re= 0.1295 +/- 0.0032 |      g_re= 0.0000 +/- 0.0000 |      g_re= 0.0432 +/- 0.0089 |
g_im= 0.0939 +/- 0.0030 |      g_im= 0.0000 +/- 0.0000 |      g_im= 0.0233 +/- 0.0048 |

```

2 Unphysical Parameterizations

```

corr= [ 0.73] | corr= [ 0.68] | corr= [ 0.89] |
-----|-----|-----|
Br = 0.6131 +/- 0.0322 | Br = 0.0000 +/- 0.0000 | Br = 0.0577 +/- 0.0257 |

-- pi:omega[+] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24744 +/- 0.0020766)
+ (i/2)*(+0.066366 +/- 0.0037648) [ 0.02]

s_pole = (0.060126 +/- 0.0010333)
+ i*(+0.016422 +/- 0.0009438) [ 0.04]

pi:omega | pi:phi |
=====|=====
k_re= 0.0559 +/- 0.0018 | k_re= -0.0375 +/- 0.0018 |
k_im= 0.0332 +/- 0.0017 | k_im= -0.0442 +/- 0.0017 |
corr= [-0.05] | corr= [-0.09] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1599 +/- 0.0040 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0491 +/- 0.0099 |
arg(g)/pi= -0.1997 +/- 0.0033 | arg(g)/pi= 0.6997 +/- 0.0033 | arg(g)/pi= -0.1573 +/- 0.0130 |
-----|-----|-----|
g_re= 0.1295 +/- 0.0032 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0432 +/- 0.0089 |
g_im= -0.0939 +/- 0.0030 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0233 +/- 0.0048 |
corr= [-0.73] | corr= [-0.68] | corr= [-0.89] |

Br = 0.6131 +/- 0.0322 | Br = 0.0000 +/- 0.0000 | Br = 0.0577 +/- 0.0257 |

-- pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.27735 +/- 0.010309)
+ (i/2)*(+0.24413 +/- 0.072227) [ 0.95]

s_pole = (0.062021 +/- 0.0037939)
+ i*(+0.067711 +/- 0.022447) [-0.87]

pi:omega | pi:phi |
=====|=====
k_re= -0.0949 +/- 0.0116 | k_re= 0.0834 +/- 0.0131 |
k_im= -0.0852 +/- 0.0192 | k_im= 0.0925 +/- 0.0190 |
corr= [ 0.98] | corr= [ 0.99] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0552 +/- 0.0054 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1887 +/- 0.0232 |
arg(g)/pi= 0.5397 +/- 0.0344 | arg(g)/pi= 0.9815 +/- 0.0361 | arg(g)/pi= -0.4815 +/- 0.0361 |
-----|-----|-----|
g_re= -0.0069 +/- 0.0054 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0110 +/- 0.0227 |
g_im= 0.0547 +/- 0.0060 | g_im= 0.0000 +/- 0.0000 | g_im= -0.1883 +/- 0.0219 |
corr= [ 0.81] | corr= [ 1.00] | corr= [-1.00] |

Br = 0.0249 +/- 0.0134 | Br = 0.0000 +/- 0.0000 | Br = 0.2910 +/- 0.0355 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.27735 +/- 0.010309)
+ (i/2)*(-0.24413 +/- 0.072227) [-0.95]

s_pole = (0.062021 +/- 0.0037939)

```

2 Unphysical Parameterizations

```

+ i*(-0.067711 +/- 0.022447) [ 0.87]

pi:omega | pi:phi |
=====
k_re= 0.0949 +/- 0.0116 | k_re= -0.0834 +/- 0.0131 |
k_im= -0.0852 +/- 0.0192 | k_im= 0.0925 +/- 0.0190 |
corr= [-0.98] | corr= [-0.99] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====
|g|= 0.0552 +/- 0.0054 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1887 +/- 0.0232 |
arg(g)/pi= -0.5397 +/- 0.0344 | arg(g)/pi= 0.0185 +/- 0.0361 | arg(g)/pi= 0.4815 +/- 0.0361 |
-----|-----|-----|
g_re= -0.0069 +/- 0.0054 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0110 +/- 0.0227 |
g_im= -0.0547 +/- 0.0060 | g_im= 0.0000 +/- 0.0000 | g_im= 0.1883 +/- 0.0219 |
corr= [-0.81] | corr= [-1.00] | corr= [ 1.00] |
-----|-----|-----|
Br = 0.0249 +/- 0.0134 | Br = 0.0000 +/- 0.0000 | Br = 0.2910 +/- 0.0355 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.20339 +/- 0.0014496)
+ (i/2)*(-1.9254e-15 +/- 9.3274e-13) [ 0.00]

s_pole = (0.041368 +/- 0.00058969)
+ i*(-3.9166e-16 +/- 1.8973e-13) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0430 +/- 0.0013 | k_im= 0.0600 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1017 +/- 0.0037 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0224 +/- 0.0058 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1017 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0224 +/- 0.0058 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.28] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24556 +/- 0.00081333)
+ (i/2)*(+0.0064084 +/- 0.0014939) [-0.72]

s_pole = (0.060291 +/- 0.00040292)
+ i*(+0.0015737 +/- 0.00036311) [-0.72]

pi:omega | pi:phi |
=====
k_re= -0.0467 +/- 0.0009 | k_re= 0.0082 +/- 0.0012 |
k_im= -0.0038 +/- 0.0009 | k_im= 0.0191 +/- 0.0023 |
corr= [-0.72] | corr= [ 0.51] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
```

2 Unphysical Parameterizations

```

|g|= 0.0583 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0127 +/- 0.0065 |
arg(g)/pi= 0.1289 +/- 0.0153 |arg(g)/pi= 0.3711 +/- 0.0153 |arg(g)/pi= 0.8342 +/- 0.1083 |
-----|-----|-----|
g_re= 0.0536 +/- 0.0061 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0110 +/- 0.0075 |
g_im= 0.0230 +/- 0.0044 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0063 +/- 0.0019 |
corr= [ 0.74] | corr= [ 0.47] | corr= [ 0.14] |
-----|-----|-----|
Br = 0.8196 +/- 0.0222 | Br = 0.0000 +/- 0.0000 | Br = 0.0389 +/- 0.0466 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24556 +/- 0.00081333)
+ (i/2)*(-0.0064084 +/- 0.0014939) [ 0.72]

s_pole = (0.060291 +/- 0.00040292)
+ i*(-0.0015737 +/- 0.00036311) [ 0.72]

pi:omega | pi:phi |
=====|=====
k_re= 0.0467 +/- 0.0009 | k_re= -0.0082 +/- 0.0012 |
k_im= -0.0038 +/- 0.0009 | k_im= 0.0191 +/- 0.0023 |
corr= [ 0.72] | corr= [-0.51] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0583 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0127 +/- 0.0065 |
arg(g)/pi= -0.1289 +/- 0.0153 |arg(g)/pi= 0.6289 +/- 0.0153 |arg(g)/pi= -0.8342 +/- 0.1083 |
-----|-----|-----|
g_re= 0.0536 +/- 0.0061 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0110 +/- 0.0075 |
g_im= -0.0230 +/- 0.0044 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0063 +/- 0.0019 |
corr= [-0.74] | corr= [-0.47] | corr= [-0.14] |
-----|-----|-----|
Br = 0.8196 +/- 0.0222 | Br = 0.0000 +/- 0.0000 | Br = 0.0389 +/- 0.0466 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.27735 +/- 0.010309)
+ (i/2)*(+0.24413 +/- 0.072227) [ 0.95]

s_pole = (0.062021 +/- 0.0037939)
+ i*(+0.067711 +/- 0.022447) [-0.87]

pi:omega | pi:phi |
=====|=====
k_re= -0.0949 +/- 0.0116 | k_re= -0.0834 +/- 0.0131 |
k_im= -0.0852 +/- 0.0192 | k_im= -0.0925 +/- 0.0190 |
corr= [ 0.98] | corr= [ 0.99] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0552 +/- 0.0054 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1887 +/- 0.0232 |
arg(g)/pi= 0.5397 +/- 0.0344 |arg(g)/pi= 0.9815 +/- 0.0361 |arg(g)/pi= -0.4815 +/- 0.0361 |
-----|-----|-----|
g_re= -0.0069 +/- 0.0054 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0110 +/- 0.0227 |
g_im= 0.0547 +/- 0.0060 | g_im= 0.0000 +/- 0.0000 | g_im= -0.1883 +/- 0.0219 |
corr= [ 0.81] | corr= [ 1.00] | corr= [-1.00] |
-----|-----|-----|
Br = 0.0249 +/- 0.0134 | Br = 0.0000 +/- 0.0000 | Br = 0.2910 +/- 0.0355 |

--  

pi:omega[-] pi:phi[-] upper half-plane

```

2 Unphysical Parameterizations

```

sqrt(s)_pole = (0.24556 +/- 0.00081333)
  + (i/2)*(+0.0064084 +/- 0.0014939) [-0.72]

s_pole = (0.060291 +/- 0.00040292)
  + i*(+0.0015737 +/- 0.00036311) [-0.72]

pi:omega | pi:phi |
=====
k_re= -0.0467 +/- 0.0009 | k_re= -0.0082 +/- 0.0012 |
k_im= -0.0038 +/- 0.0009 | k_im= -0.0191 +/- 0.0023 |
corr= [-0.72] | corr= [ 0.51] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0583 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0127 +/- 0.0065 |
arg(g)/pi= 0.1289 +/- 0.0153 | arg(g)/pi= 0.3711 +/- 0.0153 | arg(g)/pi= 0.8342 +/- 0.1083 |
-----|-----|-----|
g_re= 0.0536 +/- 0.0061 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0110 +/- 0.0075 |
g_im= 0.0230 +/- 0.0044 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0063 +/- 0.0019 |
corr= [ 0.74] | corr= [ 0.47] | corr= [ 0.14] |
-----|-----|-----|
Br = 0.8196 +/- 0.0222 | Br = 0.0000 +/- 0.0000 | Br = 0.0389 +/- 0.0466 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.20339 +/- 0.0014496)
  + (i/2)*(+6.8462e-15 +/- 3.4335e-12) [ 0.00]

s_pole = (0.041368 +/- 0.00058969)
  + i*(+1.3926e-15 +/- 6.9843e-13) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0430 +/- 0.0013 | k_im= -0.0600 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1017 +/- 0.0037 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0224 +/- 0.0058 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1017 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0224 +/- 0.0058 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.28] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.27735 +/- 0.010309)
  + (i/2)*(-0.24413 +/- 0.072227) [-0.95]

s_pole = (0.062021 +/- 0.0037939)
  + i*(-0.067711 +/- 0.022447) [ 0.87]

pi:omega | pi:phi |
=====
k_re= 0.0949 +/- 0.0116 | k_re= 0.0834 +/- 0.0131 |
k_im= -0.0852 +/- 0.0192 | k_im= -0.0925 +/- 0.0190 |

```

2 Unphysical Parameterizations

```

corr= [-0.98] | corr= [-0.99] |
pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0552 +/- 0.0054 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1887 +/- 0.0232 |
arg(g)/pi= -0.5397 +/- 0.0344 | arg(g)/pi= 0.0185 +/- 0.0361 | arg(g)/pi= 0.4815 +/- 0.0361 |
-----|-----|-----
g_re= -0.0069 +/- 0.0054 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0110 +/- 0.0227 |
g_im= -0.0547 +/- 0.0060 | g_im= 0.0000 +/- 0.0000 | g_im= 0.1883 +/- 0.0219 |
corr= [-0.81] | corr= [-1.00] | corr= [ 1.00] |
-----|-----|-----
Br = 0.0249 +/- 0.0134 | Br = 0.0000 +/- 0.0000 | Br = 0.2910 +/- 0.0355 |

--  

pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24556 +/- 0.00081333)
+ (i/2)*(-0.0064084 +/- 0.0014939) [ 0.72]

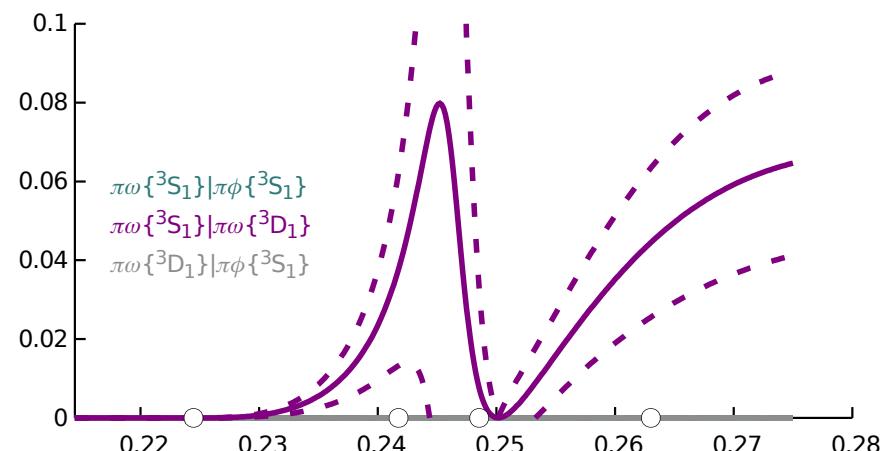
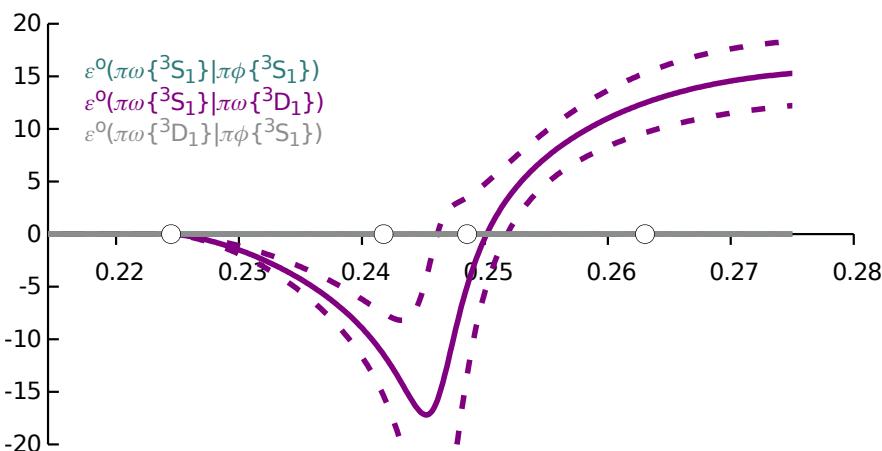
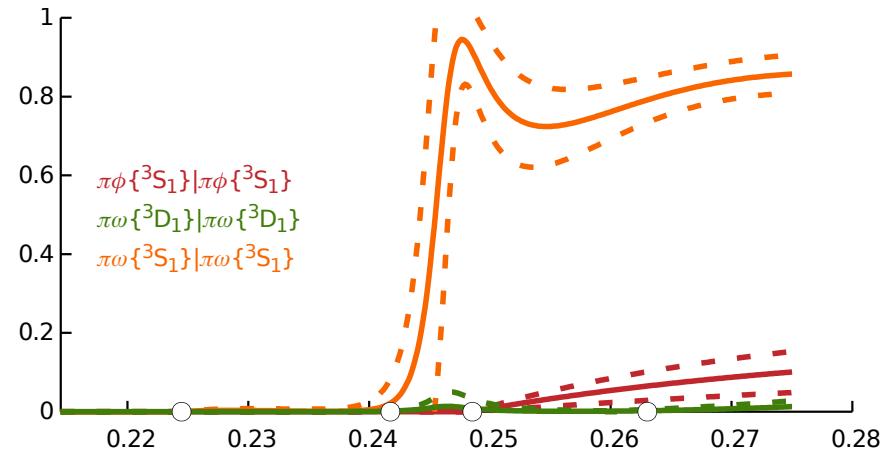
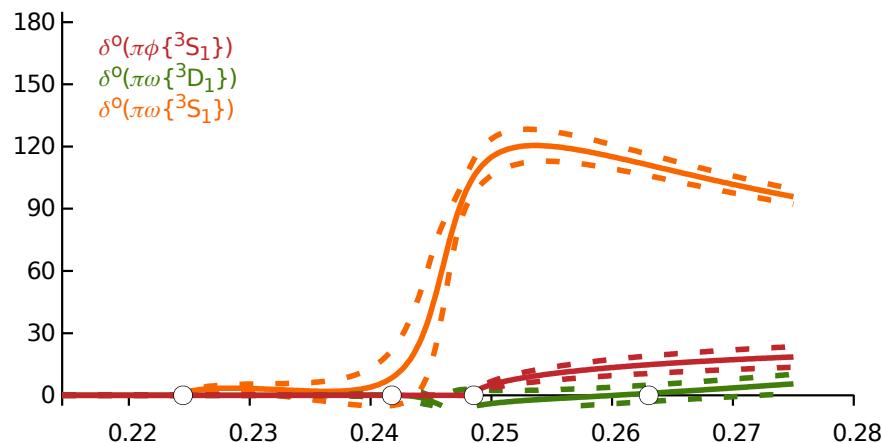
s_pole = (0.060291 +/- 0.00040292)
+ i*(-0.0015737 +/- 0.00036311) [ 0.72]

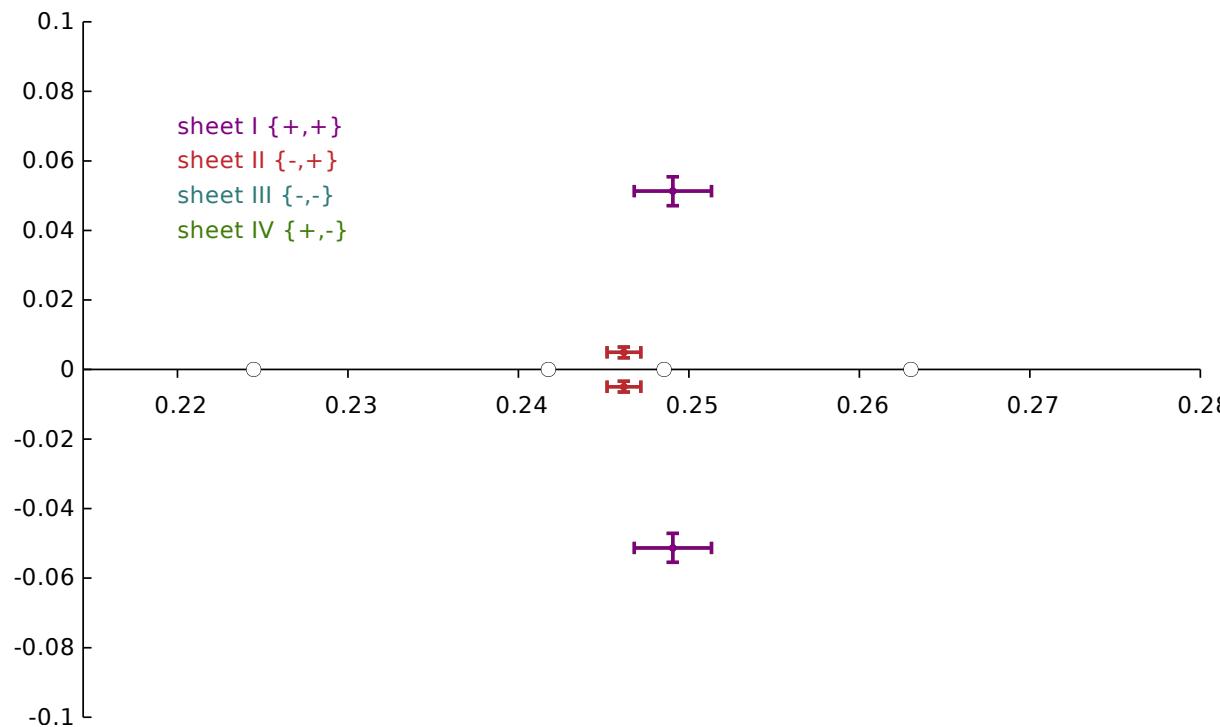
pi:omega | pi:phi |
=====|=====
k_re= 0.0467 +/- 0.0009 | k_re= 0.0082 +/- 0.0012 |
k_im= -0.0038 +/- 0.0009 | k_im= -0.0191 +/- 0.0023 |
corr= [ 0.72] | corr= [-0.51] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0583 +/- 0.0070 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0127 +/- 0.0065 |
arg(g)/pi= -0.1289 +/- 0.0153 | arg(g)/pi= 0.6289 +/- 0.0153 | arg(g)/pi= -0.8342 +/- 0.1083 |
-----|-----|-----
g_re= 0.0536 +/- 0.0061 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0110 +/- 0.0075 |
g_im= -0.0230 +/- 0.0044 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0063 +/- 0.0019 |
corr= [-0.74] | corr= [-0.47] | corr= [-0.14] |
-----|-----|-----
Br = 0.8196 +/- 0.0222 | Br = 0.0000 +/- 0.0000 | Br = 0.0389 +/- 0.0466 |

```

2.11 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3d1+gorder1_3s1.threshold_sub





parameter values

minimised with chisq/nDoF = 31.74 / (36 - 8) = 1.13

JP1+_g_pi:omega/3^D_1_pole0_order0		-1.5750 +/- 1.166		1.00	0.06	0.19	0.32	-0.23	0.08	-0.03	-0.59						
JP1+_g_pi:omega/3^S_1_pole0_order0		0.10273 +/- 0.050521		1.00	-0.96	0.07	-0.13	-0.07	-0.01	-0.03							
JP1+_g_pi:omega/3^S_1_pole0_order1		-0.76670 +/- 0.84953		1.00	-0.02	0.05	0.10	0.01	-0.15								
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order		-48.310 +/- 11.622		1.00	-0.28	0.37	-0.08	-0.19									
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order		7.0316 +/- 0.55986		1.00	-0.93	-0.00	0.20										
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order		-136.73 +/- 10.661		1.00	0.05	-0.10											
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0		0.93586 +/- 0.29477		1.00	-0.20												
JP1+_m_pole0		0.24655 +/- 0.00065445		1.00													

pole singularities

```

pi:omega[+] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24906 +/- 0.0022615)
  + (i/2)*(+0.051308 +/- 0.0041576) [ 0.30]

s_pole = (0.061373 +/- 0.0010996)
  + i*(+0.012779 +/- 0.0010756) [ 0.31]

pi:omega | pi:phi |
=====
k_re= 0.0551 +/- 0.0023 | k_re= 0.0345 +/- 0.0025 |

```

2 Unphysical Parameterizations

