PSALTer results panel

$$\mathcal{S} == \iiiint \Big(\mathcal{A}^{\alpha\beta\chi}\ \sigma_{\alpha\beta\chi} + f^{\alpha\beta}\ \tau\,(\Delta{+}\mathcal{K})_{\alpha\beta} + \frac{1}{3} r_{\cdot_2} (4\,\partial_\beta \mathcal{A}_{\alpha\iota\theta} - 2\,\partial_\beta \mathcal{A}_{\alpha\theta\iota} + 2\,\partial_\beta \mathcal{A}_{\iota\theta\alpha} - \partial_\iota \mathcal{A}_{\alpha\beta\theta} + \partial_\theta \mathcal{A}_{\alpha\beta\iota} - 2\,\partial_\theta \mathcal{A}_{\alpha\iota\beta})\,\partial^\theta \mathcal{A}^{\alpha\beta\iota} -$$
$$2\,r_{\cdot_3} (\partial_\beta \mathcal{A}_{\iota\ \theta}^{\ \theta}\,\partial^\iota \mathcal{A}^{\alpha\beta}{}_\alpha + \partial_\iota \mathcal{A}_{\beta\ \theta}^{\ \theta}\,\partial^\iota \mathcal{A}^{\alpha\beta}{}_\alpha + \partial_\alpha \mathcal{A}^{\alpha\beta\iota}\,\partial_\theta \mathcal{A}_{\beta\ \iota}^{\ \theta} - 2\,\partial^\iota \mathcal{A}^{\alpha\beta}{}_\alpha\,\partial_\theta \mathcal{A}_{\beta\ \iota}^{\ \theta} + \partial_\alpha \mathcal{A}^{\alpha\beta\iota}\,\partial_\theta \mathcal{A}_{\iota\ \beta}^{\ \theta} - 2\,\partial^\iota \mathcal{A}^{\alpha\beta}{}_\alpha\,\partial_\theta \mathcal{A}_{\iota\ \beta}^{\ \theta} + 2\,\partial_\beta \mathcal{A}_{\iota\theta\alpha}\,\partial^\theta \mathcal{A}^{\alpha\beta\iota}) +$$
$$\frac{1}{6} t_{\cdot_1} (2\,\mathcal{A}^{\alpha\iota}{}_\alpha\ \mathcal{A}_{\iota\ \theta}^{\ \theta} - 4\,\mathcal{A}_{\alpha\ \theta}^{\ \theta}\,\partial_\iota f^{\alpha\iota} + 4\,\mathcal{A}_{\iota\ \theta}^{\ \theta}\,\partial^\iota f^\alpha{}_\alpha - 2\,\partial_\iota f^{\theta}{}_\theta\,\partial^\iota f^\alpha{}_\alpha - 2\,\partial_\iota f^{\alpha\iota}\,\partial_\theta f_\alpha{}^\theta + 4\,\partial^\iota f^\alpha{}_\alpha\,\partial_\theta f_\iota{}^\theta - 6\,\partial_\alpha f_{\iota\theta}\,\partial^\theta f^{\alpha\iota} - 3\,\partial_\alpha f_{\theta\iota}\,\partial^\theta f^{\alpha\iota} + 3\,\partial_\iota f_{\alpha\theta}\,\partial^\theta f^{\alpha\iota} + 3\,\partial_\theta f_{\alpha\iota}\,\partial^\theta f^{\alpha\iota} +$$
$$3\,\partial_\theta f_{\iota\alpha}\,\partial^\theta f^{\alpha\iota} + 6\,\mathcal{A}_{\alpha\theta\iota}\,(\mathcal{A}^{\alpha\iota\theta} + 2\,\partial^\theta f^{\alpha\iota})) + r_{\cdot_5} (\partial_\iota \mathcal{A}_\theta{}^\kappa{}_\kappa\,\partial^\theta \mathcal{A}^{\alpha\iota}{}_\alpha - \partial_\theta \mathcal{A}_\iota{}^\kappa{}_\kappa\,\partial^\theta \mathcal{A}^{\alpha\iota}{}_\alpha - (\partial_\alpha \mathcal{A}^{\alpha\iota\theta} - 2\,\partial^\theta \mathcal{A}^{\alpha\iota}{}_\alpha)\,(\partial_\kappa \mathcal{A}_\iota{}^\kappa{}_\theta - \partial_\kappa \mathcal{A}_\theta{}^\kappa{}_\iota)))[t, x, y, z]\,dt\,dx\,dy\,dz$$

