PSALTer results panel

$$
\begin{aligned}
\mathcal{S} == \iiiint \Big(& \tfrac{1}{6}\big(2\,(t_1-2t_3)\,\mathcal{A}^{\alpha\iota}{}_{\alpha}\,\mathcal{A}_{\iota}{}^{\theta}{}_{\theta} + 6\,\mathcal{A}^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi} + 6\,f^{\alpha\beta}\,\tau(\Delta+\mathcal{K})_{\alpha\beta} - 4t_1\,\mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\,\partial_{\iota}f^{\alpha\iota} + 8t_3\,\mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\,\partial_{\iota}f^{\alpha\iota} + 4t_1\,\mathcal{A}_{\iota}{}^{\theta}{}_{\theta}\,\partial^{\iota}f^{\alpha}{}_{\alpha} - 8t_3\,\mathcal{A}_{\iota}{}^{\theta}{}_{\theta}\,\partial^{\iota}f^{\alpha}{}_{\alpha} - 2t_1\,\partial_{\iota}f^{\theta}{}_{\theta}\,\partial^{\iota}f^{\alpha}{}_{\alpha} + 4t_3\,\partial_{\iota}f^{\theta}{}_{\theta}\,\partial^{\iota}f^{\alpha}{}_{\alpha} - \\
& 2t_1\,\partial_{\iota}f^{\alpha\iota}\,\partial_{\theta}f_{\alpha}{}^{\theta} + 4t_3\,\partial_{\iota}f^{\alpha\iota}\,\partial_{\theta}f_{\alpha}{}^{\theta} + 4t_1\,\partial^{\iota}f^{\alpha}{}_{\alpha}\,\partial_{\theta}f_{\iota}{}^{\theta} - 8t_3\,\partial^{\iota}f^{\alpha}{}_{\alpha}\,\partial_{\theta}f_{\iota}{}^{\theta} - 8r_1\,\partial_{\beta}\mathcal{A}_{\alpha\iota\theta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} + 4r_1\,\partial_{\beta}\mathcal{A}_{\alpha\theta\iota}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} - 16r_1\,\partial_{\beta}\mathcal{A}_{\iota\theta\alpha}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} - 4r_1\,\partial_{\iota}\mathcal{A}_{\alpha\beta\theta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} + \\
& 4r_1\,\partial_{\theta}\mathcal{A}_{\alpha\beta\iota}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} + 4r_1\,\partial_{\theta}\mathcal{A}_{\alpha\iota\beta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} + 6r_5\,\partial_{\iota}\mathcal{A}_{\theta}{}^{\kappa}{}_{\kappa}\,\partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha} - 6r_5\,\partial_{\theta}\mathcal{A}_{\iota}{}^{\kappa}{}_{\kappa}\,\partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha} - 6t_1\,\partial_{\alpha}f_{\iota\theta}\,\partial^{\theta}f^{\alpha\iota} - 3t_1\,\partial_{\alpha}f_{\theta\iota}\,\partial^{\theta}f^{\alpha\iota} + 3t_1\,\partial_{\iota}f_{\alpha\theta}\,\partial^{\theta}f^{\alpha\iota} + 3t_1\,\partial_{\theta}f_{\alpha\iota}\,\partial^{\theta}f^{\alpha\iota} + \\
& 3t_1\,\partial_{\theta}f_{\iota\alpha}\,\partial^{\theta}f^{\alpha\iota} + 6t_1\,\mathcal{A}_{\alpha\theta\iota}\,(\mathcal{A}^{\alpha\iota\theta} + 2\,\partial^{\theta}f^{\alpha\iota}) - 6r_5\,\partial_{\alpha}\mathcal{A}^{\alpha\iota\theta}\,\partial_{\kappa}\mathcal{A}_{\iota}{}^{\kappa}{}_{\theta} + 12r_5\,\partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha}\,\partial_{\kappa}\mathcal{A}_{\iota}{}^{\kappa}{}_{\theta} + 6r_5\,\partial_{\alpha}\mathcal{A}^{\alpha\iota\theta}\,\partial_{\kappa}\mathcal{A}_{\theta}{}^{\kappa}{}_{\iota} - 12r_5\,\partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha}\,\partial_{\kappa}\mathcal{A}_{\theta}{}^{\kappa}{}_{\iota}\big)\Big)[t,x,y,z]\,dz\,dy\,dx\,dt
\end{aligned}
$$