```

k_im= 0.0262 +/- 0.0018 |      k_im= 0.0374 +/- 0.0018 |
corr= [ 0.20]           |      corr= [ 0.01]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1424 +/- 0.0042 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0481 +/- 0.0084 |
arg(g)/pi= -0.2299 +/- 0.0047 |arg(g)/pi= 0.7299 +/- 0.0047 |arg(g)/pi= -0.1920 +/- 0.0114 |
-----|-----|-----|
g_re= 0.1069 +/- 0.0033 |      g_re= -0.0000 +/- 0.0000 |      g_re= 0.0397 +/- 0.0068 |
g_im= -0.0942 +/- 0.0034 |      g_im= 0.0000 +/- 0.0000 |      g_im= -0.0273 +/- 0.0052 |
corr= [-0.61]           |      corr= [-0.59]           |      corr= [-0.92]           |
-----|-----|-----|
Br = 0.6436 +/- 0.0512 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0736 +/- 0.0297 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24906 +/- 0.0022615)
+ (i/2)*(-0.051308 +/- 0.0041576) [-0.30]

s_pole = (0.061373 +/- 0.0010996)
+ i*(-0.012779 +/- 0.0010756) [-0.31]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0551 +/- 0.0023 |      k_re= -0.0345 +/- 0.0025 |
k_im= 0.0262 +/- 0.0018 |      k_im= 0.0374 +/- 0.0018 |
corr= [-0.20]           |      corr= [-0.01]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1424 +/- 0.0042 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0481 +/- 0.0084 |
arg(g)/pi= 0.2299 +/- 0.0047 |arg(g)/pi= 0.2701 +/- 0.0047 |arg(g)/pi= 0.1920 +/- 0.0114 |
-----|-----|-----|
g_re= 0.1069 +/- 0.0033 |      g_re= 0.0000 +/- 0.0000 |      g_re= 0.0397 +/- 0.0068 |
g_im= 0.0942 +/- 0.0034 |      g_im= 0.0000 +/- 0.0000 |      g_im= 0.0273 +/- 0.0052 |
corr= [ 0.61]           |      corr= [ 0.59]           |      corr= [ 0.92]           |
-----|-----|-----|
Br = 0.6436 +/- 0.0512 |      Br = 0.0000 +/- 0.0000 |      Br = 0.0736 +/- 0.0297 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24906 +/- 0.0022615)
+ (i/2)*(-0.051308 +/- 0.0041577) [-0.30]

s_pole = (0.061373 +/- 0.0010996)
+ i*(-0.012779 +/- 0.0010756) [-0.31]

pi:omega |      pi:phi |
=====|=====
k_re= -0.0551 +/- 0.0023 |      k_re= 0.0345 +/- 0.0025 |
k_im= 0.0262 +/- 0.0018 |      k_im= -0.0374 +/- 0.0018 |
corr= [-0.20]           |      corr= [-0.01]           |

pi:omega/3^S_1(*) |      pi:phi/3^S_1 |      pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1424 +/- 0.0042 |      |g|= 0.0000 +/- 0.0000 |      |g|= 0.0481 +/- 0.0084 |
arg(g)/pi= 0.2299 +/- 0.0047 |arg(g)/pi= 0.2701 +/- 0.0047 |arg(g)/pi= 0.1920 +/- 0.0114 |
-----|-----|-----|
g_re= 0.1069 +/- 0.0033 |      g_re= 0.0000 +/- 0.0000 |      g_re= 0.0397 +/- 0.0068 |
g_im= 0.0942 +/- 0.0034 |      g_im= 0.0000 +/- 0.0000 |      g_im= 0.0273 +/- 0.0052 |

```

2 Unphysical Parameterizations

```

corr= [ 0.61] | corr= [ 0.59] | corr= [ 0.92]
-----|-----|-----|
Br = 0.6436 +/- 0.0512 | Br = 0.0000 +/- 0.0000 | Br = 0.0736 +/- 0.0297 |

-- pi:omega[+] pi:phi[-] upper half-plane
sqrt(s)_pole = (0.24906 +/- 0.0022615)
+ (i/2)*(+0.051308 +/- 0.0041577) [ 0.30]

s_pole = (0.061373 +/- 0.0010996)
+ i*(+0.012779 +/- 0.0010756) [ 0.31]

pi:omega | pi:phi |
=====|=====
k_re= 0.0551 +/- 0.0023 | k_re= -0.0345 +/- 0.0025 |
k_im= 0.0262 +/- 0.0018 | k_im= -0.0374 +/- 0.0018 |
corr= [ 0.20] | corr= [ 0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1424 +/- 0.0042 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0481 +/- 0.0084 |
arg(g)/pi= -0.2299 +/- 0.0047 | arg(g)/pi= 0.7299 +/- 0.0047 | arg(g)/pi= -0.1920 +/- 0.0114 |
|-----|-----|-----|
g_re= 0.1069 +/- 0.0033 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0397 +/- 0.0068 |
g_im= -0.0942 +/- 0.0034 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0273 +/- 0.0052 |
corr= [-0.61] | corr= [-0.59] | corr= [-0.92] |
|-----|-----|-----|
Br = 0.6436 +/- 0.0512 | Br = 0.0000 +/- 0.0000 | Br = 0.0736 +/- 0.0297 |

-- pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.27187 +/- 0.010718)
+ (i/2)*(+0.23965 +/- 0.065039) [ 0.91]

s_pole = (0.059554 +/- 0.0035152)
+ i*(+0.065154 +/- 0.020045) [-0.68]

pi:omega | pi:phi |
=====|=====
k_re= -0.0914 +/- 0.0114 | k_re= 0.0797 +/- 0.0128 |
k_im= -0.0848 +/- 0.0171 | k_im= 0.0923 +/- 0.0168 |
corr= [ 0.96] | corr= [ 0.97] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0573 +/- 0.0069 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1817 +/- 0.0206 |
arg(g)/pi= 0.5491 +/- 0.0322 | arg(g)/pi= 0.9684 +/- 0.0329 | arg(g)/pi= -0.4684 +/- 0.0329 |
|-----|-----|-----|
g_re= -0.0088 +/- 0.0055 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0180 +/- 0.0207 |
g_im= 0.0566 +/- 0.0071 | g_im= 0.0000 +/- 0.0000 | g_im= -0.1808 +/- 0.0186 |
corr= [ 0.21] | corr= [ 1.00] | corr= [-1.00] |
|-----|-----|-----|
Br = 0.0267 +/- 0.0125 | Br = 0.0000 +/- 0.0000 | Br = 0.2689 +/- 0.0318 |

-- pi:omega[-] pi:phi[+] lower half-plane
sqrt(s)_pole = (0.27187 +/- 0.010718)
+ (i/2)*(-0.23965 +/- 0.065039) [-0.91]

s_pole = (0.059554 +/- 0.0035152)

```

2 Unphysical Parameterizations

```

+ i*(-0.065154 +/- 0.020045) [ 0.68]

pi:omega | pi:phi |
=====
k_re= 0.0914 +/- 0.0114 | k_re= -0.0797 +/- 0.0128 |
k_im= -0.0848 +/- 0.0171 | k_im= 0.0923 +/- 0.0168 |
corr= [-0.96] | corr= [-0.97] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====
|g|= 0.0573 +/- 0.0069 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1817 +/- 0.0206 |
arg(g)/pi= -0.5491 +/- 0.0322 | arg(g)/pi= 0.0316 +/- 0.0329 | arg(g)/pi= 0.4684 +/- 0.0329 |
-----|-----|-----|
g_re= -0.0088 +/- 0.0055 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0180 +/- 0.0207 |
g_im= -0.0566 +/- 0.0071 | g_im= 0.0000 +/- 0.0000 | g_im= 0.1808 +/- 0.0186 |
corr= [-0.21] | corr= [-1.00] | corr= [ 1.00] |
-----|-----|-----|
Br = 0.0267 +/- 0.0125 | Br = 0.0000 +/- 0.0000 | Br = 0.2689 +/- 0.0318 |

-- pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.20196 +/- 0.0015008
+ (i/2)*(-8.0085e-17 +/- 4.9859e-14) [ 0.00]

s_pole = (0.040788 +/- 0.00060621
+ i*(-1.6183e-17 +/- 1.0071e-14) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0443 +/- 0.0013 | k_im= 0.0607 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1067 +/- 0.0037 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0251 +/- 0.0056 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1067 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0251 +/- 0.0056 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.25] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24619 +/- 0.00099068)
+ (i/2)*(+0.0049357 +/- 0.0015516) [-0.84]

s_pole = (0.060604 +/- 0.00049103
+ i*(+0.0012151 +/- 0.00037787) [-0.84]

pi:omega | pi:phi |
=====
k_re= -0.0474 +/- 0.0011 | k_re= 0.0071 +/- 0.0011 |
k_im= -0.0029 +/- 0.0009 | k_im= 0.0169 +/- 0.0032 |
corr= [-0.85] | corr= [ 0.58] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
```

2 Unphysical Parameterizations

```

|g|= 0.0497 +/- 0.0101 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0181 +/- 0.0092 |
arg(g)/pi= 0.1332 +/- 0.0210 | arg(g)/pi= 0.3668 +/- 0.0210 | arg(g)/pi= 0.8829 +/- 0.0886 |
-----|-----|-----|
g_re= 0.0454 +/- 0.0088 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0169 +/- 0.0102 |
g_im= 0.0202 +/- 0.0060 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0065 +/- 0.0023 |
corr= [ 0.82] | corr= [ 0.64] | corr= [ 0.48] |
-----|-----|-----|
Br = 0.7811 +/- 0.0866 | Br = 0.0000 +/- 0.0000 | Br = 0.1035 +/- 0.1330 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24619 +/- 0.00099068)
+ (i/2)*(-0.0049357 +/- 0.0015516) [ 0.84]  

s_pole = (0.060604 +/- 0.00049103)
+ i*(-0.0012151 +/- 0.00037787) [ 0.84]

pi:omega | pi:phi |
=====|=====
k_re= 0.0474 +/- 0.0011 | k_re= -0.0071 +/- 0.0011 |
k_im= -0.0029 +/- 0.0009 | k_im= 0.0169 +/- 0.0032 |
corr= [ 0.85] | corr= [-0.58] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0497 +/- 0.0101 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0181 +/- 0.0092 |
arg(g)/pi= -0.1332 +/- 0.0210 | arg(g)/pi= 0.6332 +/- 0.0210 | arg(g)/pi= -0.8829 +/- 0.0886 |
-----|-----|-----|
g_re= 0.0454 +/- 0.0088 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0169 +/- 0.0102 |
g_im= -0.0202 +/- 0.0060 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0065 +/- 0.0023 |
corr= [-0.82] | corr= [-0.64] | corr= [-0.48] |
-----|-----|-----|
Br = 0.7811 +/- 0.0866 | Br = 0.0000 +/- 0.0000 | Br = 0.1035 +/- 0.1330 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.27187 +/- 0.010718)
+ (i/2)*(+0.23965 +/- 0.065039) [ 0.91]  

s_pole = (0.059554 +/- 0.0035152)
+ i*(+0.065154 +/- 0.020045) [-0.68]

pi:omega | pi:phi |
=====|=====
k_re= -0.0914 +/- 0.0114 | k_re= -0.0797 +/- 0.0128 |
k_im= -0.0848 +/- 0.0171 | k_im= -0.0923 +/- 0.0168 |
corr= [ 0.96] | corr= [ 0.97] |

pi:omega/3^S_1 | pi:phi/3^S_1 | pi:omega/3^D_1(*) |
=====|=====|=====
|g|= 0.0573 +/- 0.0069 | |g|= 0.0000 +/- 0.0000 | |g|= 0.1817 +/- 0.0206 |
arg(g)/pi= 0.5491 +/- 0.0322 | arg(g)/pi= 0.9684 +/- 0.0329 | arg(g)/pi= -0.4684 +/- 0.0329 |
-----|-----|-----|
g_re= -0.0088 +/- 0.0055 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0180 +/- 0.0207 |
g_im= 0.0566 +/- 0.0071 | g_im= 0.0000 +/- 0.0000 | g_im= -0.1808 +/- 0.0186 |
corr= [ 0.21] | corr= [ 1.00] | corr= [-1.00] |
-----|-----|-----|
Br = 0.0267 +/- 0.0125 | Br = 0.0000 +/- 0.0000 | Br = 0.2689 +/- 0.0318 |

--  

pi:omega[-] pi:phi[-] upper half-plane

```

2 Unphysical Parameterizations

```

sqrt(s)_pole = (0.24619 +/- 0.00099068)
  + (i/2)*(+0.0049357 +/- 0.0015516) [-0.84]

s_pole = (0.060604 +/- 0.00049103)
  + i*(+0.0012151 +/- 0.00037787) [-0.84]

pi:omega | pi:phi |
=====
k_re= -0.0474 +/- 0.0011 | k_re= -0.0071 +/- 0.0011 |
k_im= -0.0029 +/- 0.0009 | k_im= -0.0169 +/- 0.0032 |
corr= [-0.85] | corr= [ 0.58] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0497 +/- 0.0101 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0181 +/- 0.0092 |
arg(g)/pi= 0.1332 +/- 0.0210 | arg(g)/pi= 0.3668 +/- 0.0210 | arg(g)/pi= 0.8829 +/- 0.0886 |
-----|-----|-----|
g_re= 0.0454 +/- 0.0088 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0169 +/- 0.0102 |
g_im= 0.0202 +/- 0.0060 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0065 +/- 0.0023 |
corr= [ 0.82] | corr= [ 0.64] | corr= [ 0.48] |
-----|-----|-----|
Br = 0.7811 +/- 0.0866 | Br = 0.0000 +/- 0.0000 | Br = 0.1035 +/- 0.1330 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.20196 +/- 0.0015008)
  + (i/2)*(+4.3632e-15 +/- 2.1641e-12) [ 0.00]

s_pole = (0.040788 +/- 0.00060621)
  + i*(+8.8134e-16 +/- 4.3713e-13) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0443 +/- 0.0013 | k_im= -0.0607 +/- 0.0007 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1067 +/- 0.0037 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0251 +/- 0.0056 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1067 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0251 +/- 0.0056 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.25] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.27187 +/- 0.010718)
  + (i/2)*(-0.23965 +/- 0.065039) [-0.91]

s_pole = (0.059554 +/- 0.0035152)
  + i*(-0.065154 +/- 0.020045) [ 0.68]

pi:omega | pi:phi |
=====
k_re= 0.0914 +/- 0.0114 | k_re= 0.0797 +/- 0.0128 |
k_im= -0.0848 +/- 0.0171 | k_im= -0.0923 +/- 0.0168 |

```

2 Unphysical Parameterizations

```

corr= [-0.96]          |     corr= [-0.97]          |
                         |                         |

      pi:omega/3^S_1 |           pi:phi/3^S_1 |           pi:omega/3^D_1(*) |
=====|=====|=====|
    |g|= 0.0573 +/- 0.0069 |    |g|= 0.0000 +/- 0.0000 |    |g|= 0.1817 +/- 0.0206 |
arg(g)/pi= -0.5491 +/- 0.0322 | arg(g)/pi= 0.0316 +/- 0.0329 | arg(g)/pi= 0.4684 +/- 0.0329 |
-----|-----|-----|
  g_re= -0.0088 +/- 0.0055 |    g_re= 0.0000 +/- 0.0000 |    g_re= 0.0180 +/- 0.0207 |
  g_im= -0.0566 +/- 0.0071 |    g_im= 0.0000 +/- 0.0000 |    g_im= 0.1808 +/- 0.0186 |
  corr= [-0.21]           |    corr= [-1.00]          |    corr= [ 1.00]          |
-----|-----|-----|
  Br = 0.0267 +/- 0.0125 |    Br = 0.0000 +/- 0.0000 |    Br = 0.2689 +/- 0.0318 |

--  

pi:omega[-] pi:phi[-] lower half-plane

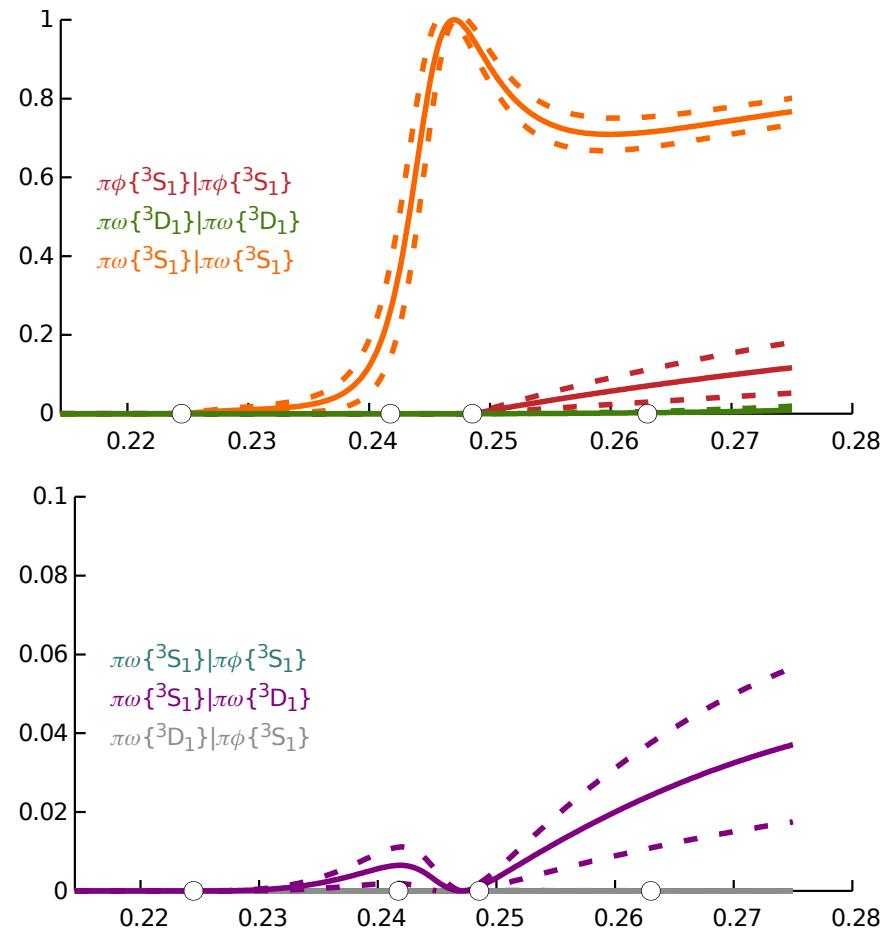
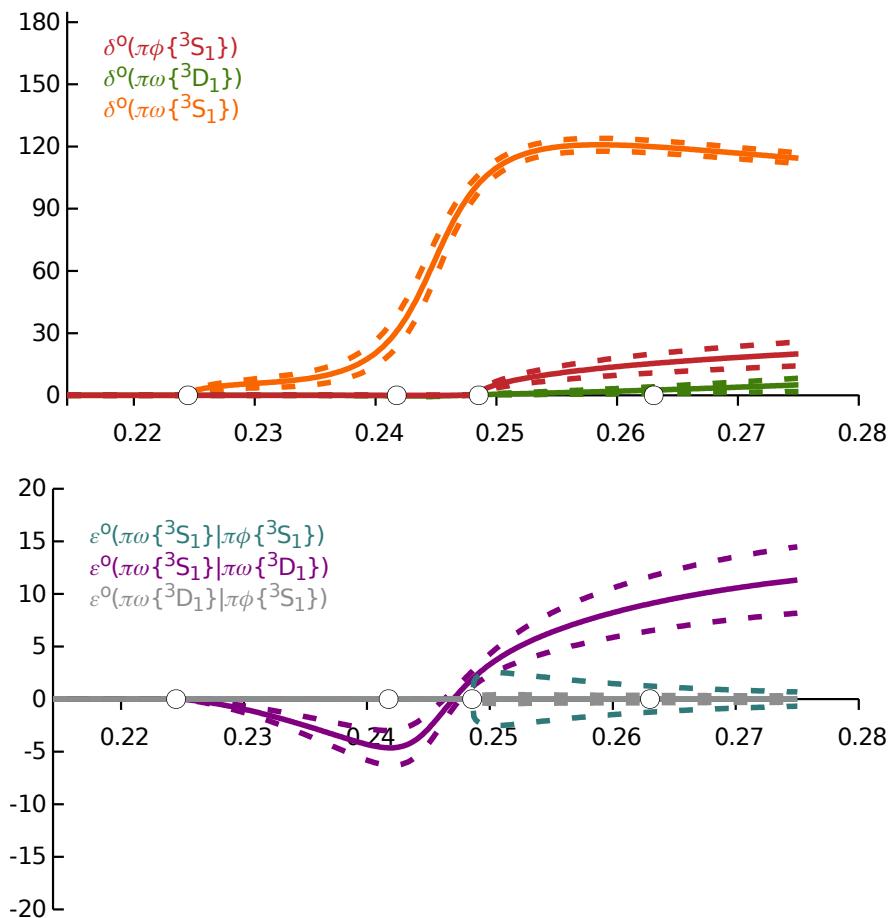
sqrt(s)_pole = (0.24619 +/- 0.00099068)
  + (i/2)*(-0.0049357 +/- 0.0015516) [ 0.84]

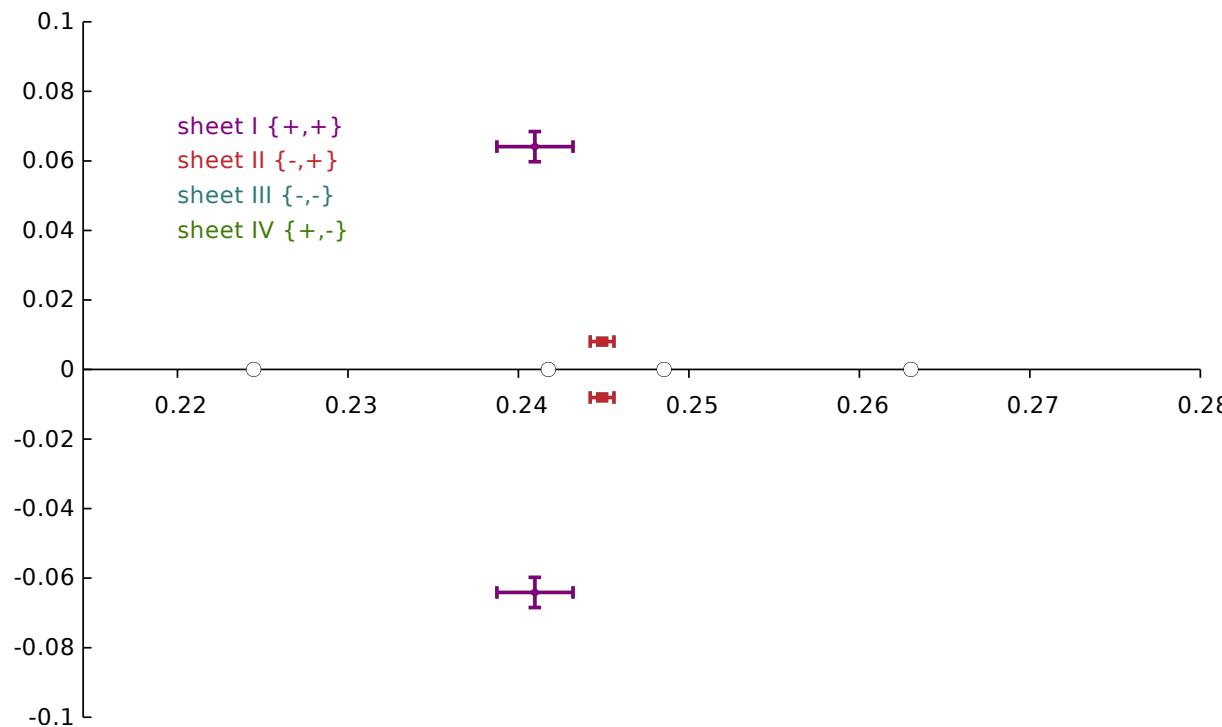
s_pole = (0.060604 +/- 0.00049103)
  + i*(-0.0012151 +/- 0.00037787) [ 0.84]

      pi:omega |           pi:phi |           pi:omega |
=====|=====|=====|
    k_re= 0.0474 +/- 0.0011 |    k_re= 0.0071 +/- 0.0011 |    pi:omega/3^S_1(*) |
    k_im= -0.0029 +/- 0.0009 |    k_im= -0.0169 +/- 0.0032 |    pi:phi/3^S_1 |
    corr= [ 0.85]           |    corr= [-0.58]          |    pi:omega/3^D_1 |
-----|-----|-----|
    |g|= 0.0497 +/- 0.0101 |    |g|= 0.0000 +/- 0.0000 |    |g|= 0.0181 +/- 0.0092 |
arg(g)/pi= -0.1332 +/- 0.0210 | arg(g)/pi= 0.6332 +/- 0.0210 | arg(g)/pi= -0.8829 +/- 0.0886 |
-----|-----|-----|
  g_re= 0.0454 +/- 0.0088 |    g_re= -0.0000 +/- 0.0000 |    g_re= -0.0169 +/- 0.0102 |
  g_im= -0.0202 +/- 0.0060 |    g_im= 0.0000 +/- 0.0000 |    g_im= -0.0065 +/- 0.0023 |
  corr= [-0.82]           |    corr= [-0.64]          |    corr= [-0.48]          |
-----|-----|-----|
  Br = 0.7811 +/- 0.0866 |    Br = 0.0000 +/- 0.0000 |    Br = 0.1035 +/- 0.1330 |

```

2.12 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3S1.irho





parameter values

minimised with chisq/nDoF = 33.27 / (36 - 7) = 1.15

JP1+_g_pi:omega/3^S_1_pole0	0.086324 +/- 0.0061901	1.00 -0.01 -0.25 -0.17 -0.02 0.01 -0.11
JP1+_g_pi:phi/3^S_1_pole0	2.7768e-06 +/- 0.011352	1.00 0.01 0.00 0.00 -0.00 -0.04
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order	-38.748 +/- 12.701	1.00 -0.20 0.34 -0.11 -0.14
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	6.6946 +/- 0.6193	1.00 -0.95 0.00 0.02
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-134.47 +/- 12.322	1.00 0.04 -0.03
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.92768 +/- 0.28228	1.00 -0.26
JP1+_m_pole0	0.24703 +/- 0.00058788	1.00

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24097 +/- 0.0022381)
  + (i/2)*(+0.06412 +/- 0.0043147) [ 0.60]
s_pole = (0.05704 +/- 0.0010018)
  + i*(+0.015451 +/- 0.0011316) [ 0.59]
```

pi:omega	pi:phi
k_re= 0.0501 +/- 0.0024	k_re= 0.0323 +/- 0.0024
k_im= 0.0344 +/- 0.0015	k_im= 0.0469 +/- 0.0012

