PSALTer results panel

$$\mathcal{S} == \int\int\int\int (\mathcal{A}^{\alpha\beta\chi}\ \sigma_{\alpha\beta\chi} + f^{\alpha\beta}\ \tau\,(\Delta+\mathcal{K})_{\alpha\beta} - 2\,r_{3}\,(\partial_{\beta}\mathcal{A}_{\iota}{}^{\theta}{}_{\theta}\partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha} + \partial_{\iota}\mathcal{A}_{\beta}{}^{\theta}{}_{\theta}\partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha} + \partial_{\alpha}\mathcal{A}^{\alpha\beta\iota}\partial_{\theta}\mathcal{A}_{\beta}{}^{\theta}{}_{\iota} - 2\,\partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha}\partial_{\theta}\mathcal{A}_{\beta}{}^{\theta}{}_{\iota} + \partial_{\alpha}\mathcal{A}^{\alpha\beta\iota}\partial_{\theta}\mathcal{A}_{\iota}{}^{\theta}{}_{\beta} - 2\,\partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha}\partial_{\theta}\mathcal{A}_{\iota}{}^{\theta}{}_{\beta} + 2\,\partial_{\beta}\mathcal{A}_{\iota\theta\alpha}\partial^{\theta}\mathcal{A}^{\alpha\beta\iota}) + \frac{2}{3}\,r_{1}\,(3\,\partial_{\beta}\mathcal{A}_{\iota}{}^{\theta}{}_{\theta}\partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha} + 3\,\partial_{\iota}\mathcal{A}_{\beta}{}^{\theta}{}_{\theta}\partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha} + 3\,\partial_{\alpha}\mathcal{A}^{\alpha\beta\iota}\partial_{\theta}\mathcal{A}_{\beta}{}^{\theta}{}_{\iota} - 6\,\partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha}\partial_{\theta}\mathcal{A}_{\beta}{}^{\theta}{}_{\iota} + 3\,\partial_{\alpha}\mathcal{A}^{\alpha\beta\iota}\partial_{\theta}\mathcal{A}_{\iota}{}^{\theta}{}_{\beta} - 6\,\partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha}\partial_{\theta}\mathcal{A}_{\iota}{}^{\theta}{}_{\beta} - 2\,\partial_{\beta}\mathcal{A}_{\alpha\iota\theta}\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} + \partial_{\beta}\mathcal{A}_{\alpha\theta\iota}\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} + 2\,\partial_{\beta}\mathcal{A}_{\iota\theta\alpha}\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} - \partial_{\iota}\mathcal{A}_{\alpha\beta\theta}\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} + \partial_{\theta}\mathcal{A}_{\alpha\beta\iota}\partial^{\theta}\mathcal{A}^{\alpha\beta\iota} + \partial_{\theta}\mathcal{A}_{\alpha\iota\beta}\partial^{\theta}\mathcal{A}^{\alpha\beta\iota}) + \frac{1}{6}\,t_{1}\,(2\,\mathcal{A}^{\alpha\iota}{}_{\alpha}\,\mathcal{A}_{\iota}{}^{\theta}{}_{\theta} - 4\,\mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\,\partial_{\iota}f^{\alpha\iota} + 4\,\mathcal{A}_{\iota}{}^{\theta}{}_{\theta}\,\partial^{\iota}f^{\alpha}{}_{\alpha} - 2\,\partial_{\iota}f^{\theta}{}_{\theta}\partial^{\iota}f^{\alpha}{}_{\alpha} - 2\,\partial_{\iota}f^{\alpha\iota}\partial_{\theta}f_{\alpha}{}^{\theta} + 4\,\partial^{\iota}f^{\alpha}{}_{\alpha}\partial_{\theta}f_{\iota}{}^{\theta} - 6\,\partial_{\alpha}f_{\iota\theta}\partial^{\theta}f^{\alpha\iota} - 3\,\partial_{\alpha}f_{\theta\iota}\partial^{\theta}f^{\alpha\iota} + 3\,\partial_{\iota}f_{\alpha\theta}\partial^{\theta}f^{\alpha\iota} + 3\,\partial_{\theta}f_{\alpha\iota}\partial^{\theta}f^{\alpha\iota} + 3\,\partial_{\theta}f_{\iota\alpha}\partial^{\theta}f^{\alpha\iota} + 6\,\mathcal{A}_{\alpha\theta\iota}\,(\mathcal{A}^{\alpha\iota\theta} + 2\,\partial^{\theta}f^{\alpha\iota})) + r_{5}\,(\partial_{\iota}\mathcal{A}_{\theta}{}^{\kappa}{}_{\kappa}\partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha} - \partial_{\theta}\mathcal{A}_{\iota}{}^{\kappa}{}_{\kappa}\partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha} - (\partial_{\alpha}\mathcal{A}^{\alpha\iota\theta} - 2\,\partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha})\,(\partial_{\kappa}\mathcal{A}_{\iota}{}^{\kappa}{}_{\theta} - \partial_{\kappa}\mathcal{A}_{\theta}{}^{\kappa}{}_{\iota}))))[t, x, y, z]\,dz\,dy\,dx\,dt$$