Wave operator

	$0^{+}\,\mathcal{A}^{\parallel}$	$0^{+}\,f^{\parallel}$	$0^{+}\,f^{\perp}$	$0^{-}\,\mathcal{A}^{\parallel}$
$0^{+}\,\mathcal{A}^{\parallel}\dagger$	t_3	$-i\sqrt{2}\,k t_3$	0	0
$0^{+}\,f^{\parallel}\dagger$	$i\sqrt{2}\,k t_3$	$2k^2 t_3$	0	0
$0^{+}\,f^{\perp}\dagger$	0	0	0	0
$0^{-}\,\mathcal{A}^{\parallel}\dagger$	0	0	0	$-t_1$

	$1^{+}\,\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$1^{+}\,\mathcal{A}^{\perp}{}_{\alpha\beta}$	$1^{+}\,f^{\parallel}{}_{\alpha\beta}$	$1^{-}\,\mathcal{A}^{\parallel}{}_{\alpha}$	$1^{-}\,\mathcal{A}^{\perp}{}_{\alpha}$	$1^{-}\,f^{\parallel}{}_{\alpha}$	$1^{-}\,f^{\perp}{}_{\alpha}$
$1^{+}\,\mathcal{A}^{\parallel}\dagger^{\alpha\beta}$	$k^2(2r_1+r_5)-\frac{t_1}{2}$	$-\frac{t_1}{\sqrt{2}}$	$-\frac{i k t_1}{\sqrt{2}}$	0	0	0	0
$1^{+}\,\mathcal{A}^{\perp}\dagger^{\alpha\beta}$	$-\frac{t_1}{\sqrt{2}}$	0	0	0	0	0	0
$1^{+}\,f^{\parallel}\dagger^{\alpha\beta}$	$\frac{i k t_1}{\sqrt{2}}$	0	0	0	0	0	0
$1^{-}\,\mathcal{A}^{\parallel}\dagger^{\alpha}$	0	0	0	$\frac{1}{6}(6k^2(r_1+r_5)+t_1+4t_3)$	$\frac{t_1-2t_3}{3\sqrt{2}}$	0	$\frac{1}{3}\,i k(t_1-2t_3)$
$1^{-}\,\mathcal{A}^{\perp}\dagger^{\alpha}$	0	0	0	$\frac{t_1-2t_3}{3\sqrt{2}}$	$\frac{t_1+t_3}{3}$	0	$\frac{1}{3}\,i\sqrt{2}\,k(t_1+t_3)$
$1^{-}\,f^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^{-}\,f^{\perp}\dagger^{\alpha}$	0	0	0	$-\frac{1}{3}\,i k(t_1-2t_3)$	$-\frac{1}{3}\,i\sqrt{2}\,k(t_1+t_3)$	0	$\frac{2}{3}k^2(t_1+t_3)$

	$2^{+}\,\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$2^{+}\,f^{\parallel}{}_{\alpha\beta}$	$2^{-}\,\mathcal{A}^{\parallel}{}_{\alpha\beta\chi}$
$2^{+}\,\mathcal{A}^{\parallel}\dagger^{\alpha\beta}$	$\frac{t_1}{2}$	$-\frac{i k t_1}{\sqrt{2}}$	0
$2^{+}\,f^{\parallel}\dagger^{\alpha\beta}$	$\frac{i k t_1}{\sqrt{2}}$	$k^2 t_1$	0
$2^{-}\,\mathcal{A}^{\parallel}\dagger^{\alpha\beta\chi}$	0	0	$k^2 r_1+\frac{t_1}{2}$