2 Unphysical Parameterizations

```

corr= [ 0.43] | corr= [ 0.08] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1302 +/- 0.0045 | |g|= 0.0001 +/- 0.0017 | |g|= 0.0373 +/- 0.0089 |
arg(g)/pi= -0.1313 +/- 0.0041 | arg(g)/pi= -0.4801 +/- 11.2960 | arg(g)/pi= -0.0997 +/- 0.0178 |
-----|-----|-----
g_re= 0.1193 +/- 0.0045 | g_re= -0.0000 +/- 0.0029 | g_re= 0.0355 +/- 0.0087 |
g_im= -0.0522 +/- 0.0015 | g_im= 0.0000 +/- 0.0001 | g_im= -0.0115 +/- 0.0029 |
corr= [-0.47] | corr= [ 0.97] | corr= [-0.71] |
-----|-----|-----
Br = 0.3733 +/- 0.0185 | Br = 0.0000 +/- 0.0000 | Br = 0.0306 +/- 0.0158 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24097 +/- 0.0022381)  

+ (i/2)*(-0.06412 +/- 0.0043147) [-0.60]  

s_pole = (0.05704 +/- 0.0010018)  

+ i*(-0.015451 +/- 0.0011316) [-0.59]  

pi:omega | pi:phi |
=====|=====
k_re= -0.0501 +/- 0.0024 | k_re= -0.0323 +/- 0.0024 |
k_im= 0.0344 +/- 0.0015 | k_im= 0.0469 +/- 0.0012 |
corr= [-0.43] | corr= [-0.08] |
-----|-----|-----  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1302 +/- 0.0045 | |g|= 0.0001 +/- 0.0017 | |g|= 0.0373 +/- 0.0089 |
arg(g)/pi= 0.1313 +/- 0.0041 | arg(g)/pi= 0.4857 +/- 11.1438 | arg(g)/pi= 0.0997 +/- 0.0178 |
-----|-----|-----
g_re= 0.1193 +/- 0.0045 | g_re= -0.0000 +/- 0.0029 | g_re= 0.0355 +/- 0.0087 |
g_im= 0.0522 +/- 0.0015 | g_im= 0.0000 +/- 0.0001 | g_im= 0.0115 +/- 0.0029 |
corr= [ 0.47] | corr= [-0.97] | corr= [ 0.71] |
-----|-----|-----
Br = 0.3733 +/- 0.0185 | Br = 0.0000 +/- 0.0000 | Br = 0.0306 +/- 0.0158 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24097 +/- 0.0022381)  

+ (i/2)*(+0.06412 +/- 0.0043148) [ 0.60]  

s_pole = (0.05704 +/- 0.0010018)  

+ i*(+0.015451 +/- 0.0011316) [ 0.59]  

pi:omega | pi:phi |
=====|=====
k_re= 0.0501 +/- 0.0024 | k_re= -0.0323 +/- 0.0024 |
k_im= 0.0344 +/- 0.0015 | k_im= -0.0469 +/- 0.0012 |
corr= [ 0.43] | corr= [ 0.08] |
-----|-----|-----  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1302 +/- 0.0045 | |g|= 0.0002 +/- 0.0032 | |g|= 0.0373 +/- 0.0089 |
arg(g)/pi= -0.1313 +/- 0.0041 | arg(g)/pi= 0.3022 +/- 11.1691 | arg(g)/pi= -0.0997 +/- 0.0178 |
-----|-----|-----
g_re= 0.1193 +/- 0.0045 | g_re= -0.0000 +/- 0.0044 | g_re= 0.0355 +/- 0.0087 |
g_im= -0.0522 +/- 0.0015 | g_im= 0.0000 +/- 0.0030 | g_im= -0.0115 +/- 0.0029 |
corr= [-0.47] | corr= [-1.00] | corr= [-0.71] |
-----|-----|-----
```

2 Unphysical Parameterizations

```

-----+-----+-----+
Br = 0.3733 +/- 0.0186 | Br = 0.0000 +/- 0.0000 | Br = 0.0306 +/- 0.0158 |
-----+-----+-----+
-- pi:omega[+] pi:phi[-] lower half-plane
sqrt(s)_pole = (0.24097 +/- 0.0022381)
+ (i/2)*(-0.06412 +/- 0.0043148) [-0.60]

s_pole = (0.05704 +/- 0.0010018)
+ i*(-0.015451 +/- 0.0011316) [-0.59]

pi:omega | pi:phi |
=====+=====+=====
k_re= -0.0501 +/- 0.0024 | k_re= 0.0323 +/- 0.0024 |
k_im= 0.0344 +/- 0.0015 | k_im= -0.0469 +/- 0.0012 |
corr= [-0.43] | corr= [-0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====+=====+=====
|g|= 0.1302 +/- 0.0045 | |g|= 0.0002 +/- 0.0032 | |g|= 0.0373 +/- 0.0089 |
arg(g)/pi= 0.1313 +/- 0.0041 | arg(g)/pi= -0.3022 +/- 11.1691 | arg(g)/pi= 0.0997 +/- 0.0178 |
-----+-----+-----+
g_re= 0.1193 +/- 0.0045 | g_re= -0.0000 +/- 0.0044 | g_re= 0.0355 +/- 0.0087 |
g_im= 0.0522 +/- 0.0015 | g_im= -0.0000 +/- 0.0030 | g_im= 0.0115 +/- 0.0029 |
corr= [ 0.47] | corr= [ 1.00] | corr= [ 0.71] |
-----+-----+-----+
Br = 0.3733 +/- 0.0186 | Br = 0.0000 +/- 0.0000 | Br = 0.0306 +/- 0.0158 |

-- pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.19527 +/- 0.0022414)
+ (i/2)*(+1.8478e-18 +/- 9.2366e-16) [ 0.00]

s_pole = (0.038131 +/- 0.00087534)
+ i*(+3.6061e-19 +/- 1.8026e-16) [ 0.00]

pi:omega | pi:phi |
=====+=====+=====
k_re= -0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0496 +/- 0.0016 | k_im= 0.0634 +/- 0.0008 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====+=====+=====
|g|= 0.1283 +/- 0.0047 | |g|= 0.0001 +/- 0.0010 | |g|= 0.0249 +/- 0.0079 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.0073 +/- 11.0928 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----+-----+-----+
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1283 +/- 0.0047 | g_im= 0.0000 +/- 0.0017 | g_im= 0.0249 +/- 0.0079 |
corr= [-1.00] | corr= [-0.26] | corr= [-0.35] |
-----+-----+-----+
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000

-- pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24491 +/- 0.00068982)
+ (i/2)*(+0.0080338 +/- 0.00094559) [-0.46]

s_pole = (0.059965 +/- 0.00033965)
+ i*(+0.0019676 +/- 0.0002291) [-0.45]

```

2 Unphysical Parameterizations

```

pi:omega | pi:phi |
=====
k_re= -0.0460 +/- 0.0008 | k_re= 0.0092 +/- 0.0008 |
k_im= -0.0048 +/- 0.0006 | k_im= 0.0212 +/- 0.0016 |
corr= [-0.50] | corr= [-0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0656 +/- 0.0036 | |g|= 0.0003 +/- 0.0055 | |g|= 0.0082 +/- 0.0027 |
arg(g)/pi= 0.1270 +/- 0.0172 | arg(g)/pi= -0.4881 +/- 11.1776 | arg(g)/pi= 0.7207 +/- 0.0189 |
-----|-----|-----|
g_re= 0.0604 +/- 0.0040 | g_re= 0.0000 +/- 0.0092 | g_re= -0.0053 +/- 0.0020 |
g_im= 0.0255 +/- 0.0031 | g_im= 0.0000 +/- 0.0005 | g_im= 0.0063 +/- 0.0020 |
corr= [-0.21] | corr= [ 1.00] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8181 +/- 0.0155 | Br = 0.0000 +/- 0.0000 | Br = 0.0129 +/- 0.0086 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24491 +/- 0.00068982)
+ (i/2)*(-0.0080338 +/- 0.00094559) [ 0.46]

s_pole = (0.059965 +/- 0.00033965)
+ i*(-0.0019676 +/- 0.0002291) [ 0.45]

pi:omega | pi:phi |
=====
k_re= 0.0460 +/- 0.0008 | k_re= -0.0092 +/- 0.0008 |
k_im= -0.0048 +/- 0.0006 | k_im= 0.0212 +/- 0.0016 |
corr= [ 0.50] | corr= [ 0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0656 +/- 0.0036 | |g|= 0.0003 +/- 0.0055 | |g|= 0.0082 +/- 0.0027 |
arg(g)/pi= -0.1270 +/- 0.0172 | arg(g)/pi= 0.4900 +/- 11.1471 | arg(g)/pi= -0.7207 +/- 0.0189 |
-----|-----|-----|
g_re= 0.0604 +/- 0.0040 | g_re= 0.0000 +/- 0.0092 | g_re= -0.0053 +/- 0.0020 |
g_im= -0.0255 +/- 0.0031 | g_im= -0.0000 +/- 0.0005 | g_im= -0.0063 +/- 0.0020 |
corr= [ 0.21] | corr= [-1.00] | corr= [ 0.95] |
-----|-----|-----|
Br = 0.8181 +/- 0.0155 | Br = 0.0000 +/- 0.0000 | Br = 0.0129 +/- 0.0086 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.19527 +/- 0.0022414)
+ (i/2)*(-2.1031e-15 +/- 1.0511e-12) [ 0.00]

s_pole = (0.038131 +/- 0.00087533)
+ i*(-4.1043e-16 +/- 2.0513e-13) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0496 +/- 0.0016 | k_im= -0.0634 +/- 0.0008 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1283 +/- 0.0047 | |g|= 0.0002 +/- 0.0042 | |g|= 0.0249 +/- 0.0079 |

```

2 Unphysical Parameterizations

```

arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.0066 +/- 11.1417 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1283 +/- 0.0047 | g_im= 0.0000 +/- 0.0069 | g_im= 0.0249 +/- 0.0079 |
corr= [-1.00] | corr= [-0.64] | corr= [-0.35] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24491 +/- 0.00069007)
+ (i/2)*(+0.008034 +/- 0.00094594) [-0.46]  

s_pole = (0.059965 +/- 0.00033977)
+ i*(+0.0019676 +/- 0.00022918) [-0.45]

pi:omega | pi:phi |
=====|=====
k_re= -0.0460 +/- 0.0008 | k_re= -0.0092 +/- 0.0008 |
k_im= -0.0048 +/- 0.0006 | k_im= -0.0212 +/- 0.0016 |
corr= [-0.50] | corr= [-0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0656 +/- 0.0036 | |g|= 0.0005 +/- 0.0076 | |g|= 0.0082 +/- 0.0027 |
arg(g)/pi= 0.1270 +/- 0.0172 | arg(g)/pi= 0.4768 +/- 11.1617 | arg(g)/pi= 0.7207 +/- 0.0189 |
-----|-----|-----|
g_re= 0.0604 +/- 0.0040 | g_re= 0.0000 +/- 0.0126 | g_re= -0.0053 +/- 0.0020 |
g_im= 0.0255 +/- 0.0031 | g_im= -0.0000 +/- 0.0012 | g_im= 0.0063 +/- 0.0020 |
corr= [-0.21] | corr= [-1.00] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8181 +/- 0.0155 | Br = 0.0000 +/- 0.0000 | Br = 0.0129 +/- 0.0086 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24491 +/- 0.00069007)
+ (i/2)*(-0.008034 +/- 0.00094594) [ 0.46]  

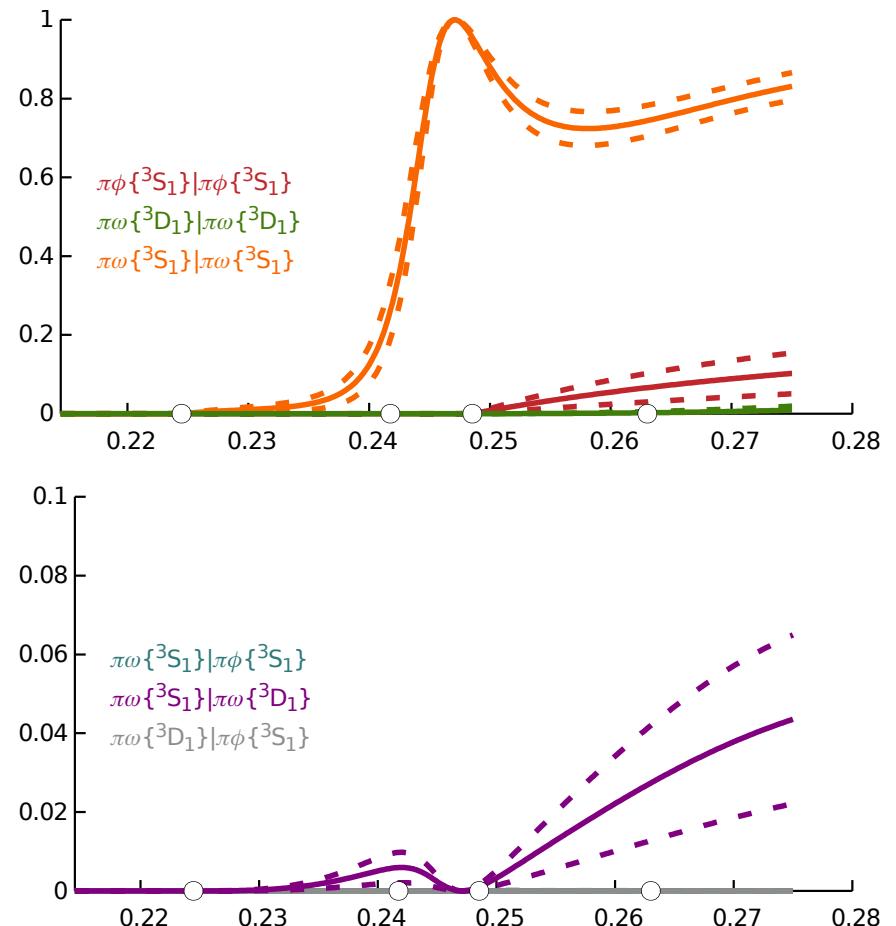
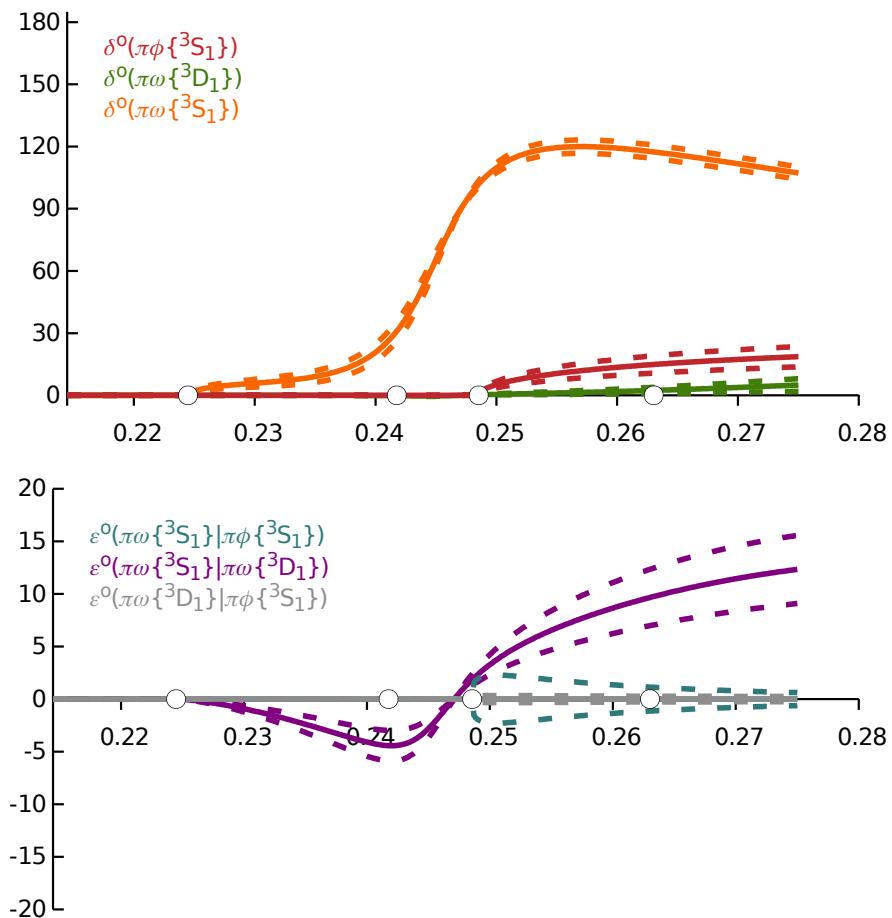
s_pole = (0.059965 +/- 0.00033977)
+ i*(-0.0019676 +/- 0.00022918) [ 0.45]

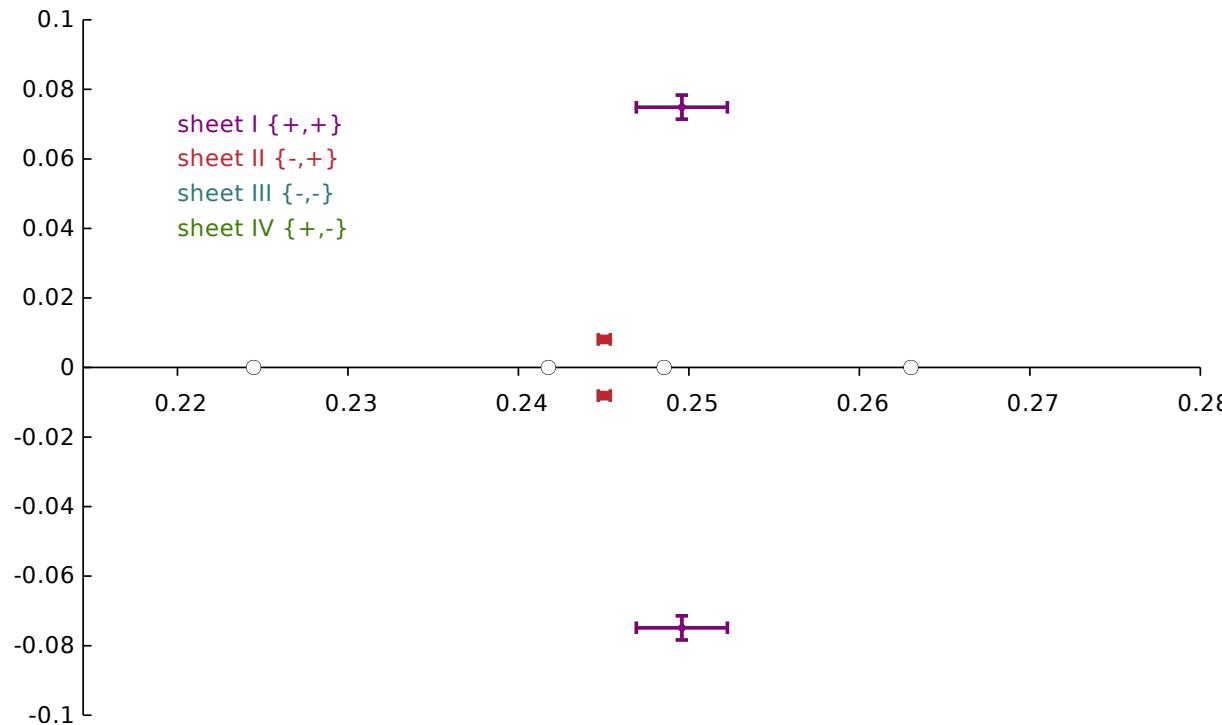
pi:omega | pi:phi |
=====|=====
k_re= 0.0460 +/- 0.0008 | k_re= 0.0092 +/- 0.0008 |
k_im= -0.0048 +/- 0.0006 | k_im= -0.0212 +/- 0.0016 |
corr= [ 0.50] | corr= [ 0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0656 +/- 0.0036 | |g|= 0.0005 +/- 0.0076 | |g|= 0.0082 +/- 0.0027 |
arg(g)/pi= -0.1270 +/- 0.0172 | arg(g)/pi= -0.4753 +/- 11.2004 | arg(g)/pi= -0.7207 +/- 0.0189 |
-----|-----|-----|
g_re= 0.0604 +/- 0.0040 | g_re= 0.0000 +/- 0.0126 | g_re= -0.0053 +/- 0.0020 |
g_im= -0.0255 +/- 0.0031 | g_im= 0.0000 +/- 0.0012 | g_im= -0.0063 +/- 0.0020 |
corr= [ 0.21] | corr= [ 1.00] | corr= [ 0.95] |
-----|-----|-----|
Br = 0.8181 +/- 0.0155 | Br = 0.0000 +/- 0.0000 | Br = 0.0129 +/- 0.0086 |

```

2.13 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3S1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 33.21 / (36 - 7) = 1.15
```

JP1+_g_pi:omega/3^S_1_pole0	0.083218 +/- 0.0054395	1.00 -0.09 -0.29 -0.19 -0.03 -0.01 -0.00
JP1+_g_pi:phi/3^S_1_pole0	6.9465e-07 +/- 0.0089728	1.00 -0.00 0.01 -0.01 -0.05 -0.00
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_orde	-35.607 +/- 11.282	1.00 -0.12 0.30 -0.15 -0.00
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde	5.7152 +/- 0.42929	1.00 -0.92 0.01 0.00
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-114.88 +/- 8.5207	1.00 0.04 -0.00
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.86859 +/- 0.24167	1.00 -0.01
JP1+_m_pole0	0.24708 +/- 1.7509e-05	1.00

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24959 +/- 0.0026708)
+ (i/2)*(+0.074858 +/- 0.0034639) [ 0.63]

s_pole = (0.060896 +/- 0.001255)
+ i*(+0.018684 +/- 0.0010033) [ 0.69]
```

pi:omega	pi:phi
k_re= 0.0589 +/- 0.0025	k_re= 0.0412 +/- 0.0025
k_im= 0.0360 +/- 0.0011	k_im= 0.0462 +/- 0.0011