Wave operator

	$0^{+}_{.}\mathcal{A}^{\parallel}$	$0^{+}_{.}f^{\parallel}$	$0^{+}_{.}f^{\perp}$	$0^{-}_{.}\mathcal{A}^{\parallel}$
$0^{+}_{.}\mathcal{A}^{\parallel}\,\dagger$	$6\,k^2\,(-r_{1}+r_{3})$	0	0	0
$0^{+}_{.}f^{\parallel}\,\dagger$	0	0	0	0
$0^{+}_{.}f^{\perp}\,\dagger$	0	0	0	0
$0^{-}_{.}\mathcal{A}^{\parallel}\,\dagger$	0	0	0	$-t_{1}$

	$1^{+}_{.}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$1^{+}_{.}\mathcal{A}^{\perp}{}_{\alpha\beta}$	$1^{+}_{.}f^{\parallel}{}_{\alpha\beta}$	$1^{-}_{.}\mathcal{A}^{\parallel}{}_{\alpha}$	$1^{-}_{.}\mathcal{A}^{\perp}{}_{\alpha}$	$1^{-}_{.}f^{\parallel}{}_{\alpha}$	$1^{-}_{.}f^{\perp}{}_{\alpha}$
$1^{+}_{.}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$k^2\,(2\,r_{3}+r_{5}) - \frac{t_{1}}{2}$	$-\frac{t_{1}}{\sqrt{2}}$	$-\frac{i\,k\,t_{1}}{\sqrt{2}}$	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	$k^2\,(-r_{1}+2\,r_{3}+r_{5}) + \frac{t_{1}}{6}$	$\frac{t_{1}}{3\,\sqrt{2}}$	0	$\frac{i\,k\,t_{1}}{3}$
$1^{-}_{.}\mathcal{A}^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{t_{1}}{3\,\sqrt{2}}$	$\frac{t_{1}}{3}$	0	$\frac{1}{3}\,i\,\sqrt{2}\,k\,t_{1}$
$1^{-}_{.}f^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^{-}_{.}f^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{1}{3}\,i\,k\,t_{1}$	$-\frac{1}{3}\,i\,\sqrt{2}\,k\,t_{1}$	0	$\frac{2\,k^2\,t_{1}}{3}$

	$2^{+}_{.}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$2^{+}_{.}f^{\parallel}{}_{\alpha\beta}$	$2^{-}_{.}\mathcal{A}^{\parallel}{}_{\alpha\beta\chi}$
$2^{+}_{.}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{t_{1}}{2}$	$-\frac{i\,k\,t_{1}}{\sqrt{2}}$	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