Saturated propagator

	$0^{+}\,\sigma^{\parallel}$	$0^{+}\,\tau^{\parallel}$	$0^{+}\,\tau^{\perp}$	$0^{-}\,\sigma^{\parallel}$
$0^{+}\,\sigma^{\parallel}\dagger$	$\frac{1}{(1+2k^2)^2 t_3}$	$-\frac{i\sqrt{2}\,k}{(1+2k^2)^2 t_3}$	0	0
$0^{+}\,\tau^{\parallel}\dagger$	$\frac{i\sqrt{2}\,k}{(1+2k^2)^2 t_3}$	$\frac{2k^2}{(1+2k^2)^2 t_3}$	0	0
$0^{+}\,\tau^{\perp}\dagger$	0	0	0	0
$0^{-}\,\sigma^{\parallel}\dagger$	0	0	0	$-\frac{1}{t_1}$

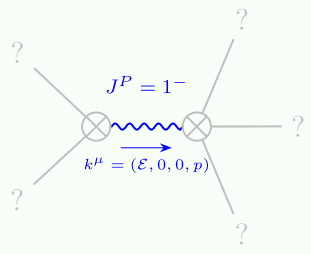
	$1^{+}\,\sigma^{\parallel}{}_{\alpha\beta}$	$1^{+}\,\sigma^{\perp}{}_{\alpha\beta}$	$1^{+}\,\tau^{\parallel}{}_{\alpha\beta}$	$1^{-}\,\sigma^{\parallel}{}_{\alpha}$	$1^{-}\,\sigma^{\perp}{}_{\alpha}$	$1^{-}\,\tau^{\parallel}{}_{\alpha}$	$1^{-}\,\tau^{\perp}{}_{\alpha}$
$1^{+}\,\sigma^{\parallel}\dagger^{\alpha\beta}$	0	$-\frac{\sqrt{2}}{t_1+k^2 t_1}$	$-\frac{i\sqrt{2}\,k}{t_1+k^2 t_1}$	0	0	0	0
$1^{+}\,\sigma^{\perp}\dagger^{\alpha\beta}$	$-\frac{\sqrt{2}}{t_1+k^2 t_1}$	$\frac{-2k^2(2r_1+r_5)+t_1}{(1+k^2)^2 t_1^2}$	$\frac{-2ik^3(2r_1+r_5)+ikt_1}{(1+k^2)^2 t_1^2}$	0	0	0	0
$1^{+}\,\tau^{\parallel}\dagger^{\alpha\beta}$	$\frac{i\sqrt{2}\,k}{t_1+k^2 t_1}$	$\frac{i(2k^3(2r_1+r_5)-kt_1)}{(1+k^2)^2 t_1^2}$	$\frac{-2k^4(2r_1+r_5)+k^2 t_1}{(1+k^2)^2 t_1^2}$	0	0	0	0
$1^{-}\,\sigma^{\parallel}\dagger^{\alpha}$	0	0	0	$\frac{2(t_1+t_3)}{3t_1t_3+2k^2(r_1+r_5)(t_1+t_3)}$	$-\frac{\sqrt{2}(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	0	$-\frac{2ik(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$
$1^{-}\,\sigma^{\perp}\dagger^{\alpha}$	0	0	0	$-\frac{\sqrt{2}(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	$\frac{6k^2(r_1+r_5)+t_1+4t_3}{(1+2k^2)^2(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	0	$\frac{i\sqrt{2}\,k(6k^2(r_1+r_5)+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$
$1^{-}\,\tau^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^{-}\,\tau^{\perp}\dagger^{\alpha}$	0	0	0	$\frac{2ik(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	$-\frac{i\sqrt{2}\,k(6k^2(r_1+r_5)+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	0	$\frac{2k^2(6k^2(r_1+r_5)+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$