2 Unphysical Parameterizations

```

corr= [ 0.26] | corr= [-0.18] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1651 +/- 0.0053 | |g|= 0.0001 +/- 0.0013 | |g|= 0.0472 +/- 0.0109 |
arg(g)/pi= -0.2075 +/- 0.0033 | arg(g)/pi= -0.4642 +/- 11.2075 | arg(g)/pi= -0.1669 +/- 0.0149 |
-----|-----|-----
g_re= 0.1312 +/- 0.0040 | g_re= -0.0000 +/- 0.0022 | g_re= 0.0408 +/- 0.0098 |
g_im= -0.1002 +/- 0.0039 | g_im= -0.0000 +/- 0.0002 | g_im= -0.0236 +/- 0.0052 |
corr= [-0.84] | corr= [ 1.00] | corr= [-0.89] |
-----|-----|-----
Br = 0.5997 +/- 0.0229 | Br = 0.0000 +/- 0.0000 | Br = 0.0490 +/- 0.0243 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24959 +/- 0.0026708)  

+ (i/2)*(-0.074858 +/- 0.0034639) [-0.63]  

s_pole = (0.060896 +/- 0.001255)  

+ i*(-0.018684 +/- 0.0010033) [-0.69]

pi:omega | pi:phi |
=====|=====
k_re= -0.0589 +/- 0.0025 | k_re= -0.0412 +/- 0.0025 |
k_im= 0.0360 +/- 0.0011 | k_im= 0.0462 +/- 0.0011 |
corr= [-0.26] | corr= [ 0.18] |
-----|-----

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1651 +/- 0.0053 | |g|= 0.0001 +/- 0.0013 | |g|= 0.0472 +/- 0.0109 |
arg(g)/pi= 0.2075 +/- 0.0033 | arg(g)/pi= 0.4658 +/- 11.1602 | arg(g)/pi= 0.1669 +/- 0.0149 |
-----|-----|-----
g_re= 0.1312 +/- 0.0040 | g_re= -0.0000 +/- 0.0022 | g_re= 0.0408 +/- 0.0098 |
g_im= 0.1002 +/- 0.0039 | g_im= 0.0000 +/- 0.0002 | g_im= 0.0236 +/- 0.0052 |
corr= [ 0.84] | corr= [-1.00] | corr= [ 0.89] |
-----|-----|-----
Br = 0.5997 +/- 0.0229 | Br = 0.0000 +/- 0.0000 | Br = 0.0490 +/- 0.0243 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24959 +/- 0.0026708)  

+ (i/2)*(-0.074858 +/- 0.0034639) [-0.63]  

s_pole = (0.060896 +/- 0.001255)  

+ i*(-0.018684 +/- 0.0010033) [-0.69]

pi:omega | pi:phi |
=====|=====
k_re= -0.0589 +/- 0.0025 | k_re= 0.0412 +/- 0.0025 |
k_im= 0.0360 +/- 0.0011 | k_im= -0.0462 +/- 0.0011 |
corr= [-0.26] | corr= [ 0.18] |
-----|-----

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1651 +/- 0.0053 | |g|= 0.0001 +/- 0.0020 | |g|= 0.0472 +/- 0.0109 |
arg(g)/pi= 0.2075 +/- 0.0033 | arg(g)/pi= -0.2861 +/- 11.1741 | arg(g)/pi= 0.1669 +/- 0.0149 |
-----|-----|-----
g_re= 0.1312 +/- 0.0040 | g_re= -0.0000 +/- 0.0027 | g_re= 0.0408 +/- 0.0098 |
g_im= 0.1002 +/- 0.0039 | g_im= -0.0000 +/- 0.0021 | g_im= 0.0236 +/- 0.0052 |
corr= [ 0.84] | corr= [ 1.00] | corr= [ 0.89] |
-----|-----|-----

```

2 Unphysical Parameterizations

```

-----+-----+-----+
Br = 0.5997 +/- 0.0229 | Br = 0.0000 +/- 0.0000 | Br = 0.0490 +/- 0.0243 |
-----+-----+-----+
-- pi:omega[+] pi:phi[-] upper half-plane
sqrt(s)_pole = (0.24959 +/- 0.0026708)
+ (i/2)*(+0.074858 +/- 0.0034639) [ 0.63]

s_pole = (0.060896 +/- 0.001255)
+ i*(-0.018684 +/- 0.0010033) [ 0.69]

pi:omega | pi:phi |
=====+=====+=====
k_re= 0.0589 +/- 0.0025 | k_re= -0.0412 +/- 0.0025 |
k_im= 0.0360 +/- 0.0011 | k_im= -0.0462 +/- 0.0011 |
corr= [ 0.26] | corr= [-0.18] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====+=====+=====
|g|= 0.1651 +/- 0.0053 | |g|= 0.0001 +/- 0.0020 | |g|= 0.0472 +/- 0.0109 |
arg(g)/pi= -0.2075 +/- 0.0033 | arg(g)/pi= 0.2880 +/- 11.1677 | arg(g)/pi= -0.1669 +/- 0.0149 |

g_re= 0.1312 +/- 0.0040 | g_re= -0.0000 +/- 0.0027 | g_re= 0.0408 +/- 0.0098 |
g_im= -0.1002 +/- 0.0039 | g_im= 0.0000 +/- 0.0021 | g_im= -0.0236 +/- 0.0052 |
corr= [-0.84] | corr= [-1.00] | corr= [-0.89] |

-----+-----+-----+
Br = 0.5997 +/- 0.0229 | Br = 0.0000 +/- 0.0000 | Br = 0.0490 +/- 0.0243 |
-----+-----+-----+
-- pi:omega[-] pi:phi[+] lower half-plane
sqrt(s)_pole = (0.20068 +/- 0.0018421)
+ (i/2)*(-5.5937e-16 +/- 2.9218e-13) [ 0.00]

s_pole = (0.040274 +/- 0.00073934)
+ i*(-1.1221e-16 +/- 5.8613e-14) [ 0.00]

pi:omega | pi:phi |
=====+=====+=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0454 +/- 0.0016 | k_im= 0.0612 +/- 0.0008 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====+=====+=====
|g|= 0.1044 +/- 0.0043 | |g|= 0.0001 +/- 0.0012 | |g|= 0.0207 +/- 0.0065 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.0015 +/- 11.1209 | arg(g)/pi= 0.5000 +/- 0.0000 |

g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1044 +/- 0.0043 | g_im= 0.0000 +/- 0.0020 | g_im= 0.0207 +/- 0.0065 |
corr= [-1.00] | corr= [-0.29] | corr= [-0.19] |

-----+-----+-----+
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |
-----+-----+-----+
-- pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24504 +/- 0.00034832)
+ (i/2)*(+0.0080754 +/- 0.00087325) [-0.63]

s_pole = (0.060029 +/- 0.00017295)
+ i*(+0.0019788 +/- 0.00021222) [-0.63]

```

2 Unphysical Parameterizations

```

pi:omega | pi:phi |
=====
k_re= -0.0462 +/- 0.0004 | k_re= 0.0093 +/- 0.0007 |
k_im= -0.0048 +/- 0.0005 | k_im= 0.0210 +/- 0.0010 |
corr= [-0.60] | corr= [ 0.59] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0656 +/- 0.0032 | |g|= 0.0003 +/- 0.0049 | |g|= 0.0080 +/- 0.0026 |
arg(g)/pi= 0.1210 +/- 0.0147 | arg(g)/pi= -0.4798 +/- 11.2037 | arg(g)/pi= 0.7202 +/- 0.0186 |
-----|-----|-----|
g_re= 0.0610 +/- 0.0034 | g_re= 0.0000 +/- 0.0081 | g_re= -0.0051 +/- 0.0018 |
g_im= 0.0244 +/- 0.0028 | g_im= 0.0000 +/- 0.0005 | g_im= 0.0062 +/- 0.0019 |
corr= [-0.12] | corr= [ 1.00] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8175 +/- 0.0101 | Br = 0.0000 +/- 0.0000 | Br = 0.0121 +/- 0.0077 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24504 +/- 0.00034832)
+ (i/2)*(-0.0080754 +/- 0.00087325) [ 0.63]

s_pole = (0.060029 +/- 0.00017295)
+ i*(-0.0019788 +/- 0.00021222) [ 0.63]

pi:omega | pi:phi |
=====
k_re= 0.0462 +/- 0.0004 | k_re= -0.0093 +/- 0.0007 |
k_im= -0.0048 +/- 0.0005 | k_im= 0.0210 +/- 0.0010 |
corr= [ 0.60] | corr= [-0.59] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0656 +/- 0.0032 | |g|= 0.0003 +/- 0.0049 | |g|= 0.0080 +/- 0.0026 |
arg(g)/pi= -0.1210 +/- 0.0147 | arg(g)/pi= 0.4824 +/- 11.1617 | arg(g)/pi= -0.7202 +/- 0.0186 |
-----|-----|-----|
g_re= 0.0610 +/- 0.0034 | g_re= 0.0000 +/- 0.0081 | g_re= -0.0051 +/- 0.0018 |
g_im= -0.0244 +/- 0.0028 | g_im= -0.0000 +/- 0.0005 | g_im= -0.0062 +/- 0.0019 |
corr= [ 0.12] | corr= [-1.00] | corr= [ 0.95] |
-----|-----|-----|
Br = 0.8175 +/- 0.0101 | Br = 0.0000 +/- 0.0000 | Br = 0.0121 +/- 0.0077 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.20068 +/- 0.0018421)
+ (i/2)*(-1.0073e-16 +/- 3.6747e-14) [ 0.00]

s_pole = (0.040274 +/- 0.00073933)
+ i*(-2.0226e-17 +/- 7.3776e-15) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0454 +/- 0.0016 | k_im= -0.0612 +/- 0.0008 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1044 +/- 0.0043 | |g|= 0.0004 +/- 0.0071 | |g|= 0.0207 +/- 0.0065 |

```

2 Unphysical Parameterizations

```

arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.0017 +/- 11.1555 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1044 +/- 0.0043 | g_im= 0.0000 +/- 0.0119 | g_im= 0.0207 +/- 0.0065 |
corr= [-1.00] | corr= [-0.82] | corr= [-0.19] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24504 +/- 0.00034856)
+ (i/2)*(+0.0080756 +/- 0.00087354) [-0.63]  

s_pole = (0.060029 +/- 0.00017307)
+ i*(+0.0019788 +/- 0.00021229) [-0.64]

pi:omega | pi:phi |
=====|=====
k_re= -0.0462 +/- 0.0004 | k_re= -0.0093 +/- 0.0007 |
k_im= -0.0048 +/- 0.0005 | k_im= -0.0210 +/- 0.0010 |
corr= [-0.60] | corr= [ 0.59] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0656 +/- 0.0032 | |g|= 0.0004 +/- 0.0067 | |g|= 0.0080 +/- 0.0026 |
arg(g)/pi= 0.1210 +/- 0.0147 | arg(g)/pi= 0.4695 +/- 11.1579 | arg(g)/pi= 0.7202 +/- 0.0186 |
-----|-----|-----|
g_re= 0.0610 +/- 0.0034 | g_re= 0.0000 +/- 0.0112 | g_re= -0.0051 +/- 0.0018 |
g_im= 0.0244 +/- 0.0028 | g_im= -0.0000 +/- 0.0011 | g_im= 0.0062 +/- 0.0019 |
corr= [-0.12] | corr= [-1.00] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8175 +/- 0.0101 | Br = 0.0000 +/- 0.0000 | Br = 0.0121 +/- 0.0077 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.24504 +/- 0.00034856)
+ (i/2)*(-0.0080756 +/- 0.00087354) [ 0.63]  

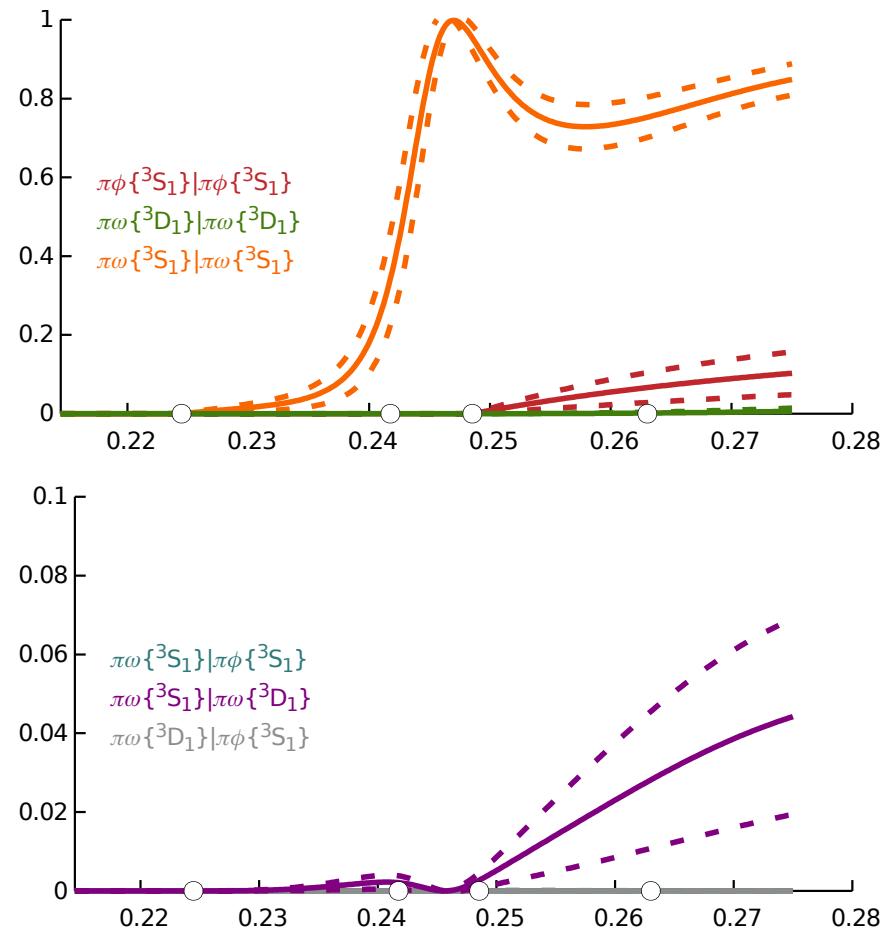
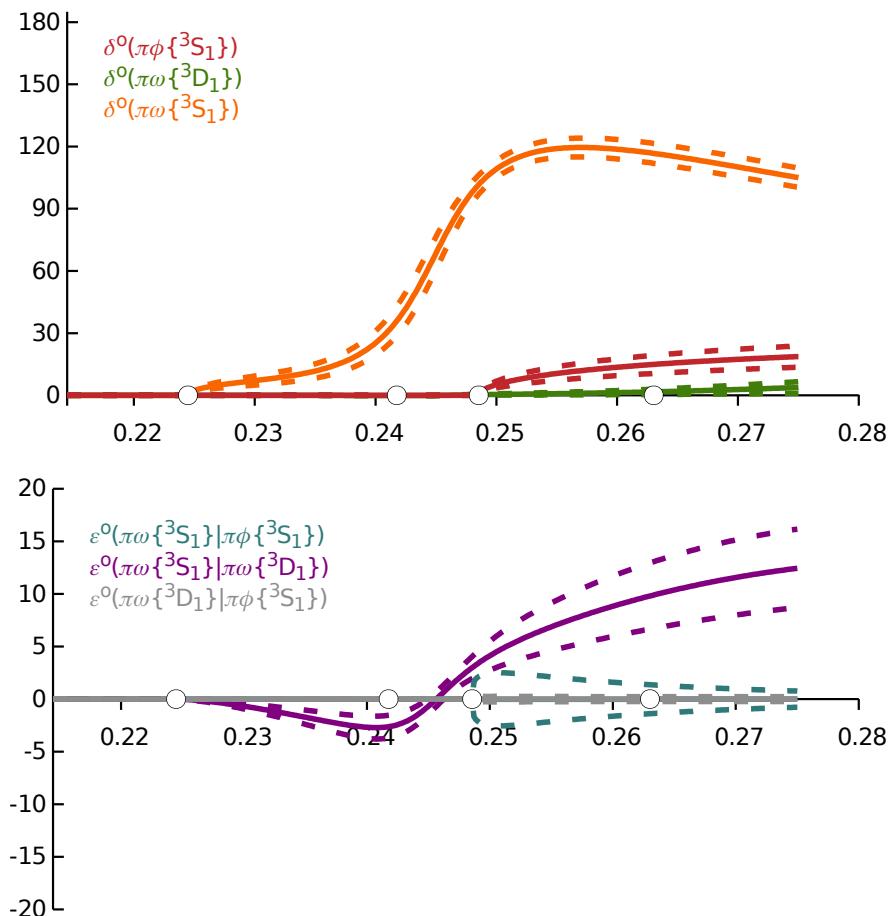
s_pole = (0.060029 +/- 0.00017307)
+ i*(-0.0019788 +/- 0.00021229) [ 0.64]

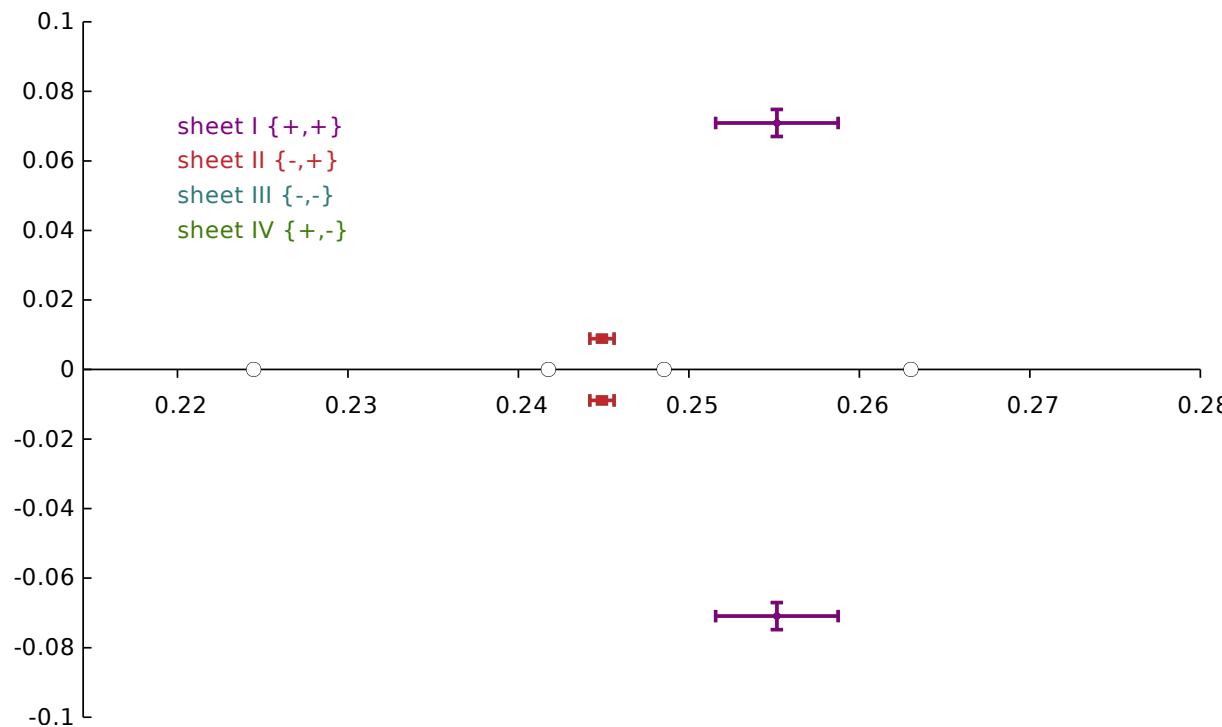
pi:omega | pi:phi |
=====|=====
k_re= 0.0462 +/- 0.0004 | k_re= 0.0093 +/- 0.0007 |
k_im= -0.0048 +/- 0.0005 | k_im= -0.0210 +/- 0.0010 |
corr= [ 0.60] | corr= [-0.59] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0656 +/- 0.0032 | |g|= 0.0004 +/- 0.0067 | |g|= 0.0080 +/- 0.0026 |
arg(g)/pi= -0.1210 +/- 0.0147 | arg(g)/pi= -0.4666 +/- 11.2324 | arg(g)/pi= -0.7202 +/- 0.0186 |
-----|-----|-----|
g_re= 0.0610 +/- 0.0034 | g_re= 0.0000 +/- 0.0112 | g_re= -0.0051 +/- 0.0018 |
g_im= -0.0244 +/- 0.0028 | g_im= 0.0000 +/- 0.0011 | g_im= -0.0062 +/- 0.0019 |
corr= [ 0.12] | corr= [ 1.00] | corr= [ 0.95] |
-----|-----|-----|
Br = 0.8175 +/- 0.0101 | Br = 0.0000 +/- 0.0000 | Br = 0.0121 +/- 0.0077 |

```

2.14 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1_3S1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 33.27 / (36 - 7) = 1.15
```

JP1+_g_pi:omega/3^S_1_pole0	0.077770 +/- 0.004756	1.00 -0.05 -0.26 -0.26 0.18 0.10 -0.42
JP1+_g_pi:phi/3^S_1_pole0	-7.9299e-05 +/- 0.010548	1.00 0.02 0.00 0.00 -0.01 -0.04
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_order	-27.774 +/- 10.309	1.00 -0.09 0.31 -0.06 -0.05
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	4.6885 +/- 0.42072	1.00 -0.91 0.01 0.07
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order	-92.121 +/- 8.0762	1.00 0.06 -0.07
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.94613 +/- 0.29679	1.00 -0.28
JP1+_m_pole0	0.24564 +/- 0.00062583	1.00

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.25516 +/- 0.0035961)
+ (i/2)*(+0.070919 +/- 0.0038913) [ 0.67]

s_pole = (0.063852 +/- 0.0017463)
+ i*(+0.018096 +/- 0.0011783) [ 0.74]
```

pi:omega	pi:phi
k_re= 0.0628 +/- 0.0032	k_re= 0.0445 +/- 0.0035
k_im= 0.0329 +/- 0.0012	k_im= 0.0422 +/- 0.0013

```

corr= [ 0.24] | corr= [-0.28] |
pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1567 +/- 0.0065 | |g|= 0.0001 +/- 0.0016 | |g|= 0.0440 +/- 0.0117 |
arg(g)/pi= -0.2478 +/- 0.0032 | arg(g)/pi= -0.2954 +/- 10.9312 | arg(g)/pi= -0.2080 +/- 0.0172 |
-----
g_re= 0.1116 +/- 0.0046 | g_re= 0.0000 +/- 0.0025 | g_re= 0.0349 +/- 0.0099 |
g_im= -0.1101 +/- 0.0049 | g_im= 0.0000 +/- 0.0008 | g_im= -0.0267 +/- 0.0066 |
corr= [-0.89] | corr= [ 1.00] | corr= [-0.92] |
-----
Br = 0.6086 +/- 0.0274 | Br = 0.0000 +/- 0.0000 | Br = 0.0479 +/- 0.0273 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.25516 +/- 0.0035961)
+ (i/2)*(-0.070919 +/- 0.0038913) [-0.67]

s_pole = (0.063852 +/- 0.0017463)
+ i*(-0.018096 +/- 0.0011783) [-0.74]

pi:omega | pi:phi |
=====
k_re= -0.0628 +/- 0.0032 | k_re= -0.0445 +/- 0.0035 |
k_im= 0.0329 +/- 0.0012 | k_im= 0.0422 +/- 0.0013 |
corr= [-0.24] | corr= [ 0.28] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1567 +/- 0.0065 | |g|= 0.0001 +/- 0.0016 | |g|= 0.0440 +/- 0.0117 |
arg(g)/pi= 0.2478 +/- 0.0032 | arg(g)/pi= 0.2954 +/- 10.9312 | arg(g)/pi= 0.2080 +/- 0.0172 |
-----
g_re= 0.1116 +/- 0.0046 | g_re= 0.0000 +/- 0.0025 | g_re= 0.0349 +/- 0.0099 |
g_im= 0.1101 +/- 0.0049 | g_im= -0.0000 +/- 0.0008 | g_im= 0.0267 +/- 0.0066 |
corr= [ 0.89] | corr= [-1.00] | corr= [ 0.92] |
-----
Br = 0.6086 +/- 0.0274 | Br = 0.0000 +/- 0.0000 | Br = 0.0479 +/- 0.0273 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.25516 +/- 0.0035961)
+ (i/2)*(-0.070919 +/- 0.0038913) [-0.67]

s_pole = (0.063852 +/- 0.0017463)
+ i*(-0.018096 +/- 0.0011783) [-0.74]

pi:omega | pi:phi |
=====
k_re= -0.0628 +/- 0.0032 | k_re= 0.0445 +/- 0.0035 |
k_im= 0.0329 +/- 0.0012 | k_im= -0.0422 +/- 0.0013 |
corr= [-0.24] | corr= [ 0.28] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1567 +/- 0.0065 | |g|= 0.0001 +/- 0.0022 | |g|= 0.0440 +/- 0.0117 |
arg(g)/pi= 0.2478 +/- 0.0032 | arg(g)/pi= -0.2612 +/- 10.9326 | arg(g)/pi= 0.2080 +/- 0.0172 |
-----
g_re= 0.1116 +/- 0.0046 | g_re= 0.0000 +/- 0.0034 | g_re= 0.0349 +/- 0.0099 |
g_im= 0.1101 +/- 0.0049 | g_im= 0.0000 +/- 0.0016 | g_im= 0.0267 +/- 0.0066 |
corr= [ 0.89] | corr= [ 1.00] | corr= [ 0.92] |