	$0^{+}_{.}\sigma^{\parallel}$	$0^{+}_{.}\tau^{\parallel}$	$0^{+}_{.}\tau^{\perp}$	$0^{-}_{.}\sigma^{\parallel}$
$0^{+}_{.}\sigma^{\parallel}\,\dagger$	$\frac{1}{6\,k^2\,(-r_{1}+r_{3})}$	0	0	0
$0^{+}_{.}\tau^{\parallel}\,\dagger$	0	0	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
$1^{+}_{.}\sigma^{\perp}\,\dagger^{\alpha\beta}$	$-\frac{\sqrt{2}}{t_{1}+k^2\,t_{1}}$	$\frac{-2\,k^2\,(2\,r_{3}+r_{5})+t_{1}}{(1+k^2)^2\,t_{1}^{2}}$	$\frac{-2\,i\,k^3\,(2\,r_{3}+r_{5})+i\,k\,t_{1}}{(1+k^2)^2\,t_{1}^{2}}$	0	0	0	0
$1^{+}_{.}\tau^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{i\,\sqrt{2}\,k}{t_{1}+k^2\,t_{1}}$	$\frac{i\,(2\,k^3\,(2\,r_{3}+r_{5})-k\,t_{1})}{(1+k^2)^2\,t_{1}^{2}}$	$\frac{-2\,k^4\,(2\,r_{3}+r_{5})+k^2\,t_{1}}{(1+k^2)^2\,t_{1}^{2}}$	0	0	0	0
$1^{-}_{.}\sigma^{\parallel}\,\dagger^{\alpha}$	0	0	0	$\frac{1}{k^2\,(-r_{1}+2\,r_{3}+r_{5})}$	$\frac{1}{\sqrt{2}\,(k^2+2\,k^4)\,(r_{1}-2\,r_{3}-r_{5})}$	0	$\frac{i}{k\,(1+2\,k^2)\,(r_{1}-2\,r_{3}-r_{5})}$
$1^{-}_{.}\sigma^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{1}{\sqrt{2}\,(k^2+2\,k^4)\,(r_{1}-2\,r_{3}-r_{5})}$	$\frac{\frac{1}{-r_{1}+2\,r_{3}+r_{5}}+\frac{6\,k^2}{t_{1}}}{2\,(k+2\,k^3)^2}$	0	$\frac{i\,(6\,k^2\,(r_{1}-2\,r_{3}-r_{5})-t_{1})}{\sqrt{2}\,k\,(1+2\,k^2)^2\,(r_{1}-2\,r_{3}-r_{5})\,t_{1}}$
$1^{-}_{.}\tau^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^{-}_{.}\tau^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{i}{k\,(1+2\,k^2)\,(-r_{1}+2\,r_{3}+r_{5})}$	$-\frac{i\,(6\,k^2\,(r_{1}-2\,r_{3}-r_{5})-t_{1})}{\sqrt{2}\,k\,(1+2\,k^2)^2\,(r_{1}-2\,r_{3}-r_{5})\,t_{1}}$	0	$\frac{\frac{1}{-r_{1}+2\,r_{3}+r_{5}}+\frac{6\,k^2}{t_{1}}}{(1+2\,k^2)^2}$

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

Source constraints

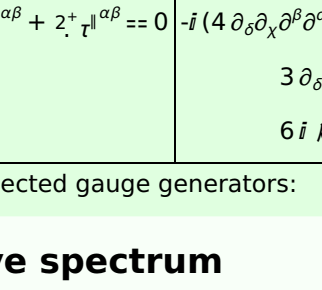
Spin-parity form	Covariant form	Multiplicities
$0^{+}_{.}\tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$0^{+}_{.}\tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\beta}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\alpha}{}_{\alpha}$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

Massive spectrum

Massive particle

Pole residue:	$-\frac{1}{r_{1}} > 0$
Square mass:	$-\frac{t_{1}}{2\,r_{1}} > 0$
Spin:	2
Parity:	Odd

Massless spectrum



Massless particle

Pole residue:	$\frac{7}{r_{1}-2\,r_{3}-r_{5}} + \frac{-2\,t_{1}\,p^2+4\,(r_{1}-2\,r_{3}-r_{5})\,p^4}{t_{1}^{2}} > 0$
Polarisations:	2

Unitarity conditions

$$r_{3} \in \mathbb{R}\ \&\&\ r_{5} < -2\,r_{3}\ \&\&\ 2\,r_{3} + r_{5} < r_{1} < 0\ \&\&\ t_{1} > 0$$