PSALTer results panel

$$\mathcal{S} == \int\int\int\int \Big(\frac{1}{6}\,(2\,(t_1 - 2\,t_3)\,\mathcal{A}^{\alpha\imath}{}_{\alpha}\,\mathcal{A}_{\imath}{}^{\theta}{}_{\theta} + 6\,\mathcal{A}^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi} + 6\,f^{\alpha\beta}\,\tau\,(\Delta+\mathcal{K})_{\alpha\beta} - 4\,t_1\,\mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\,\partial_{\imath}f^{\alpha\imath} + 8\,t_3\,\mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\,\partial_{\imath}f^{\alpha\imath} + 4\,t_1\,\mathcal{A}_{\imath}{}^{\theta}{}_{\theta}\,\partial^{\prime}f^{\alpha}{}_{\alpha} - 8\,t_3\,\mathcal{A}_{\imath}{}^{\theta}{}_{\theta}\,\partial^{\prime}f^{\alpha}{}_{\alpha} - 2\,t_1\,\partial_{\imath}f^{\theta}{}_{\theta}\,\partial^{\prime}f^{\alpha}{}_{\alpha} + 4\,t_3\,\partial_{\imath}f^{\theta}{}_{\theta}\,\partial^{\prime}f^{\alpha}{}_{\alpha} - 2\,t_1\,\partial_{\imath}f^{\alpha\imath}\,\partial_{\theta}f_{\alpha}{}^{\theta} + 4\,t_3\,\partial_{\imath}f^{\alpha\imath}\,\partial_{\theta}f_{\alpha}{}^{\theta} + 4\,t_1\,\partial^{\prime}f^{\alpha}{}_{\alpha}\,\partial_{\theta}f_{\imath}{}^{\theta} - 8\,t_3\,\partial^{\prime}f^{\alpha}{}_{\alpha}\,\partial_{\theta}f_{\imath}{}^{\theta} + 8\,r_2\,\partial_{\beta}\mathcal{A}_{\alpha\imath\theta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\imath} - 4\,r_2\,\partial_{\beta}\mathcal{A}_{\alpha\theta\imath}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\imath} + 4\,r_2\,\partial_{\beta}\mathcal{A}_{\imath\theta\alpha}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\imath} - 2\,r_2\,\partial_{\imath}\mathcal{A}_{\alpha\beta\theta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\imath} + 2\,r_2\,\partial_{\theta}\mathcal{A}_{\alpha\beta\imath}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\imath} - 4\,r_2\,\partial_{\theta}\mathcal{A}_{\alpha\imath\beta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\imath} + 6\,r_5\,\partial_{\imath}\mathcal{A}_{\theta}{}^{\kappa}{}_{\kappa}\,\partial^{\theta}\mathcal{A}^{\alpha\imath}{}_{\alpha} - 6\,r_5\,\partial_{\theta}\mathcal{A}_{\imath}{}^{\kappa}{}_{\kappa}\,\partial^{\theta}\mathcal{A}^{\alpha\imath}{}_{\alpha} - 6\,t_1\,\partial_{\alpha}f_{\imath\theta}\,\partial^{\theta}f^{\alpha\imath} - 3\,t_1\,\partial_{\alpha}f_{\theta\imath}\,\partial^{\theta}f^{\alpha\imath} + 3\,t_1\,\partial_{\imath}f_{\alpha\theta}\,\partial^{\theta}f^{\alpha\imath} + 3\,t_1\,\partial_{\theta}f_{\alpha\imath}\,\partial^{\theta}f^{\alpha\imath} + 3\,t_1\,\partial_{\theta}f_{\imath\alpha}\,\partial^{\theta}f^{\alpha\imath} + 6\,t_1\,\mathcal{A}_{\alpha\theta\imath}\,(\mathcal{A}^{\alpha\imath\theta} + 2\,\partial^{\theta}f^{\alpha\imath}) - 6\,r_5\,\partial_{\alpha}\mathcal{A}^{\alpha\imath\theta}\,\partial_{\kappa}\mathcal{A}_{\imath}{}^{\kappa}{}_{\theta} + 12\,r_5\,\partial^{\theta}\mathcal{A}^{\alpha\imath}{}_{\alpha}\,\partial_{\kappa}\mathcal{A}_{\imath}{}^{\kappa}{}_{\theta} + 6\,r_5\,\partial_{\alpha}\mathcal{A}^{\alpha\imath\theta}\,\partial_{\kappa}\mathcal{A}_{\theta}{}^{\kappa}{}_{\imath} - 12\,r_5\,\partial^{\theta}\mathcal{A}^{\alpha\imath}{}_{\alpha}\,\partial_{\kappa}\mathcal{A}_{\theta}{}^{\kappa}{}_{\imath})\Big)[t, x, y, z]\,dz\,dy\,dx\,dt$$