```

2 Unphysical Parameterizations

```

-----+-----+-----+
Br = 0.6086 +/- 0.0274 | Br = 0.0000 +/- 0.0000 | Br = 0.0479 +/- 0.0273 |
-----+-----+-----+
-- pi:omega[+] pi:phi[-] upper half-plane
sqrt(s)_pole = (0.25516 +/- 0.0035961)
+ (i/2)*(+0.070919 +/- 0.0038913) [ 0.67]

s_pole = (0.063852 +/- 0.0017463)
+ i*(-0.018096 +/- 0.0011783) [ 0.74]

pi:omega | pi:phi |
=====+=====+=====
k_re= 0.0628 +/- 0.0032 | k_re= -0.0445 +/- 0.0035 |
k_im= 0.0329 +/- 0.0012 | k_im= -0.0422 +/- 0.0013 |
corr= [ 0.24] | corr= [-0.28] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====+=====+=====
|g|= 0.1567 +/- 0.0065 | |g|= 0.0001 +/- 0.0022 | |g|= 0.0440 +/- 0.0117 |
arg(g)/pi= -0.2478 +/- 0.0032 | arg(g)/pi= 0.2612 +/- 10.9326 | arg(g)/pi= -0.2080 +/- 0.0172 |

g_re= 0.1116 +/- 0.0046 | g_re= 0.0000 +/- 0.0034 | g_re= 0.0349 +/- 0.0099 |
g_im= -0.1101 +/- 0.0049 | g_im= -0.0000 +/- 0.0016 | g_im= -0.0267 +/- 0.0066 |
corr= [-0.89] | corr= [-1.00] | corr= [-0.92] |

-----+-----+-----+
Br = 0.6086 +/- 0.0274 | Br = 0.0000 +/- 0.0000 | Br = 0.0479 +/- 0.0273 |
-----+-----+-----+
-- pi:omega[-] pi:phi[+] lower half-plane
sqrt(s)_pole = (0.19499 +/- 0.0024408)
+ (i/2)*(-7.9964e-17 +/- 3.1845e-14) [ 0.00]

s_pole = (0.038023 +/- 0.00095185)
+ i*(-1.5606e-17 +/- 6.213e-15) [ 0.00]

pi:omega | pi:phi |
=====+=====+=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0498 +/- 0.0018 | k_im= 0.0635 +/- 0.0009 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====+=====+=====
|g|= 0.1119 +/- 0.0051 | |g|= 0.0001 +/- 0.0012 | |g|= 0.0205 +/- 0.0077 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.1016 +/- 10.9000 | arg(g)/pi= 0.5000 +/- 0.0000 |

g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1119 +/- 0.0051 | g_im= -0.0000 +/- 0.0019 | g_im= 0.0205 +/- 0.0077 |
corr= [-1.00] | corr= [-0.28] | corr= [-0.20] |

-----+-----+-----+
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |
-----+-----+-----+
-- pi:omega[-] pi:phi[+] upper half-plane
sqrt(s)_pole = ( 0.2449 +/- 0.00071073)
+ (i/2)*(+0.0088836 +/- 0.00097498) [-0.38]

s_pole = (0.059957 +/- 0.00034977)
+ i*(+0.0021756 +/- 0.00023647) [-0.36]

```

```

pi:omega | pi:phi |
=====
k_re= -0.0461 +/- 0.0008 | k_re= 0.0100 +/- 0.0009 |
k_im= -0.0053 +/- 0.0006 | k_im= 0.0216 +/- 0.0015 |
corr= [-0.43] | corr= [-0.10] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0686 +/- 0.0035 | |g|= 0.0003 +/- 0.0052 | |g|= 0.0065 +/- 0.0025 |
arg(g)/pi= 0.1109 +/- 0.0197 | arg(g)/pi= -0.5743 +/- 10.9347 | arg(g)/pi= 0.6384 +/- 0.0224 |
-----|-----|-----|
g_re= 0.0645 +/- 0.0041 | g_re= -0.0001 +/- 0.0086 | g_re= -0.0028 +/- 0.0013 |
g_im= 0.0234 +/- 0.0037 | g_im= -0.0000 +/- 0.0008 | g_im= 0.0059 +/- 0.0021 |
corr= [-0.39] | corr= [ 1.00] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8097 +/- 0.0184 | Br = 0.0000 +/- 0.0000 | Br = 0.0074 +/- 0.0055 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = ( 0.2449 +/- 0.00071073 )
+ (i/2)*(-0.0088836 +/- 0.00097498) [ 0.38]

s_pole = (0.059957 +/- 0.00034977)
+ i*(-0.0021756 +/- 0.00023647) [ 0.36]

pi:omega | pi:phi |
=====
k_re= 0.0461 +/- 0.0008 | k_re= -0.0100 +/- 0.0009 |
k_im= -0.0053 +/- 0.0006 | k_im= 0.0216 +/- 0.0015 |
corr= [ 0.43] | corr= [ 0.10] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0686 +/- 0.0035 | |g|= 0.0003 +/- 0.0052 | |g|= 0.0065 +/- 0.0025 |
arg(g)/pi= -0.1109 +/- 0.0197 | arg(g)/pi= 0.5743 +/- 10.9347 | arg(g)/pi= -0.6384 +/- 0.0224 |
-----|-----|-----|
g_re= 0.0645 +/- 0.0041 | g_re= -0.0001 +/- 0.0086 | g_re= -0.0028 +/- 0.0013 |
g_im= -0.0234 +/- 0.0037 | g_im= 0.0000 +/- 0.0008 | g_im= -0.0059 +/- 0.0021 |
corr= [ 0.39] | corr= [-1.00] | corr= [ 0.95] |
-----|-----|-----|
Br = 0.8097 +/- 0.0184 | Br = 0.0000 +/- 0.0000 | Br = 0.0074 +/- 0.0055 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = ( 0.19499 +/- 0.0024408 )
+ (i/2)*(+3.487e-14 +/- 1.7624e-11) [ 0.00]

s_pole = (0.038023 +/- 0.00095182)
+ i*(+6.7949e-15 +/- 3.4344e-12) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0498 +/- 0.0018 | k_im= -0.0635 +/- 0.0009 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1119 +/- 0.0051 | |g|= 0.0006 +/- 0.0101 | |g|= 0.0205 +/- 0.0077 |

```

2 Unphysical Parameterizations

```

arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= -0.1019 +/- 10.9302 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----|
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1119 +/- 0.0051 | g_im= -0.0001 +/- 0.0166 | g_im= 0.0205 +/- 0.0077 |
corr= [-1.00] | corr= [-0.87] | corr= [-0.20] |
-----|-----|-----|
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = ( 0.2449 +/- 0.00071093)  

+ (i/2)*(+0.0088838 +/- 0.00097538) [-0.38]  

s_pole = (0.059957 +/- 0.00034987)  

+ i*(+0.0021757 +/- 0.00023656) [-0.37]

pi:omega | pi:phi |
=====|=====
k_re= -0.0461 +/- 0.0008 | k_re= -0.0100 +/- 0.0009 |
k_im= -0.0053 +/- 0.0006 | k_im= -0.0216 +/- 0.0015 |
corr= [-0.43] | corr= [-0.10] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0686 +/- 0.0035 | |g|= 0.0004 +/- 0.0073 | |g|= 0.0065 +/- 0.0025 |
arg(g)/pi= 0.1109 +/- 0.0197 | arg(g)/pi= 0.5749 +/- 10.9349 | arg(g)/pi= 0.6384 +/- 0.0224 |
-----|-----|-----|
g_re= 0.0645 +/- 0.0041 | g_re= -0.0001 +/- 0.0121 | g_re= -0.0028 +/- 0.0013 |
g_im= 0.0234 +/- 0.0037 | g_im= 0.0000 +/- 0.0010 | g_im= 0.0059 +/- 0.0021 |
corr= [-0.39] | corr= [-1.00] | corr= [-0.95] |
-----|-----|-----|
Br = 0.8097 +/- 0.0184 | Br = 0.0000 +/- 0.0000 | Br = 0.0074 +/- 0.0055 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = ( 0.2449 +/- 0.00071093)  

+ (i/2)*(-0.0088838 +/- 0.00097538) [ 0.38]  

s_pole = (0.059957 +/- 0.00034987)  

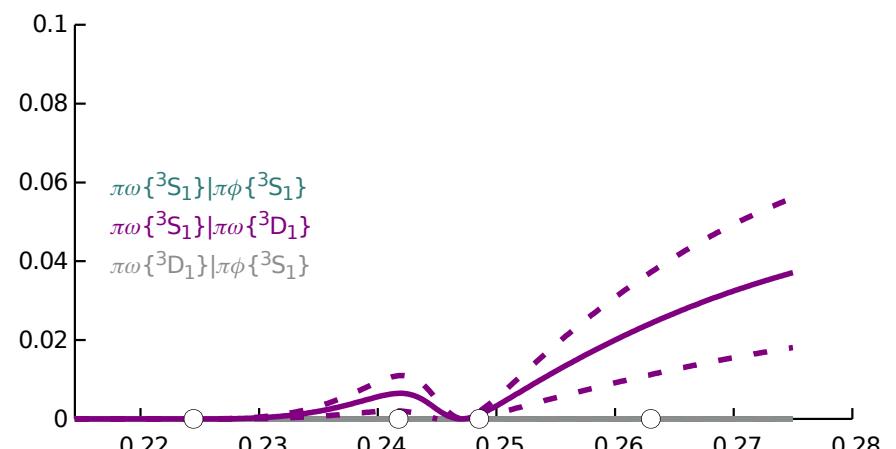
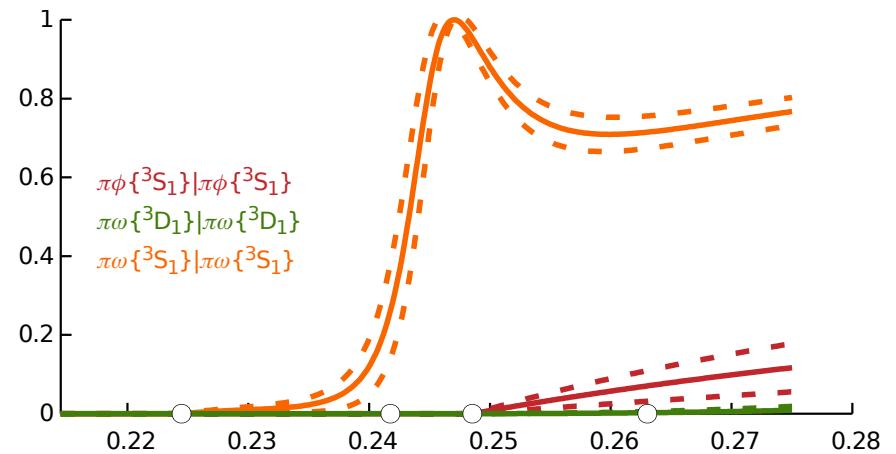
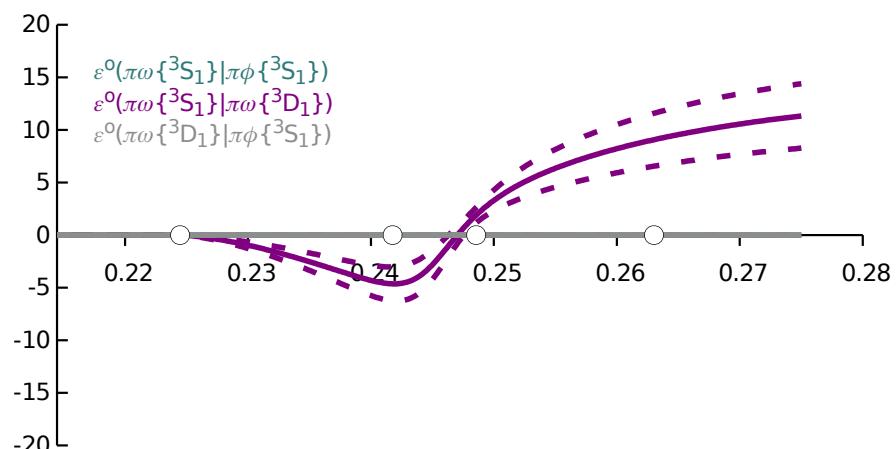
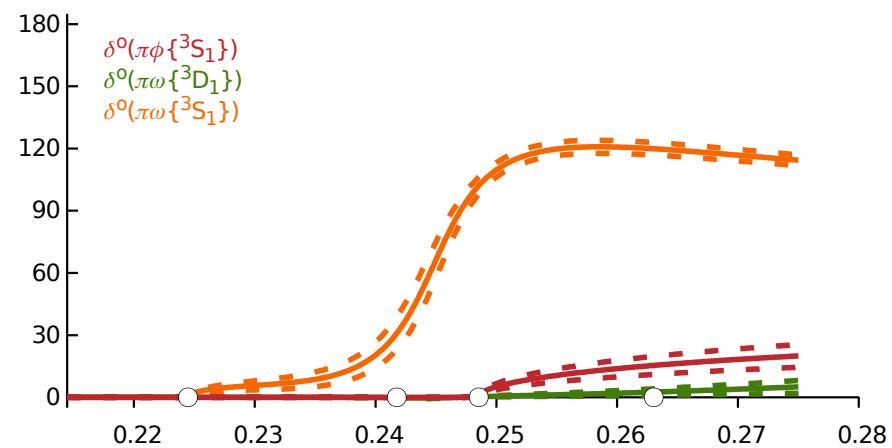
+ i*(-0.0021757 +/- 0.00023656) [ 0.37]

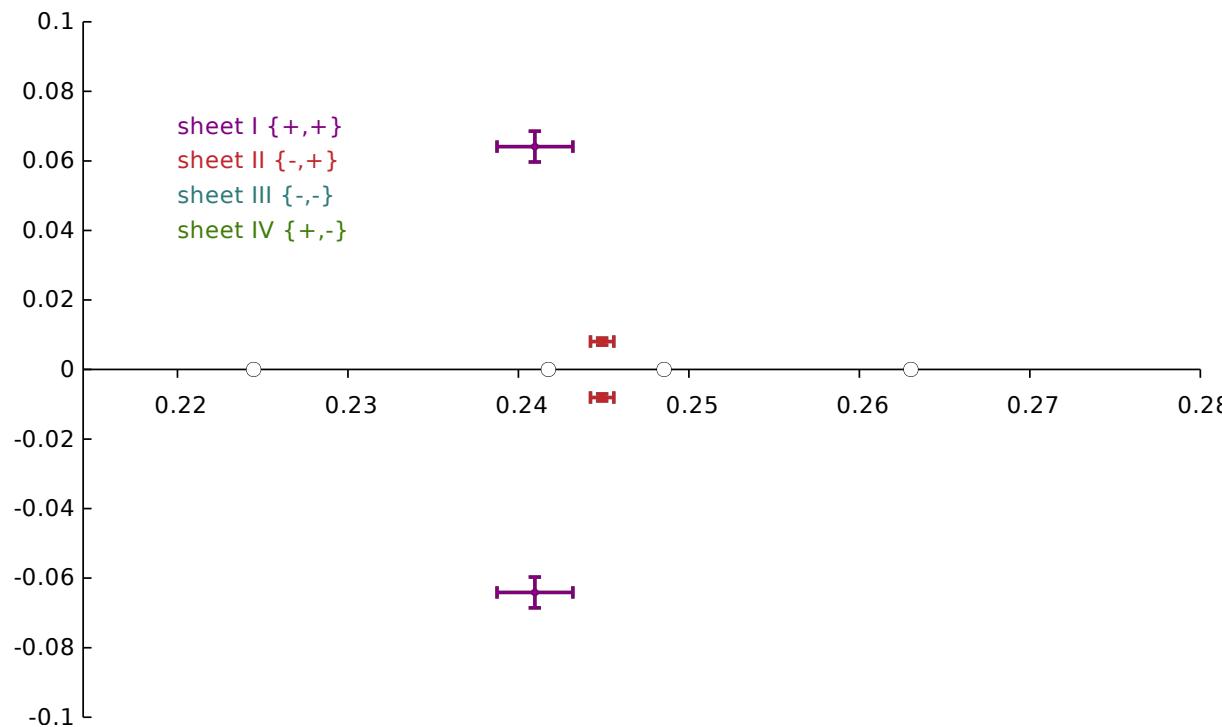
pi:omega | pi:phi |
=====|=====
k_re= 0.0461 +/- 0.0008 | k_re= 0.0100 +/- 0.0009 |
k_im= -0.0053 +/- 0.0006 | k_im= -0.0216 +/- 0.0015 |
corr= [ 0.43] | corr= [ 0.10] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.0686 +/- 0.0035 | |g|= 0.0004 +/- 0.0073 | |g|= 0.0065 +/- 0.0025 |
arg(g)/pi= -0.1109 +/- 0.0197 | arg(g)/pi= -0.5749 +/- 10.9349 | arg(g)/pi= -0.6384 +/- 0.0224 |
-----|-----|-----|
g_re= 0.0645 +/- 0.0041 | g_re= -0.0001 +/- 0.0121 | g_re= -0.0028 +/- 0.0013 |
g_im= -0.0234 +/- 0.0037 | g_im= -0.0000 +/- 0.0010 | g_im= -0.0059 +/- 0.0021 |
corr= [ 0.39] | corr= [ 1.00] | corr= [ 0.95] |
-----|-----|-----|
Br = 0.8097 +/- 0.0184 | Br = 0.0000 +/- 0.0000 | Br = 0.0074 +/- 0.0055 |

```

2.15 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1.irho





parameter values

```
minimised with chisq/nDoF = 33.27 / (36 - 6) = 1.11
```

JP1+_g_pi:omega/3^S_1_pole0	0.086326 +/- 0.0061901	1.00 -0.25 -0.17 -0.02 0.01 -0.11
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_orde	-38.753 +/- 12.701	1.00 -0.20 0.34 -0.11 -0.14
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde	6.6946 +/- 0.61919	1.00 -0.95 0.00 0.02
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-134.48 +/- 12.32	1.00 0.04 -0.03
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.92773 +/- 0.28229	1.00 -0.26
JP1+_m_pole0	0.24703 +/- 0.00058739	1.00

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24097 +/- 0.0022232)
+ (i/2)*(+0.064119 +/- 0.0044446) [ 0.60]

s_pole = (0.05704 +/- 0.00099292)
+ i*(+0.015451 +/- 0.0011618) [ 0.58]
```

pi:omega	pi:phi
k_re= 0.0501 +/- 0.0024	k_re= 0.0323 +/- 0.0025
k_im= 0.0344 +/- 0.0015	k_im= 0.0469 +/- 0.0012
corr= [0.45]	corr= [0.12]

2 Unphysical Parameterizations

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1302 +/- 0.0043 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0373 +/- 0.0086 |
arg(g)/pi= -0.1313 +/- 0.0040 | arg(g)/pi= 0.6313 +/- 0.0040 | arg(g)/pi= -0.0996 +/- 0.0178 |
-----|-----|-----
g_re= 0.1193 +/- 0.0043 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0355 +/- 0.0083 |
g_im= -0.0522 +/- 0.0015 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0115 +/- 0.0030 |
corr= [-0.47] | corr= [-0.84] | corr= [-0.70] |
-----|-----|-----
Br = 0.3710 +/- 0.0191 | Br = 0.0000 +/- 0.0000 | Br = 0.0305 +/- 0.0151 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24097 +/- 0.0022232)
+ (i/2)*(-0.064119 +/- 0.0044446) [-0.60]

s_pole = (0.05704 +/- 0.00099292)
+ i*(-0.015451 +/- 0.0011618) [-0.58]

pi:omega | pi:phi |
=====|=====
k_re= -0.0501 +/- 0.0024 | k_re= -0.0323 +/- 0.0025 |
k_im= 0.0344 +/- 0.0015 | k_im= 0.0469 +/- 0.0012 |
corr= [-0.45] | corr= [-0.12] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1302 +/- 0.0043 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0373 +/- 0.0086 |
arg(g)/pi= 0.1313 +/- 0.0040 | arg(g)/pi= 0.3687 +/- 0.0040 | arg(g)/pi= 0.0996 +/- 0.0178 |
-----|-----|-----
g_re= 0.1193 +/- 0.0043 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0355 +/- 0.0083 |
g_im= 0.0522 +/- 0.0015 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0115 +/- 0.0030 |
corr= [ 0.47] | corr= [ 0.84] | corr= [ 0.70] |
-----|-----|-----
Br = 0.3710 +/- 0.0191 | Br = 0.0000 +/- 0.0000 | Br = 0.0305 +/- 0.0151 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24097 +/- 0.0022232)
+ (i/2)*(+0.064119 +/- 0.0044446) [ 0.60]

s_pole = (0.05704 +/- 0.00099292)
+ i*(+0.015451 +/- 0.0011618) [ 0.58]

pi:omega | pi:phi |
=====|=====
k_re= 0.0501 +/- 0.0024 | k_re= -0.0323 +/- 0.0025 |
k_im= 0.0344 +/- 0.0015 | k_im= -0.0469 +/- 0.0012 |
corr= [ 0.45] | corr= [ 0.12] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1302 +/- 0.0043 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0373 +/- 0.0086 |
arg(g)/pi= -0.1313 +/- 0.0040 | arg(g)/pi= 0.6313 +/- 0.0040 | arg(g)/pi= -0.0996 +/- 0.0178 |
-----|-----|-----
g_re= 0.1193 +/- 0.0043 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0355 +/- 0.0083 |
g_im= -0.0522 +/- 0.0015 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0115 +/- 0.0030 |
corr= [-0.47] | corr= [-0.84] | corr= [-0.70] |
-----|-----|-----