	$2^{+}\,\sigma^{\parallel}{}_{\alpha\beta}$	$2^{+}\,\tau^{\parallel}{}_{\alpha\beta}$	$2^{-}\,\sigma^{\parallel}{}_{\alpha\beta\chi}$
$2^{+}\,\sigma^{\parallel}\dagger^{\alpha\beta}$	$\frac{2}{(1+2k^2)^2 t_1}$	$-\frac{2i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	0
$2^{+}\,\tau^{\parallel}\dagger^{\alpha\beta}$	$\frac{2i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	$\frac{4k^2}{(1+2k^2)^2 t_1}$	0
$2^{-}\,\sigma^{\parallel}\dagger^{\alpha\beta\chi}$	0	0	$\frac{2}{2k^2 r_1+t_1}$

Source constraints

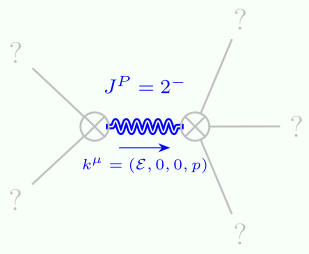
Spin-parity form	Covariant form	Multiplicities
$0^{+}\,\tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$-2ik\,0^{+}\,\sigma^{\parallel} + 0^{+}\,\tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\beta}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha}{}_{\alpha} + 2\,\partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha}{}_{\alpha}{}^{\beta}$	1
$2ik\,1^{-}\,\sigma^{\perp\alpha} + 1^{-}\,\tau^{\perp\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial_{\beta}\sigma^{\beta\alpha\chi}$	3
$1^{-}\,\tau^{\parallel\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau(\Delta+\mathcal{K})^{\beta\alpha}$	3
$ik\,1^{+}\,\sigma^{\perp\alpha\beta} + 1^{+}\,\tau^{\parallel\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\chi\alpha\beta} == \partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta}$	3
$-2ik\,2^{+}\,\sigma^{\parallel\alpha\beta} + 2^{+}\,\tau^{\parallel\alpha\beta} == 0$	$-i(4\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} -$ $3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 4i\,k^{\chi}\,\partial_{\epsilon}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\sigma^{\delta}{}_{\delta}{}^{\epsilon} - 6i\,k^{\chi}\,\partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\delta\beta\epsilon} - 6i\,k^{\chi}\,\partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\delta\alpha\epsilon} +$ $6i\,k^{\chi}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\alpha\beta\delta} + 6i\,k^{\chi}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\beta\alpha\delta} + 2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\tau(\Delta+\mathcal{K})^{\chi\delta} - 2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 4i\,\eta^{\alpha\beta}\,k^{\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial_{\chi}\sigma^{\delta}{}_{\delta}{}^{\epsilon}) == 0$	5
Total expected gauge generators:		16

Massive spectrum



Massive particle

Pole residue:	$-\frac{3(-2t_1t_3(t_1+t_3)+r_1(t_1^2+2t_3^2)+r_5(t_1^2+2t_3^2))}{2(r_1+r_5)(t_1+t_3)(-3t_1t_3+r_1(t_1+t_3)+r_5(t_1+t_3))} > 0$
Square mass:	$-\frac{3t_1t_3}{2(r_1+r_5)(t_1+t_3)} > 0$
Spin:	1
Parity:	Odd



Massive particle

Pole residue:	$-\frac{1}{r_1} > 0$
Square mass:	$-\frac{t_1}{2r_1} > 0$
Spin:	2
Parity:	Odd

Massless spectrum

(No particles)

Unitarity conditions

$r_1 < 0 \,\&\&\, ((t_3 < 0 \,\&\&\, 0 < t_1 < -t_3 \,\&\&\, r_5 < -r_1) \,||\, (t_3 > 0 \,\&\&\, t_1 > 0 \,\&\&\, r_5 < -r_1))$