Wave operator

	$0^+_{\cdot}\mathcal{A}^{\parallel}$	$0^+_{\cdot}f^{\parallel}$	$0^+_{\cdot}f^{\perp}$	$0^-_{\cdot}\mathcal{A}^{\parallel}$
$0^+_{\cdot}\mathcal{A}^{\parallel}\,\dagger$	t_3	$-i\sqrt{2}\,k\,t_3$	0	0
$0^+_{\cdot}f^{\parallel}\,\dagger$	$i\sqrt{2}\,k\,t_3$	$2k^2\,t_3$	0	0
$0^+_{\cdot}f^{\perp}\,\dagger$	0	0	0	0
$0^-_{\cdot}\mathcal{A}^{\parallel}\,\dagger$	0	0	0	$k^2\,r_2 - t_1$

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

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

Saturated propagator

	$0^+_{\cdot}\sigma^{\parallel}$	$0^+_{\cdot}\tau^{\parallel}$	$0^+_{\cdot}\tau^{\perp}$	$0^-_{\cdot}\sigma^{\parallel}$
$0^+_{\cdot}\sigma^{\parallel}\,\dagger$	$\frac{1}{(1+2\,k^2)^2\,t_3}$	$-\frac{i\,\sqrt{2}\,k}{(1+2\,k^2)^2\,t_3}$	0	0
$0^+_{\cdot}\tau^{\parallel}\,\dagger$	$\frac{i\,\sqrt{2}\,k}{(1+2\,k^2)^2\,t_3}$	$\frac{2\,k^2}{(1+2\,k^2)^2\,t_3}$	0	0
$0^+_{\cdot}\tau^{\perp}\,\dagger$	0	0	0	0
$0^-_{\cdot}\sigma^{\parallel}\,\dagger$	0	0	0	$\frac{1}{k^2\,r_2 - t_1}$

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

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

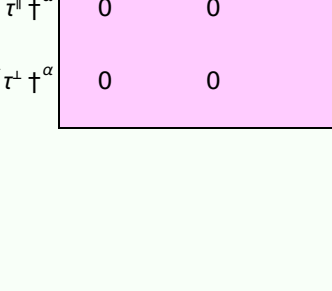
Source constraints

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

Massive spectrum

Massive particle

Pole residue:	$-\frac{1}{r_2} > 0$
Square mass:	$\frac{t_1}{r_2} > 0$
Spin:	0
Parity:	Odd



Massive particle

Pole residue:	$\frac{6\,t_1\,t_3\,(t_1 + t_3) - 3\,r_5\,(t_1^2 + 2\,t_3^2)}{2\,r_5\,(t_1 + t_3)\,(-3\,t_1\,t_3 + r_5\,(t_1 + t_3))} > 0$
Square mass:	$-\frac{3\,t_1\,t_3}{2\,r_5\,t_1 + 2\,r_5\,t_3} > 0$
Spin:	1
Parity:	Odd

Massless spectrum

(No particles)

Unitarity conditions

$t_3 > 0\ \&\&\ t_1 < -t_3\ \&\&\ r_5 < 0\ \&\&\ r_2 < 0$