```

2 Unphysical Parameterizations

```

Br = 0.3710 +/- 0.0191 | Br = 0.0000 +/- 0.0000 | Br = 0.0305 +/- 0.0151 |

--pi:omega[+] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24097 +/- 0.0022232)
+ (i/2)*(-0.064119 +/- 0.0044446) [-0.60]

s_pole = (0.05704 +/- 0.00099292)
+ i*(-0.015451 +/- 0.0011618) [-0.58]

pi:omega | pi:phi |
=====|=====
k_re= -0.0501 +/- 0.0024 | k_re= 0.0323 +/- 0.0025 |
k_im= 0.0344 +/- 0.0015 | k_im= -0.0469 +/- 0.0012 |
corr= [-0.45] | corr= [-0.12] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1302 +/- 0.0043 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0373 +/- 0.0086 |
arg(g)/pi= 0.1313 +/- 0.0040 | arg(g)/pi= 0.3687 +/- 0.0040 | arg(g)/pi= 0.0996 +/- 0.0178 |
-----|-----|-----
g_re= 0.1193 +/- 0.0043 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0355 +/- 0.0083 |
g_im= 0.0522 +/- 0.0015 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0115 +/- 0.0030 |
corr= [ 0.47] | corr= [ 0.84] | corr= [ 0.70] |
-----|-----|-----
Br = 0.3710 +/- 0.0191 | Br = 0.0000 +/- 0.0000 | Br = 0.0305 +/- 0.0151 |

--pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.19527 +/- 0.0022187)
+ (i/2)*(+1.1421e-18 +/- 5.7126e-16) [ 0.00]

s_pole = (0.038131 +/- 0.00086647)
+ i*(+2.2294e-19 +/- 1.1151e-16) [ 0.00]

pi:omega | pi:phi |
=====|=====
k_re= -0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0496 +/- 0.0016 | k_im= 0.0634 +/- 0.0008 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1283 +/- 0.0046 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0249 +/- 0.0075 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1283 +/- 0.0046 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0249 +/- 0.0075 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.33] |
-----|-----|-----
Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24491 +/- 0.00068209)
+ (i/2)*(+0.008034 +/- 0.00099896) [-0.49]

s_pole = (0.059965 +/- 0.0003361)
+ i*(+0.0019676 +/- 0.000242) [-0.49]

```

2 Unphysical Parameterizations

```

pi:omega | pi:phi |
=====
k_re= -0.0460 +/- 0.0008 | k_re= 0.0092 +/- 0.0008 |
k_im= -0.0048 +/- 0.0006 | k_im= 0.0212 +/- 0.0016 |
corr= [-0.53] | corr= [ 0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0656 +/- 0.0038 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0082 +/- 0.0026 |
arg(g)/pi= 0.1270 +/- 0.0174 | arg(g)/pi= 0.3730 +/- 0.0174 | arg(g)/pi= 0.7207 +/- 0.0193 |
-----|-----|-----|
g_re= 0.0604 +/- 0.0042 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0053 +/- 0.0019 |
g_im= 0.0255 +/- 0.0032 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0063 +/- 0.0019 |
corr= [-0.18] | corr= [ 0.27] | corr= [-0.94] |
-----|-----|-----|
Br = 0.8178 +/- 0.0146 | Br = 0.0000 +/- 0.0000 | Br = 0.0129 +/- 0.0082 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24491 +/- 0.00068209)
+ (i/2)*(-0.008034 +/- 0.00099896) [ 0.49]

s_pole = (0.059965 +/- 0.0003361)
+ i*(-0.0019676 +/- 0.000242) [ 0.49]

pi:omega | pi:phi |
=====
k_re= 0.0460 +/- 0.0008 | k_re= -0.0092 +/- 0.0008 |
k_im= -0.0048 +/- 0.0006 | k_im= 0.0212 +/- 0.0016 |
corr= [ 0.53] | corr= [-0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0656 +/- 0.0038 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0082 +/- 0.0026 |
arg(g)/pi= -0.1270 +/- 0.0174 | arg(g)/pi= 0.6270 +/- 0.0174 | arg(g)/pi= -0.7207 +/- 0.0193 |
-----|-----|-----|
g_re= 0.0604 +/- 0.0042 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0053 +/- 0.0019 |
g_im= -0.0255 +/- 0.0032 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0063 +/- 0.0019 |
corr= [ 0.18] | corr= [-0.27] | corr= [ 0.94] |
-----|-----|-----|
Br = 0.8178 +/- 0.0146 | Br = 0.0000 +/- 0.0000 | Br = 0.0129 +/- 0.0082 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.19527 +/- 0.0022187)
+ (i/2)*(-1.6902e-15 +/- 8.4839e-13) [ 0.00]

s_pole = (0.038131 +/- 0.00086647)
+ i*(-3.2993e-16 +/- 1.6561e-13) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0496 +/- 0.0016 | k_im= -0.0634 +/- 0.0008 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1283 +/- 0.0046 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0249 +/- 0.0075 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |

```

2 Unphysical Parameterizations

```

-----|-----|-----|
 g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
 g_im= 0.1283 +/- 0.0046 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0249 +/- 0.0075 |
 corr= [-1.00] | corr= [ 0.00] | corr= [-0.33] |
-----|-----|-----|
 Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24491 +/- 0.00068209)
+ (i/2)*(+0.008034 +/- 0.00099896) [-0.49]

s_pole = (0.059965 +/- 0.0003361)
+ i*(+0.0019676 +/- 0.000242) [-0.49]

pi:omega | pi:phi |
=====|=====
 k_re= -0.0460 +/- 0.0008 | k_re= -0.0092 +/- 0.0008 |
 k_im= -0.0048 +/- 0.0006 | k_im= -0.0212 +/- 0.0016 |
 corr= [-0.53] | corr= [ 0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0656 +/- 0.0038 | lg= 0.0000 +/- 0.0000 | lg= 0.0082 +/- 0.0026 |
 arg(g)/pi= 0.1270 +/- 0.0174 | arg(g)/pi= 0.3730 +/- 0.0174 | arg(g)/pi= 0.7207 +/- 0.0193 |
-----|-----|-----|
 g_re= 0.0604 +/- 0.0042 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0053 +/- 0.0019 |
 g_im= 0.0255 +/- 0.0032 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0063 +/- 0.0019 |
 corr= [-0.18] | corr= [ 0.27] | corr= [-0.94] |
-----|-----|-----|
 Br = 0.8178 +/- 0.0146 | Br = 0.0000 +/- 0.0000 | Br = 0.0129 +/- 0.0082 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24491 +/- 0.00068209)
+ (i/2)*(-0.008034 +/- 0.00099896) [ 0.49]

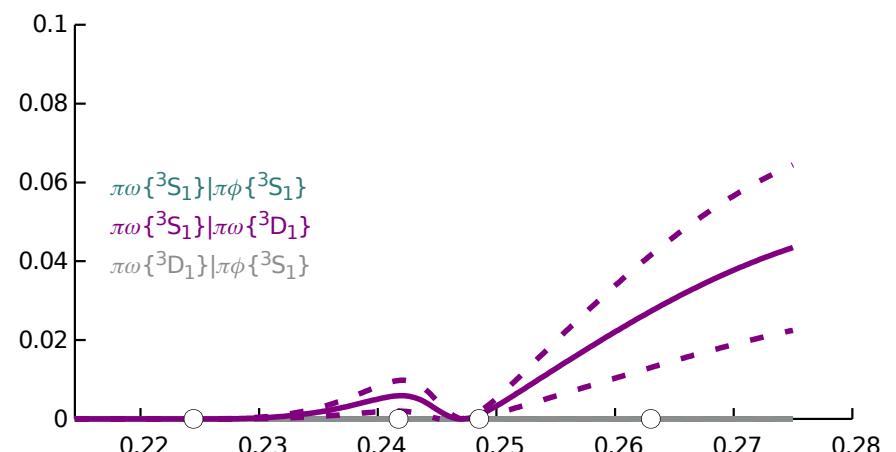
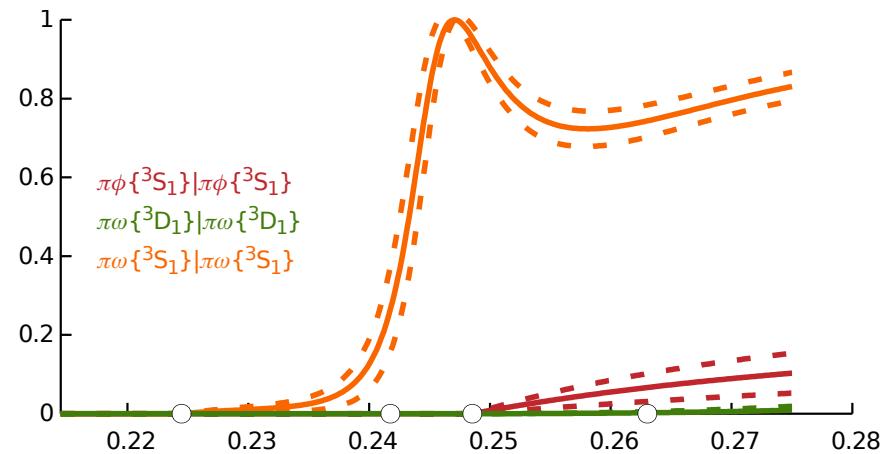
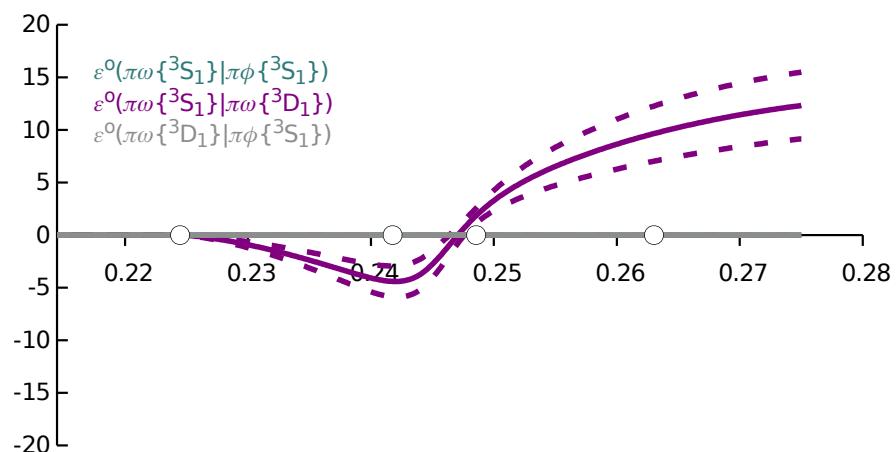
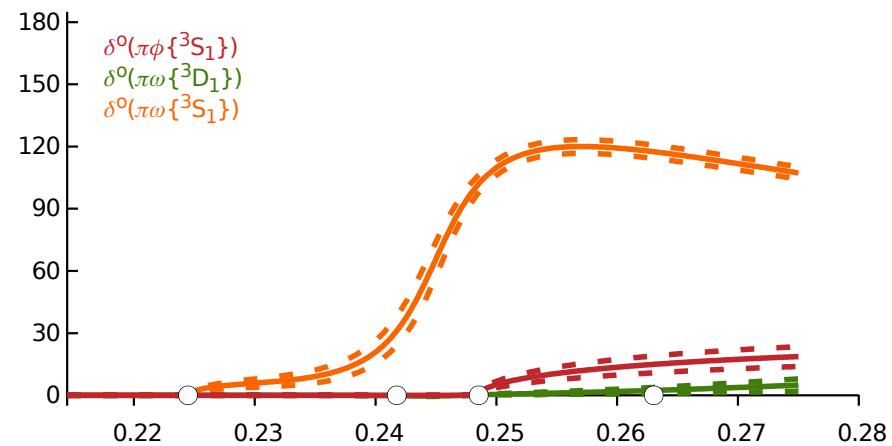
s_pole = (0.059965 +/- 0.0003361)
+ i*(-0.0019676 +/- 0.000242) [ 0.49]

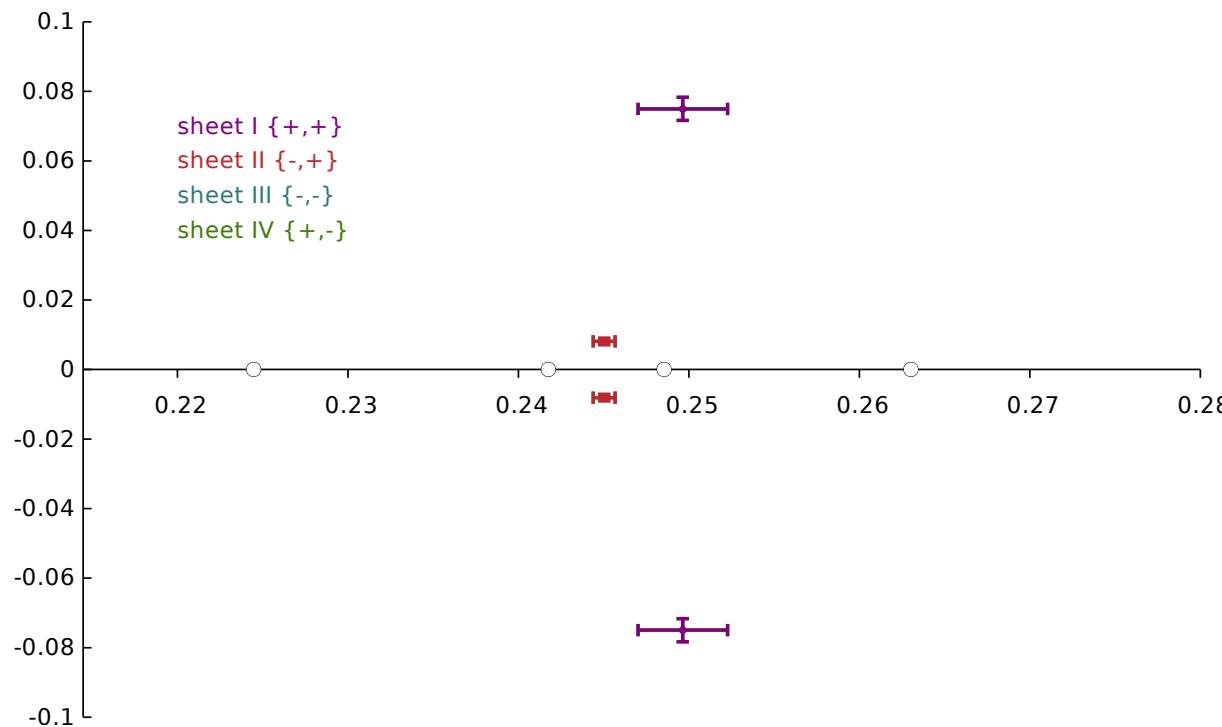
pi:omega | pi:phi |
=====|=====
 k_re= 0.0460 +/- 0.0008 | k_re= 0.0092 +/- 0.0008 |
 k_im= -0.0048 +/- 0.0006 | k_im= -0.0212 +/- 0.0016 |
 corr= [ 0.53] | corr= [-0.08] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0656 +/- 0.0038 | lg= 0.0000 +/- 0.0000 | lg= 0.0082 +/- 0.0026 |
 arg(g)/pi= -0.1270 +/- 0.0174 | arg(g)/pi= 0.6270 +/- 0.0174 | arg(g)/pi= -0.7207 +/- 0.0193 |
-----|-----|-----|
 g_re= 0.0604 +/- 0.0042 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0053 +/- 0.0019 |
 g_im= -0.0255 +/- 0.0032 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0063 +/- 0.0019 |
 corr= [ 0.18] | corr= [-0.27] | corr= [ 0.94] |
-----|-----|-----|
 Br = 0.8178 +/- 0.0146 | Br = 0.0000 +/- 0.0000 | Br = 0.0129 +/- 0.0082 |

```

2.16 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1.pole0_sub





parameter values

```
minimised with chisq/nDoF = 33.21 / (36 - 6) = 1.11
```

JP1+_g_pi:omega/3^S_1_pole0	0.083242 +/- 0.005384	1.00	-0.29	-0.19	-0.05	-0.01	-0.03				
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_orde	-35.507 +/- 11.415	1.00	-0.10	0.30	-0.12	-0.16					
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde	5.7021 +/- 0.38676	1.00	-0.90	0.02	0.00						
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-114.60 +/- 7.7	1.00	0.04	-0.04							
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.87101 +/- 0.24492	1.00	-0.17								
JP1+_m_pole0	0.24707 +/- 0.00057888	1.00									

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.24964 +/- 0.0026251)
+ (i/2)*(+0.074951 +/- 0.0033179) [ 0.61]
s_pole = (0.060917 +/- 0.001239)
+ i*(+0.018711 +/- 0.00096071) [ 0.67]
```

pi:omega	pi:phi
k_re= 0.0589 +/- 0.0024	k_re= 0.0412 +/- 0.0025
k_im= 0.0360 +/- 0.0010	k_im= 0.0462 +/- 0.0011
corr= [0.21]	corr= [-0.22]

2 Unphysical Parameterizations

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1651 +/- 0.0050 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0472 +/- 0.0107 |
arg(g)/pi= -0.2077 +/- 0.0033 | arg(g)/pi= 0.7077 +/- 0.0033 | arg(g)/pi= -0.1671 +/- 0.0151 |
-----|-----|-----
g_re= 0.1312 +/- 0.0038 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0408 +/- 0.0096 |
g_im= -0.1003 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0236 +/- 0.0052 |
corr= [-0.81] | corr= [-0.77] | corr= [-0.89] |
-----|-----|-----
Br = 0.5968 +/- 0.0224 | Br = 0.0000 +/- 0.0000 | Br = 0.0487 +/- 0.0236 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24964 +/- 0.0026251)
+ (i/2)*(-0.074951 +/- 0.0033179) [-0.61]  

s_pole = (0.060917 +/- 0.001239)
+ i*(-0.018711 +/- 0.00096071) [-0.67]

pi:omega | pi:phi |
=====|=====
k_re= -0.0589 +/- 0.0024 | k_re= -0.0412 +/- 0.0025 |
k_im= 0.0360 +/- 0.0010 | k_im= 0.0462 +/- 0.0011 |
corr= [-0.21] | corr= [ 0.22] |
-----|-----|-----

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1651 +/- 0.0050 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0472 +/- 0.0107 |
arg(g)/pi= 0.2077 +/- 0.0033 | arg(g)/pi= 0.2923 +/- 0.0033 | arg(g)/pi= 0.1671 +/- 0.0151 |
-----|-----|-----
g_re= 0.1312 +/- 0.0038 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0408 +/- 0.0096 |
g_im= 0.1003 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0236 +/- 0.0052 |
corr= [ 0.81] | corr= [ 0.77] | corr= [ 0.89] |
-----|-----|-----
Br = 0.5968 +/- 0.0224 | Br = 0.0000 +/- 0.0000 | Br = 0.0487 +/- 0.0236 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.24964 +/- 0.0026251)
+ (i/2)*(+0.074951 +/- 0.0033179) [ 0.61]  

s_pole = (0.060917 +/- 0.001239)
+ i*(+0.018711 +/- 0.00096071) [ 0.67]

pi:omega | pi:phi |
=====|=====
k_re= 0.0589 +/- 0.0024 | k_re= -0.0412 +/- 0.0025 |
k_im= 0.0360 +/- 0.0010 | k_im= -0.0462 +/- 0.0011 |
corr= [ 0.21] | corr= [-0.22] |
-----|-----|-----

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1651 +/- 0.0050 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0472 +/- 0.0107 |
arg(g)/pi= -0.2077 +/- 0.0033 | arg(g)/pi= 0.7077 +/- 0.0033 | arg(g)/pi= -0.1671 +/- 0.0151 |
-----|-----|-----
g_re= 0.1312 +/- 0.0038 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0408 +/- 0.0096 |
g_im= -0.1003 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0236 +/- 0.0052 |
corr= [-0.81] | corr= [-0.77] | corr= [-0.89] |
-----|-----|-----

```

2 Unphysical Parameterizations

```

Br = 0.5968 +/- 0.0224 | Br = 0.0000 +/- 0.0000 | Br = 0.0487 +/- 0.0236 |

--pi:omega[+] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24964 +/- 0.0026251)
+ (i/2)*(-0.074951 +/- 0.0033179) [-0.61]

s_pole = (0.060917 +/- 0.001239)
+ i*(-0.018711 +/- 0.00096071) [-0.67]

pi:omega | pi:phi |
=====|=====
k_re= -0.0589 +/- 0.0024 | k_re= 0.0412 +/- 0.0025 |
k_im= 0.0360 +/- 0.0010 | k_im= -0.0462 +/- 0.0011 |
corr= [-0.21] | corr= [ 0.22] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1651 +/- 0.0050 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0472 +/- 0.0107 |
arg(g)/pi= 0.2077 +/- 0.0033 | arg(g)/pi= 0.2923 +/- 0.0033 | arg(g)/pi= 0.1671 +/- 0.0151 |
-----|-----|-----
g_re= 0.1312 +/- 0.0038 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0408 +/- 0.0096 |
g_im= 0.1003 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0236 +/- 0.0052 |
corr= [ 0.81] | corr= [ 0.77] | corr= [ 0.89] |

Br = 0.5968 +/- 0.0224 | Br = 0.0000 +/- 0.0000 | Br = 0.0487 +/- 0.0236 |

--pi:omega[-] pi:phi[+] lower half-plane

sqrt(s)_pole = (0.20065 +/- 0.0017539)
+ (i/2)*(-3.9663e-16 +/- 2.2217e-13) [ 0.00]

s_pole = (0.040262 +/- 0.00070385)
+ i*(-7.9551e-17 +/- 4.4562e-14) [ 0.00]

pi:omega | pi:phi |
=====|=====
k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0454 +/- 0.0015 | k_im= 0.0612 +/- 0.0008 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1044 +/- 0.0044 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0207 +/- 0.0063 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1044 +/- 0.0044 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0207 +/- 0.0063 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.14] |

Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24503 +/- 0.00064036)
+ (i/2)*(+0.0080887 +/- 0.00091058) [-0.46]

s_pole = (0.060022 +/- 0.00031553)
+ i*(+0.0019819 +/- 0.00022076) [-0.45]

```

2 Unphysical Parameterizations

```

pi:omega | pi:phi |
=====
k_re= -0.0462 +/- 0.0007 | k_re= 0.0093 +/- 0.0008 |
k_im= -0.0048 +/- 0.0006 | k_im= 0.0210 +/- 0.0015 |
corr= [-0.50] | corr= [ 0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0657 +/- 0.0034 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0025 |
arg(g)/pi= 0.1207 +/- 0.0155 | arg(g)/pi= 0.3793 +/- 0.0155 | arg(g)/pi= 0.7201 +/- 0.0190 |
-----|-----|-----|
g_re= 0.0610 +/- 0.0036 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0051 +/- 0.0018 |
g_im= 0.0243 +/- 0.0029 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0061 +/- 0.0018 |
corr= [-0.15] | corr= [ 0.23] | corr= [-0.94] |
-----|-----|-----|
Br = 0.8176 +/- 0.0150 | Br = 0.0000 +/- 0.0000 | Br = 0.0121 +/- 0.0076 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24503 +/- 0.00064036)
+ (i/2)*(-0.0080887 +/- 0.00091058) [ 0.46]  

s_pole = (0.060022 +/- 0.00031553)
+ i*(-0.0019819 +/- 0.00022076) [ 0.45]

pi:omega | pi:phi |
=====
k_re= 0.0462 +/- 0.0007 | k_re= -0.0093 +/- 0.0008 |
k_im= -0.0048 +/- 0.0006 | k_im= 0.0210 +/- 0.0015 |
corr= [ 0.50] | corr= [-0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0657 +/- 0.0034 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0080 +/- 0.0025 |
arg(g)/pi= -0.1207 +/- 0.0155 | arg(g)/pi= 0.6207 +/- 0.0155 | arg(g)/pi= -0.7201 +/- 0.0190 |
-----|-----|-----|
g_re= 0.0610 +/- 0.0036 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0051 +/- 0.0018 |
g_im= -0.0243 +/- 0.0029 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0061 +/- 0.0018 |
corr= [ 0.15] | corr= [-0.23] | corr= [ 0.94] |
-----|-----|-----|
Br = 0.8176 +/- 0.0150 | Br = 0.0000 +/- 0.0000 | Br = 0.0121 +/- 0.0076 |

--  

pi:omega[-] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.20065 +/- 0.0017539)
+ (i/2)*(-1.4992e-17 +/- 3.7668e-14) [ 0.00]  

s_pole = (0.040262 +/- 0.00070385)
+ i*(-3.0056e-18 +/- 7.5616e-15) [ 0.00]

pi:omega | pi:phi |
=====
k_re= 0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0454 +/- 0.0015 | k_im= -0.0612 +/- 0.0008 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1044 +/- 0.0044 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0207 +/- 0.0063 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |

```

2 Unphysical Parameterizations

```

-----|-----|-----|
 g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
 g_im= 0.1044 +/- 0.0044 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0207 +/- 0.0063 |
 corr= [-1.00] | corr= [ 0.00] | corr= [-0.14] |
-----|-----|-----|
 Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24503 +/- 0.00064036)
+ (i/2)*(+0.0080887 +/- 0.00091058) [-0.46]

s_pole = (0.060022 +/- 0.00031553)
+ i*(+0.0019819 +/- 0.00022076) [-0.45]

pi:omega | pi:phi |
=====|=====
 k_re= -0.0462 +/- 0.0007 | k_re= -0.0093 +/- 0.0008 |
 k_im= -0.0048 +/- 0.0006 | k_im= -0.0210 +/- 0.0015 |
 corr= [-0.50] | corr= [ 0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0657 +/- 0.0034 | lg= 0.0000 +/- 0.0000 | lg= 0.0080 +/- 0.0025 |
 arg(g)/pi= 0.1207 +/- 0.0155 | arg(g)/pi= 0.3793 +/- 0.0155 | arg(g)/pi= 0.7201 +/- 0.0190 |
-----|-----|-----|
 g_re= 0.0610 +/- 0.0036 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0051 +/- 0.0018 |
 g_im= 0.0243 +/- 0.0029 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0061 +/- 0.0018 |
 corr= [-0.15] | corr= [ 0.23] | corr= [-0.94] |
-----|-----|-----|
 Br = 0.8176 +/- 0.0150 | Br = 0.0000 +/- 0.0000 | Br = 0.0121 +/- 0.0076 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24503 +/- 0.00064036)
+ (i/2)*(-0.0080887 +/- 0.00091058) [ 0.46]

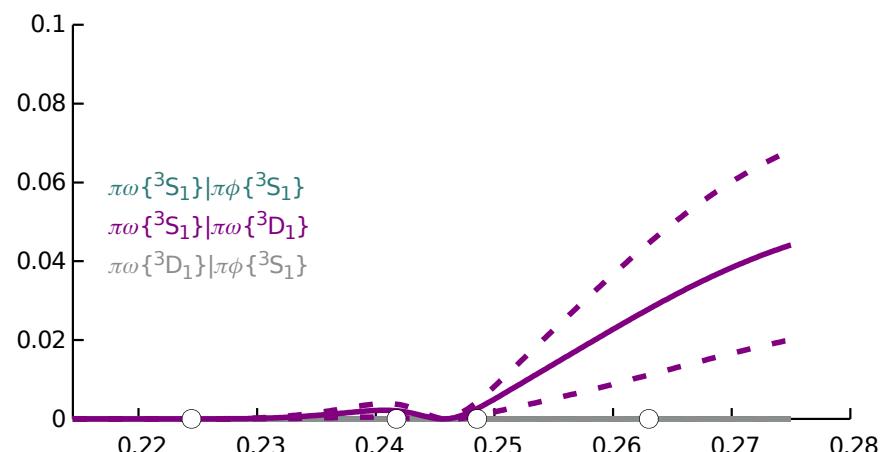
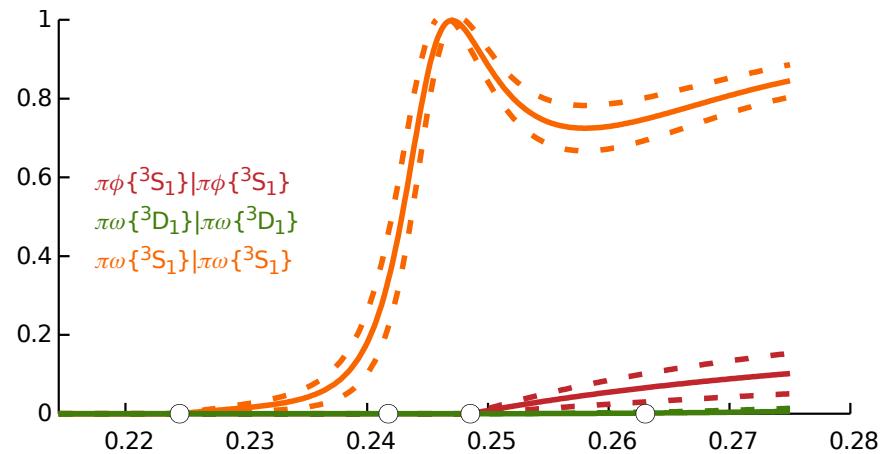
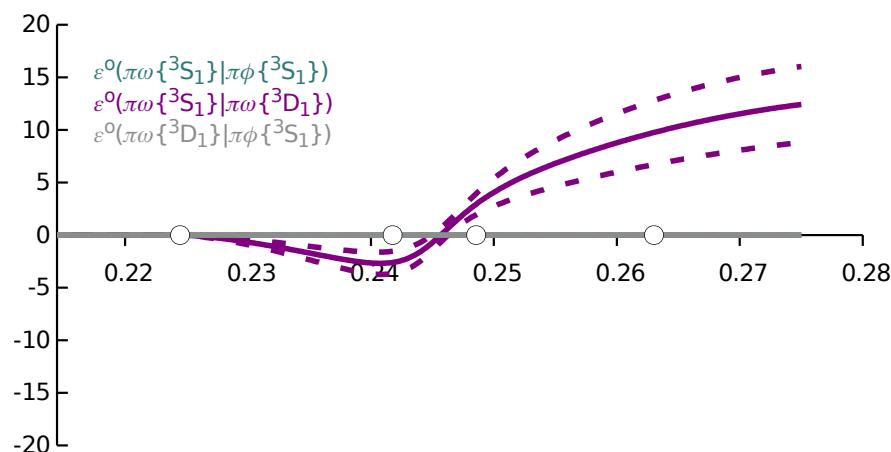
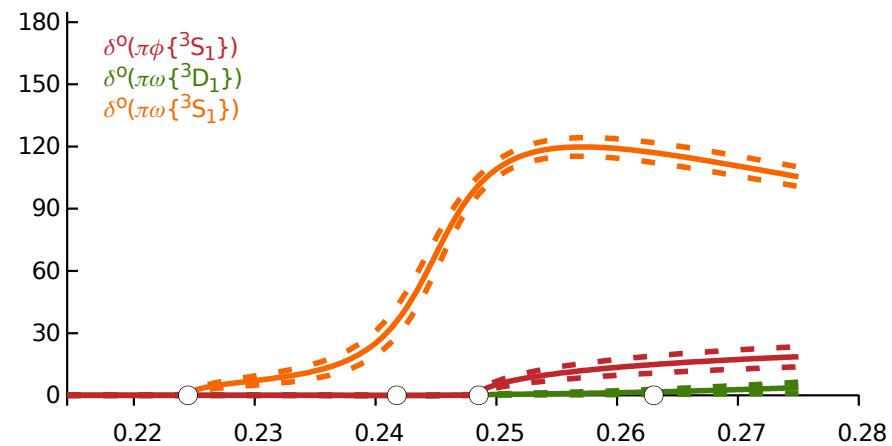
s_pole = (0.060022 +/- 0.00031553)
+ i*(-0.0019819 +/- 0.00022076) [ 0.45]

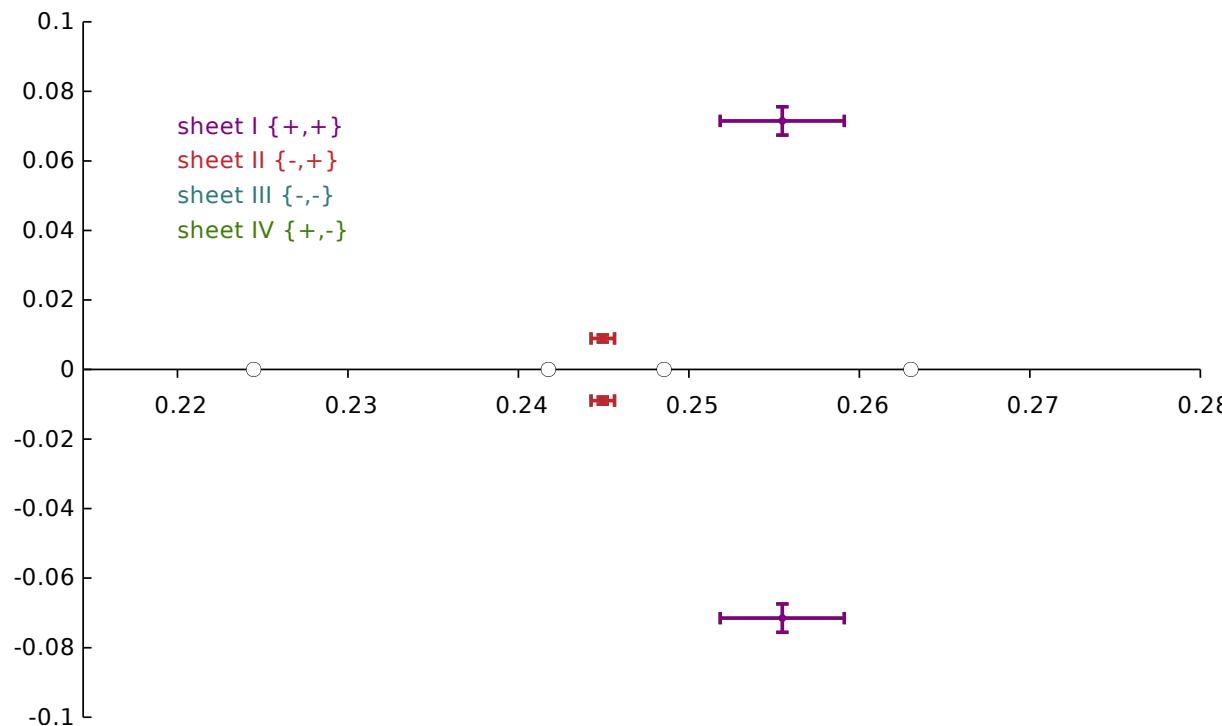
pi:omega | pi:phi |
=====|=====
 k_re= 0.0462 +/- 0.0007 | k_re= 0.0093 +/- 0.0008 |
 k_im= -0.0048 +/- 0.0006 | k_im= -0.0210 +/- 0.0015 |
 corr= [ 0.50] | corr= [-0.01] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0657 +/- 0.0034 | lg= 0.0000 +/- 0.0000 | lg= 0.0080 +/- 0.0025 |
 arg(g)/pi= -0.1207 +/- 0.0155 | arg(g)/pi= 0.6207 +/- 0.0155 | arg(g)/pi= -0.7201 +/- 0.0190 |
-----|-----|-----|
 g_re= 0.0610 +/- 0.0036 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0051 +/- 0.0018 |
 g_im= -0.0243 +/- 0.0029 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0061 +/- 0.0018 |
 corr= [ 0.15] | corr= [-0.23] | corr= [ 0.94] |
-----|-----|-----|
 Br = 0.8176 +/- 0.0150 | Br = 0.0000 +/- 0.0000 | Br = 0.0121 +/- 0.0076 |

```

2.17 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1+G1_3s1.gorder0_3s1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 33.27 / (36 - 6) = 1.11
```

JP1+_g_pi:omega/3^S_1_pole0	0.077806 +/- 0.004737	1.00	-0.26	-0.26	0.18	0.10	-0.42									
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_orde	-27.448 +/- 10.267	1.00	-0.09	0.31	-0.06	-0.06										
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde	4.6168 +/- 0.42057	1.00	-0.92	0.01	0.07											
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_order0	-90.723 +/- 8.0628	1.00	0.06	-0.07												
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.94195 +/- 0.29608	1.00	-0.28													
JP1+_m_pole0	0.24568 +/- 0.00061896	1.00														

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.25548 +/- 0.0036387)
+ (i/2)*(+0.071494 +/- 0.0041044) [ 0.69]
s_pole = (0.063991 +/- 0.0017611)
+ i*(+0.018265 +/- 0.0012426) [ 0.75]
```

pi:omega	pi:phi
k_re= 0.0632 +/- 0.0033	k_re= 0.0448 +/- 0.0035
k_im= 0.0331 +/- 0.0012	k_im= 0.0422 +/- 0.0013
corr= [0.31]	corr= [-0.21]

2 Unphysical Parameterizations

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1573 +/- 0.0064 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0442 +/- 0.0113 |
arg(g)/pi= -0.2482 +/- 0.0033 | arg(g)/pi= 0.7482 +/- 0.0033 | arg(g)/pi= -0.2083 +/- 0.0168 |
-----|-----|-----
g_re= 0.1119 +/- 0.0044 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0351 +/- 0.0095 |
g_im= -0.1106 +/- 0.0049 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0269 +/- 0.0065 |
corr= [-0.88] | corr= [-0.88] | corr= [-0.92] |
-----|-----|-----
Br = 0.6069 +/- 0.0273 | Br = 0.0000 +/- 0.0000 | Br = 0.0480 +/- 0.0264 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.25548 +/- 0.0036387)
+ (i/2)*(-0.071494 +/- 0.0041044) [-0.69]  

s_pole = (0.063991 +/- 0.0017611)
+ i*(-0.018265 +/- 0.0012426) [-0.75]

pi:omega | pi:phi |
=====|=====
k_re= -0.0632 +/- 0.0033 | k_re= -0.0448 +/- 0.0035 |
k_im= 0.0331 +/- 0.0012 | k_im= 0.0422 +/- 0.0013 |
corr= [-0.31] | corr= [ 0.21] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1573 +/- 0.0064 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0442 +/- 0.0113 |
arg(g)/pi= 0.2482 +/- 0.0033 | arg(g)/pi= 0.2518 +/- 0.0033 | arg(g)/pi= 0.2083 +/- 0.0168 |
-----|-----|-----
g_re= 0.1119 +/- 0.0044 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0351 +/- 0.0095 |
g_im= 0.1106 +/- 0.0049 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0269 +/- 0.0065 |
corr= [ 0.88] | corr= [ 0.88] | corr= [ 0.92] |
-----|-----|-----
Br = 0.6069 +/- 0.0273 | Br = 0.0000 +/- 0.0000 | Br = 0.0480 +/- 0.0264 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.25548 +/- 0.0036387)
+ (i/2)*(-0.071494 +/- 0.0041044) [-0.69]  

s_pole = (0.063991 +/- 0.0017611)
+ i*(-0.018265 +/- 0.0012426) [-0.75]

pi:omega | pi:phi |
=====|=====
k_re= -0.0632 +/- 0.0033 | k_re= 0.0448 +/- 0.0035 |
k_im= 0.0331 +/- 0.0012 | k_im= -0.0422 +/- 0.0013 |
corr= [-0.31] | corr= [ 0.21] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1573 +/- 0.0064 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0442 +/- 0.0113 |
arg(g)/pi= 0.2482 +/- 0.0033 | arg(g)/pi= 0.2518 +/- 0.0033 | arg(g)/pi= 0.2083 +/- 0.0168 |
-----|-----|-----
g_re= 0.1119 +/- 0.0044 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0351 +/- 0.0095 |
g_im= 0.1106 +/- 0.0049 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0269 +/- 0.0065 |
corr= [ 0.88] | corr= [ 0.88] | corr= [ 0.92] |
-----|-----|-----

```

2 Unphysical Parameterizations

```

Br = 0.6069 +/- 0.0273 | Br = 0.0000 +/- 0.0000 | Br = 0.0480 +/- 0.0264 |

--pi:omega[+] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.25548 +/- 0.0036387)
+ (i/2)*(+0.071494 +/- 0.0041044) [ 0.69]

s_pole = (0.063991 +/- 0.0017611)
+ i*(+0.018265 +/- 0.0012426) [ 0.75]

pi:omega | pi:phi |
=====|=====
k_re= 0.0632 +/- 0.0033 | k_re= -0.0448 +/- 0.0035 |
k_im= 0.0331 +/- 0.0012 | k_im= -0.0422 +/- 0.0013 |
corr= [ 0.31] | corr= [-0.21] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1573 +/- 0.0064 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0442 +/- 0.0113 |
arg(g)/pi= -0.2482 +/- 0.0033 | arg(g)/pi= 0.7482 +/- 0.0033 | arg(g)/pi= -0.2083 +/- 0.0168 |
-----|-----|-----
g_re= 0.1119 +/- 0.0044 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0351 +/- 0.0095 |
g_im= -0.1106 +/- 0.0049 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0269 +/- 0.0065 |
corr= [-0.88] | corr= [-0.88] | corr= [-0.92] |

Br = 0.6069 +/- 0.0273 | Br = 0.0000 +/- 0.0000 | Br = 0.0480 +/- 0.0264 |

--pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.19471 +/- 0.0024271)
+ (i/2)*(+2.55e-17 +/- 3.1976e-14) [ 0.00]

s_pole = (0.037913 +/- 0.00094514)
+ i*(+4.9585e-18 +/- 6.2303e-15) [ 0.00]

pi:omega | pi:phi |
=====|=====
k_re= -0.0000 +/- 0.0000 | k_re= 0.0000 +/- 0.0000 |
k_im= -0.0501 +/- 0.0017 | k_im= 0.0636 +/- 0.0009 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1120 +/- 0.0050 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0206 +/- 0.0074 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |
-----|-----|-----
g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
g_im= 0.1120 +/- 0.0050 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0206 +/- 0.0074 |
corr= [-1.00] | corr= [ 0.00] | corr= [-0.17] |

Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

--pi:omega[-] pi:phi[+] upper half-plane

sqrt(s)_pole = (0.24495 +/- 0.00068521)
+ (i/2)*(+0.008919 +/- 0.0010286) [-0.41]

s_pole = (0.059981 +/- 0.00033757)
+ i*(+0.0021847 +/- 0.00024954) [-0.40]

```

2 Unphysical Parameterizations

```

pi:omega | pi:phi |
=====
k_re= -0.0461 +/- 0.0008 | k_re= 0.0100 +/- 0.0009 |
k_im= -0.0053 +/- 0.0006 | k_im= 0.0215 +/- 0.0015 |
corr= [-0.44] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0688 +/- 0.0037 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0065 +/- 0.0024 |
arg(g)/pi= 0.1101 +/- 0.0197 | arg(g)/pi= 0.3899 +/- 0.0197 | arg(g)/pi= 0.6377 +/- 0.0221 |
-----|-----|-----|
g_re= 0.0647 +/- 0.0043 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0027 +/- 0.0013 |
g_im= 0.0233 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0059 +/- 0.0020 |
corr= [-0.38] | corr= [ 0.23] | corr= [-0.94] |
-----|-----|-----|
Br = 0.8104 +/- 0.0175 | Br = 0.0000 +/- 0.0000 | Br = 0.0073 +/- 0.0052 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24495 +/- 0.00068521)
+ (i/2)*(-0.008919 +/- 0.0010286) [ 0.41]

s_pole = (0.059981 +/- 0.00033757)
+ i*(-0.0021847 +/- 0.00024954) [ 0.40]

pi:omega | pi:phi |
=====
k_re= 0.0461 +/- 0.0008 | k_re= -0.0100 +/- 0.0009 |
k_im= -0.0053 +/- 0.0006 | k_im= 0.0215 +/- 0.0015 |
corr= [ 0.44] | corr= [-0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0688 +/- 0.0037 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0065 +/- 0.0024 |
arg(g)/pi= -0.1101 +/- 0.0197 | arg(g)/pi= 0.6101 +/- 0.0197 | arg(g)/pi= -0.6377 +/- 0.0221 |
-----|-----|-----|
g_re= 0.0647 +/- 0.0043 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0027 +/- 0.0013 |
g_im= -0.0233 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0059 +/- 0.0020 |
corr= [ 0.38] | corr= [-0.23] | corr= [ 0.94] |
-----|-----|-----|
Br = 0.8104 +/- 0.0175 | Br = 0.0000 +/- 0.0000 | Br = 0.0073 +/- 0.0052 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.19471 +/- 0.0024271)
+ (i/2)*(+4.6886e-14 +/- 2.3685e-11) [ 0.00]

s_pole = (0.037913 +/- 0.00094514)
+ i*(+9.1247e-15 +/- 4.6095e-12) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0501 +/- 0.0017 | k_im= -0.0636 +/- 0.0009 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1120 +/- 0.0050 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0206 +/- 0.0074 |
arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |

```

2 Unphysical Parameterizations

```

-----|-----|-----|
 g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
 g_im= 0.1120 +/- 0.0050 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0206 +/- 0.0074 |
 corr= [-1.00] | corr= [ 0.00] | corr= [-0.17] |
-----|-----|-----|
 Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24495 +/- 0.00069035)
+ (i/2)*(+0.008919 +/- 0.00103) [-0.41]

s_pole = (0.059981 +/- 0.00034011)
+ i*(+0.0021847 +/- 0.00024984) [-0.40]

pi:omega | pi:phi |
=====|=====
 k_re= -0.0461 +/- 0.0008 | k_re= -0.0100 +/- 0.0009 |
 k_im= -0.0053 +/- 0.0006 | k_im= -0.0215 +/- 0.0015 |
 corr= [-0.45] | corr= [-0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0688 +/- 0.0037 | lg= 0.0000 +/- 0.0000 | lg= 0.0065 +/- 0.0024 |
 arg(g)/pi= 0.1101 +/- 0.0196 | arg(g)/pi= 0.3899 +/- 0.0196 | arg(g)/pi= 0.6377 +/- 0.0222 |
-----|-----|-----|
 g_re= 0.0647 +/- 0.0043 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0027 +/- 0.0013 |
 g_im= 0.0233 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0059 +/- 0.0020 |
 corr= [-0.38] | corr= [ 0.23] | corr= [-0.93] |
-----|-----|-----|
 Br = 0.8104 +/- 0.0175 | Br = 0.0000 +/- 0.0000 | Br = 0.0073 +/- 0.0052 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24495 +/- 0.00069035)
+ (i/2)*(-0.008919 +/- 0.00103) [ 0.41]

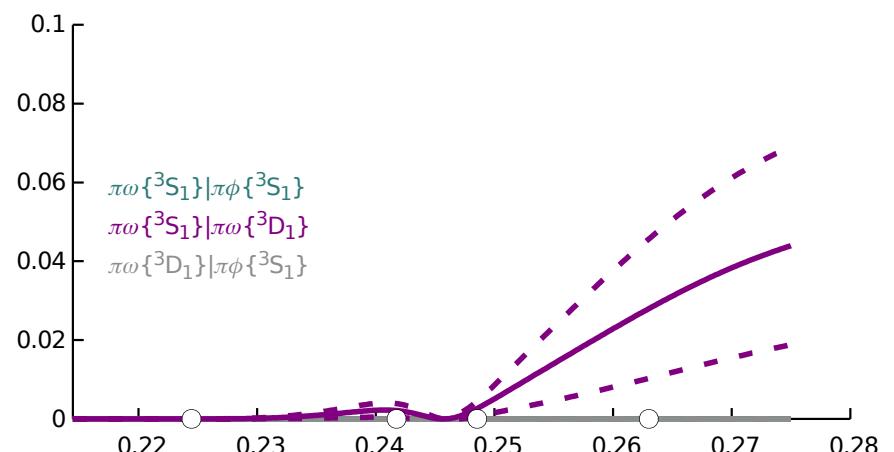
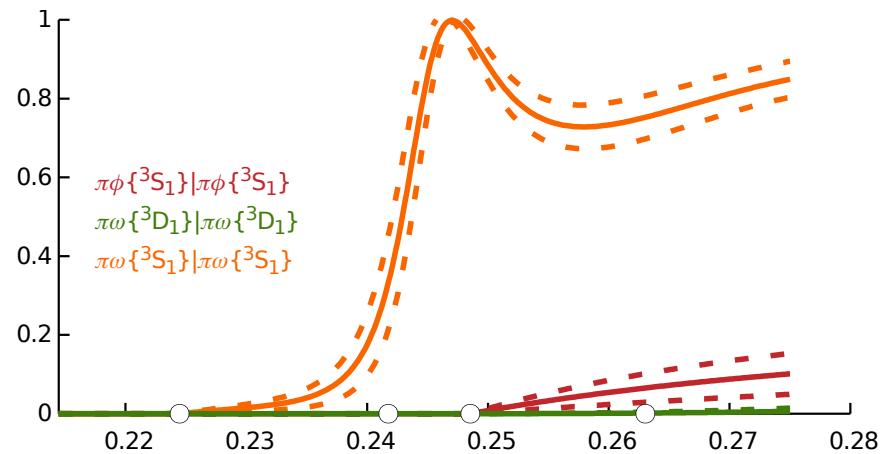
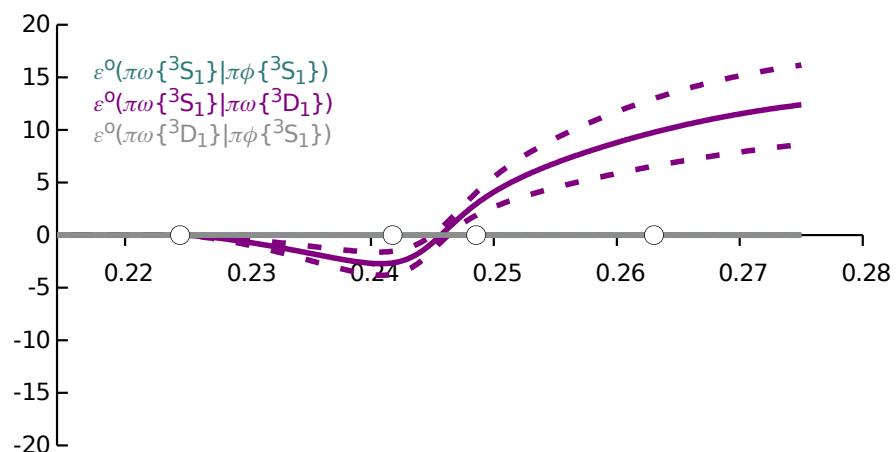
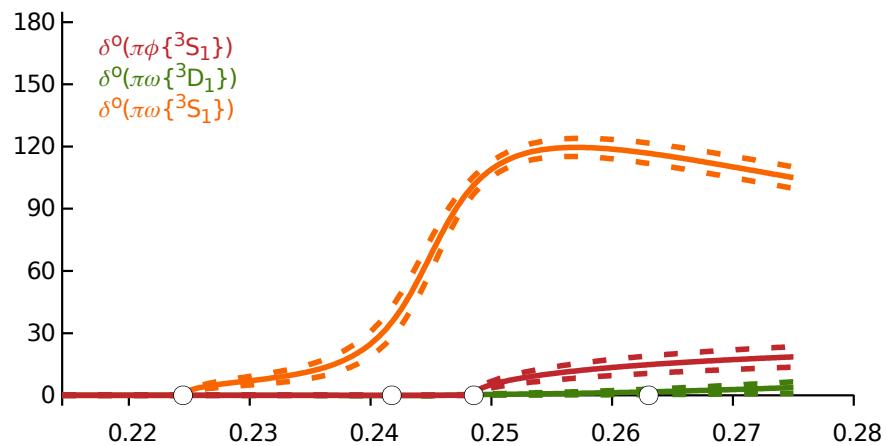
s_pole = (0.059981 +/- 0.00034011)
+ i*(-0.0021847 +/- 0.00024984) [ 0.40]

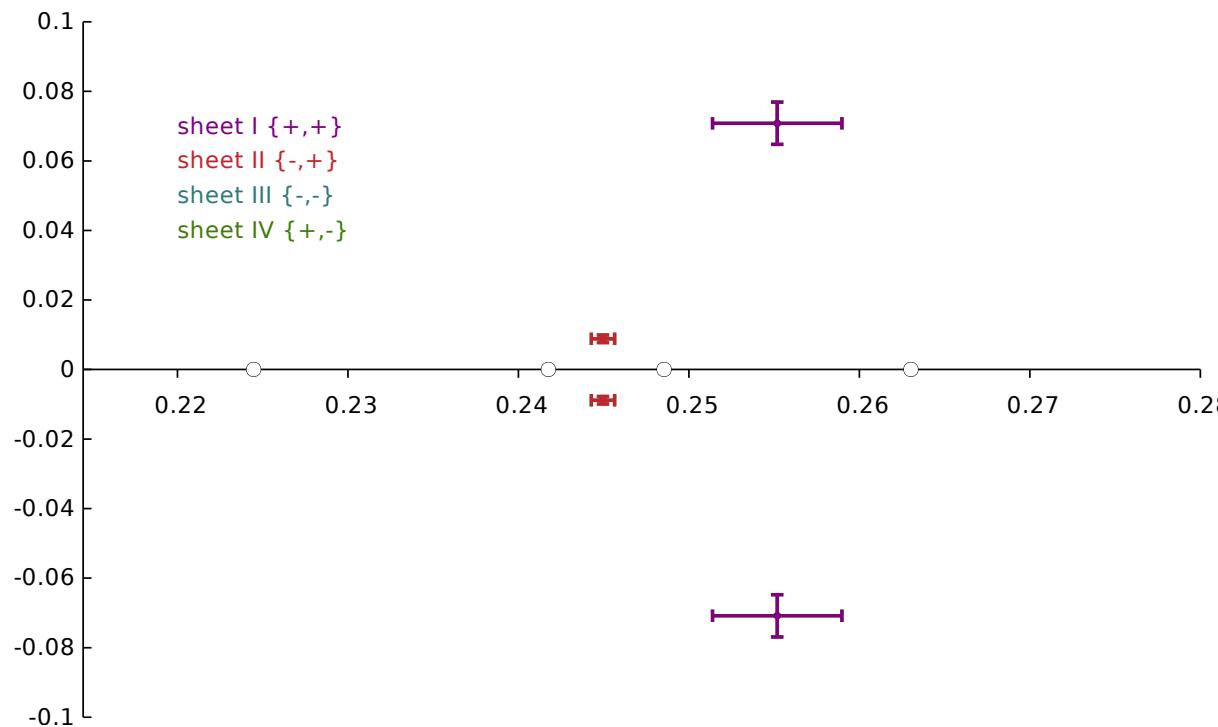
pi:omega | pi:phi |
=====|=====
 k_re= 0.0461 +/- 0.0008 | k_re= 0.0100 +/- 0.0009 |
 k_im= -0.0053 +/- 0.0006 | k_im= -0.0215 +/- 0.0015 |
 corr= [ 0.45] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0688 +/- 0.0037 | lg= 0.0000 +/- 0.0000 | lg= 0.0065 +/- 0.0024 |
 arg(g)/pi= -0.1101 +/- 0.0196 | arg(g)/pi= 0.6101 +/- 0.0196 | arg(g)/pi= -0.6377 +/- 0.0222 |
-----|-----|-----|
 g_re= 0.0647 +/- 0.0043 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0027 +/- 0.0013 |
 g_im= -0.0233 +/- 0.0037 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0059 +/- 0.0020 |
 corr= [ 0.38] | corr= [-0.23] | corr= [ 0.93] |
-----|-----|-----|
 Br = 0.8104 +/- 0.0175 | Br = 0.0000 +/- 0.0000 | Br = 0.0073 +/- 0.0052 |

```

2.18 coupled_po_pp.3s1_3d1.pole+G0_3s1_3sd1_3S1.gorder0_3s1+gorder1_3s1.threshold_sub





parameter values

```
minimised with chisq/nDoF = 33.27 / (36 - 6) = 1.11
```

JP1+_g_pi:omega/3^S_1_pole0_order0	-0.50230 +/- 0.042477	1.00	-0.99	0.31	0.24	0.05	-0.17	
JP1+_g_pi:omega/3^S_1_pole0_order1	9.6054 +/- 0.66904	1.00	-0.35	-0.19	-0.02	0.06		
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^D_1_orde	-27.655 +/- 10.455	1.00	0.35	-0.08	-0.02			
JP1+_gamma_pi:omega/3^S_1 pi:omega/3^S_1_orde	0.61835 +/- 0.17825	1.00	0.24	-0.31				
JP1+_gamma_pi:phi/3^S_1 pi:phi/3^S_1_order0	0.93747 +/- 0.29453	1.00	-0.27					
JP1+_m_pole0	0.24569 +/- 0.00060499					1.00		

pole singularities

```
pi:omega[+] pi:phi[+] upper half-plane
sqrt(s)_pole = (0.25518 +/- 0.003796)
  + (i/2)*(+0.070831 +/- 0.0060893) [ 0.75]

s_pole = (0.063864 +/- 0.0017809)
  + i*(+0.018075 +/- 0.0017647) [ 0.76]

pi:omega | pi:phi |
=====
k_re= 0.0628 +/- 0.0037 | k_re= 0.0445 +/- 0.0041 |
k_im= 0.0329 +/- 0.0019 | k_im= 0.0421 +/- 0.0016 |
corr= [ 0.60] | corr= [ 0.28] |
```

2 Unphysical Parameterizations

```

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1568 +/- 0.0079 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0438 +/- 0.0119 |
arg(g)/pi= -0.2476 +/- 0.0051 | arg(g)/pi= 0.7476 +/- 0.0051 | arg(g)/pi= -0.2083 +/- 0.0157 |
-----|-----|-----
g_re= 0.1117 +/- 0.0049 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0347 +/- 0.0099 |
g_im= -0.1100 +/- 0.0067 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0267 +/- 0.0069 |
corr= [-0.86] | corr= [-0.86] | corr= [-0.93] |
-----|-----|-----
Br = 0.6072 +/- 0.0316 | Br = 0.0000 +/- 0.0000 | Br = 0.0474 +/- 0.0272 |

--  

pi:omega[+] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.25518 +/- 0.003796)
+ (i/2)*(-0.070831 +/- 0.0060893) [-0.75]

s_pole = (0.063864 +/- 0.0017809)
+ i*(-0.018075 +/- 0.0017647) [-0.76]

pi:omega | pi:phi |
=====|=====
k_re= -0.0628 +/- 0.0037 | k_re= -0.0445 +/- 0.0041 |
k_im= 0.0329 +/- 0.0019 | k_im= 0.0421 +/- 0.0016 |
corr= [-0.60] | corr= [-0.28] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1568 +/- 0.0079 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0438 +/- 0.0119 |
arg(g)/pi= 0.2476 +/- 0.0051 | arg(g)/pi= 0.2524 +/- 0.0051 | arg(g)/pi= 0.2083 +/- 0.0157 |
-----|-----|-----
g_re= 0.1117 +/- 0.0049 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0347 +/- 0.0099 |
g_im= 0.1100 +/- 0.0067 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0267 +/- 0.0069 |
corr= [ 0.86] | corr= [ 0.86] | corr= [ 0.93] |
-----|-----|-----
Br = 0.6072 +/- 0.0316 | Br = 0.0000 +/- 0.0000 | Br = 0.0474 +/- 0.0272 |

--  

pi:omega[+] pi:phi[-] lower half-plane  

sqrt(s)_pole = (0.25518 +/- 0.003796)
+ (i/2)*(-0.070831 +/- 0.0060893) [-0.75]

s_pole = (0.063864 +/- 0.0017809)
+ i*(-0.018075 +/- 0.0017647) [-0.76]

pi:omega | pi:phi |
=====|=====
k_re= -0.0628 +/- 0.0037 | k_re= 0.0445 +/- 0.0041 |
k_im= 0.0329 +/- 0.0019 | k_im= -0.0421 +/- 0.0016 |
corr= [-0.60] | corr= [-0.28] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
|g|= 0.1568 +/- 0.0079 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0438 +/- 0.0119 |
arg(g)/pi= 0.2476 +/- 0.0051 | arg(g)/pi= 0.2524 +/- 0.0051 | arg(g)/pi= 0.2083 +/- 0.0157 |
-----|-----|-----
g_re= 0.1117 +/- 0.0049 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0347 +/- 0.0099 |
g_im= 0.1100 +/- 0.0067 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0267 +/- 0.0069 |
corr= [ 0.86] | corr= [ 0.86] | corr= [ 0.93] |
-----|-----|-----

```

2 Unphysical Parameterizations

```

Br = 0.6072 +/- 0.0316 | Br = 0.0000 +/- 0.0000 | Br = 0.0474 +/- 0.0272 |

--  

pi:omega[+] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.25518 +/- 0.003796)  

+ (i/2)*(+0.070831 +/- 0.0060893) [ 0.75]  

s_pole = (0.063864 +/- 0.0017809)  

+ i*(+0.018075 +/- 0.0017647) [ 0.76]  

pi:omega | pi:phi |  

=====|=====|  

k_re= 0.0628 +/- 0.0037 | k_re= -0.0445 +/- 0.0041 |  

k_im= 0.0329 +/- 0.0019 | k_im= -0.0421 +/- 0.0016 |  

corr= [ 0.60] | corr= [ 0.28] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |  

=====|=====|=====|  

|g|= 0.1568 +/- 0.0079 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0438 +/- 0.0119 |  

arg(g)/pi= -0.2476 +/- 0.0051 | arg(g)/pi= 0.7476 +/- 0.0051 | arg(g)/pi= -0.2083 +/- 0.0157 |  

g_re= 0.1117 +/- 0.0049 | g_re= -0.0000 +/- 0.0000 | g_re= 0.0347 +/- 0.0099 |  

g_im= -0.1100 +/- 0.0067 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0267 +/- 0.0069 |  

corr= [-0.86] | corr= [-0.86] | corr= [-0.93] |  

Br = 0.6072 +/- 0.0316 | Br = 0.0000 +/- 0.0000 | Br = 0.0474 +/- 0.0272 |  

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.19502 +/- 0.0033682)  

+ (i/2)*(-7.97e-17 +/- 3.9309e-14) [ 0.00]  

s_pole = (0.038034 +/- 0.0013137)  

+ i*(-1.555e-17 +/- 7.6706e-15) [ 0.00]  

pi:omega | pi:phi |  

=====|=====|  

k_re= 0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |  

k_im= -0.0498 +/- 0.0024 | k_im= 0.0635 +/- 0.0012 |  

corr= [ 0.00] | corr= [ 0.00] |  

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |  

=====|=====|=====|  

|g|= 0.1119 +/- 0.0045 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0204 +/- 0.0073 |  

arg(g)/pi= 0.5000 +/- 0.0000 | arg(g)/pi= 0.0000 +/- 0.0000 | arg(g)/pi= 0.5000 +/- 0.0000 |  

g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |  

g_im= 0.1119 +/- 0.0045 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0204 +/- 0.0073 |  

corr= [-1.00] | corr= [ 0.00] | corr= [-0.34] |  

Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |  

--  

pi:omega[-] pi:phi[+] upper half-plane  

sqrt(s)_pole = (0.24496 +/- 0.00068038)  

+ (i/2)*(+0.0088386 +/- 0.001092) [-0.40]  

s_pole = (0.059986 +/- 0.00033531)  

+ i*(+0.0021651 +/- 0.00026512) [-0.40]

```

2 Unphysical Parameterizations

```

pi:omega | pi:phi |
=====
k_re= -0.0461 +/- 0.0008 | k_re= 0.0100 +/- 0.0009 |
k_im= -0.0053 +/- 0.0007 | k_im= 0.0215 +/- 0.0015 |
corr= [-0.43] | corr= [ 0.06] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0684 +/- 0.0041 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0065 +/- 0.0025 |
arg(g)/pi= 0.1112 +/- 0.0186 |arg(g)/pi= 0.3888 +/- 0.0186 |arg(g)/pi= 0.6377 +/- 0.0209 |
-----|-----|-----|
g_re= 0.0643 +/- 0.0046 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0027 +/- 0.0013 |
g_im= -0.0234 +/- 0.0034 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0059 +/- 0.0022 |
corr= [-0.32] | corr= [ 0.36] | corr= [-0.94] |
-----|-----|-----|
Br = 0.8095 +/- 0.0188 | Br = 0.0000 +/- 0.0000 | Br = 0.0074 +/- 0.0055 |

--  

pi:omega[-] pi:phi[+] lower half-plane  

sqrt(s)_pole = (0.24496 +/- 0.00068038)
+ (i/2)*(-0.0088386 +/- 0.001092) [ 0.40]

s_pole = (0.059986 +/- 0.00033531)
+ i*(-0.0021651 +/- 0.00026512) [ 0.40]

pi:omega | pi:phi |
=====
k_re= 0.0461 +/- 0.0008 | k_re= -0.0100 +/- 0.0009 |
k_im= -0.0053 +/- 0.0007 | k_im= 0.0215 +/- 0.0015 |
corr= [ 0.43] | corr= [-0.06] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.0684 +/- 0.0041 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0065 +/- 0.0025 |
arg(g)/pi= -0.1112 +/- 0.0186 |arg(g)/pi= 0.6112 +/- 0.0186 |arg(g)/pi= -0.6377 +/- 0.0209 |
-----|-----|-----|
g_re= 0.0643 +/- 0.0046 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0027 +/- 0.0013 |
g_im= -0.0234 +/- 0.0034 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0059 +/- 0.0022 |
corr= [ 0.32] | corr= [-0.36] | corr= [ 0.94] |
-----|-----|-----|
Br = 0.8095 +/- 0.0188 | Br = 0.0000 +/- 0.0000 | Br = 0.0074 +/- 0.0055 |

--  

pi:omega[-] pi:phi[-] upper half-plane  

sqrt(s)_pole = (0.19502 +/- 0.0033682)
+ (i/2)*(+1.9533e-14 +/- 9.7189e-12) [ 0.00]

s_pole = (0.038034 +/- 0.0013137)
+ i*(-3.8068e-15 +/- 1.8941e-12) [ 0.00]

pi:omega | pi:phi |
=====
k_re= -0.0000 +/- 0.0000 | k_re= -0.0000 +/- 0.0000 |
k_im= -0.0498 +/- 0.0024 | k_im= -0.0635 +/- 0.0012 |
corr= [ 0.00] | corr= [ 0.00] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====
|g|= 0.1119 +/- 0.0045 | |g|= 0.0000 +/- 0.0000 | |g|= 0.0204 +/- 0.0073 |
arg(g)/pi= 0.5000 +/- 0.0000 |arg(g)/pi= 0.0000 +/- 0.0000 |arg(g)/pi= 0.5000 +/- 0.0000 |

```

2 Unphysical Parameterizations

```

-----|-----|-----|
 g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 | g_re= 0.0000 +/- 0.0000 |
 g_im= 0.1119 +/- 0.0045 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0204 +/- 0.0073 |
 corr= [-1.00] | corr= [ 0.00] | corr= [-0.34] |
-----|-----|-----|
 Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 | Br = 0.0000 +/- 0.0000 |

-- pi:omega[-] pi:phi[-] upper half-plane

sqrt(s)_pole = (0.24496 +/- 0.00068038)
+ (i/2)*(+0.0088386 +/- 0.001092) [-0.40]

s_pole = (0.059986 +/- 0.00033531)
+ i*(+0.0021651 +/- 0.00026512) [-0.40]

pi:omega | pi:phi |
=====|=====
 k_re= -0.0461 +/- 0.0008 | k_re= -0.0100 +/- 0.0009 |
 k_im= -0.0053 +/- 0.0007 | k_im= -0.0215 +/- 0.0015 |
 corr= [-0.43] | corr= [ 0.06] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0684 +/- 0.0041 | lg= 0.0000 +/- 0.0000 | lg= 0.0065 +/- 0.0025 |
 arg(g)/pi= 0.1112 +/- 0.0186 | arg(g)/pi= 0.3888 +/- 0.0186 | arg(g)/pi= 0.6377 +/- 0.0209 |
-----|-----|-----|
 g_re= 0.0643 +/- 0.0046 | g_re= 0.0000 +/- 0.0000 | g_re= -0.0027 +/- 0.0013 |
 g_im= 0.0234 +/- 0.0034 | g_im= 0.0000 +/- 0.0000 | g_im= 0.0059 +/- 0.0022 |
 corr= [-0.32] | corr= [ 0.36] | corr= [-0.94] |
-----|-----|-----|
 Br = 0.8095 +/- 0.0188 | Br = 0.0000 +/- 0.0000 | Br = 0.0074 +/- 0.0055 |

-- pi:omega[-] pi:phi[-] lower half-plane

sqrt(s)_pole = (0.24496 +/- 0.00068038)
+ (i/2)*(-0.0088386 +/- 0.001092) [ 0.40]

s_pole = (0.059986 +/- 0.00033531)
+ i*(-0.0021651 +/- 0.00026512) [ 0.40]

pi:omega | pi:phi |
=====|=====
 k_re= 0.0461 +/- 0.0008 | k_re= 0.0100 +/- 0.0009 |
 k_im= -0.0053 +/- 0.0007 | k_im= -0.0215 +/- 0.0015 |
 corr= [ 0.43] | corr= [-0.06] |

pi:omega/3^S_1(*) | pi:phi/3^S_1 | pi:omega/3^D_1 |
=====|=====|=====
 lg= 0.0684 +/- 0.0041 | lg= 0.0000 +/- 0.0000 | lg= 0.0065 +/- 0.0025 |
 arg(g)/pi= -0.1112 +/- 0.0186 | arg(g)/pi= 0.6112 +/- 0.0186 | arg(g)/pi= -0.6377 +/- 0.0209 |
-----|-----|-----|
 g_re= 0.0643 +/- 0.0046 | g_re= -0.0000 +/- 0.0000 | g_re= -0.0027 +/- 0.0013 |
 g_im= -0.0234 +/- 0.0034 | g_im= 0.0000 +/- 0.0000 | g_im= -0.0059 +/- 0.0022 |
 corr= [ 0.32] | corr= [-0.36] | corr= [ 0.94] |
-----|-----|-----|
 Br = 0.8095 +/- 0.0188 | Br = 0.0000 +/- 0.0000 | Br = 0.0074 +/- 0.0055 |

```