Wave operator

	$0^+_{\cdot}\mathcal{A}^{\parallel}$	$0^+_{\cdot}f^{\parallel}$	$0^+_{\cdot}f^{\perp}$	$0^-_{\cdot}\mathcal{A}^{\parallel}$
$0^+_{\cdot}\mathcal{A}^{\parallel}\,\dagger$	$6\,k^2\,r_{\cdot_3}$	0	0	0
$0^+_{\cdot}f^{\parallel}\,\dagger$	0	0	0	0
$0^+_{\cdot}f^{\perp}\,\dagger$	0	0	0	0
$0^-_{\cdot}\mathcal{A}^{\parallel}\,\dagger$	0	0	0	$k^2\,r_{\cdot_2} - t_{\cdot_1}$

	$1^+_{\cdot}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$1^+_{\cdot}\mathcal{A}^{\perp}{}_{\alpha\beta}$	$1^+_{\cdot}f^{\parallel}{}_{\alpha\beta}$	$1^-_{\cdot}\mathcal{A}^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\mathcal{A}^{\perp}{}_{\alpha}$	$1^-_{\cdot}f^{\parallel}{}_{\alpha}$	$1^-_{\cdot}f^{\perp}{}_{\alpha}$
$1^+_{\cdot}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$k^2\,(2\,r_{\cdot_3} + r_{\cdot_5}) - \frac{t_{\cdot_1}}{2}$	$-\frac{t_{\cdot_1}}{\sqrt{2}}$	$-\frac{i\,k\,t_{\cdot_1}}{\sqrt{2}}$	0	0	0	0
$1^+_{\cdot}\mathcal{A}^{\perp}\,\dagger^{\alpha\beta}$	$-\frac{t_{\cdot_1}}{\sqrt{2}}$	0	0	0	0	0	0
$1^+_{\cdot}f^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{i\,k\,t_{\cdot_1}}{\sqrt{2}}$	0	0	0	0	0	0
$1^-_{\cdot}\mathcal{A}^{\parallel}\,\dagger^{\alpha}$	0	0	0	$k^2\,(2\,r_{\cdot_3} + r_{\cdot_5}) + \frac{t_{\cdot_1}}{6}$	$\frac{t_{\cdot_1}}{3\,\sqrt{2}}$	0	$\frac{i\,k\,t_{\cdot_1}}{3}$
$1^-_{\cdot}\mathcal{A}^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{t_{\cdot_1}}{3\,\sqrt{2}}$	$\frac{t_{\cdot_1}}{3}$	0	$\frac{1}{3}\,i\,\sqrt{2}\,k\,t_{\cdot_1}$
$1^-_{\cdot}f^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^-_{\cdot}f^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{1}{3}\,i\,k\,t_{\cdot_1}$	$-\frac{1}{3}\,i\,\sqrt{2}\,k\,t_{\cdot_1}$	0	$\frac{2\,k^2\,t_{\cdot_1}}{3}$

	$2^+_{\cdot}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$2^+_{\cdot}f^{\parallel}{}_{\alpha\beta}$	$2^-_{\cdot}\mathcal{A}^{\parallel}{}_{\alpha\beta\chi}$
$2^+_{\cdot}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{t_{\cdot_1}}{2}$	$-\frac{i\,k\,t_{\cdot_1}}{\sqrt{2}}$	0
$2^+_{\cdot}f^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{i\,k\,t_{\cdot_1}}{\sqrt{2}}$	$k^2\,t_{\cdot_1}$	0
$2^-_{\cdot}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta\chi}$	0	0	$\frac{t_{\cdot_1}}{2}$

Saturated propagator

	$0^+_{\cdot}\sigma^{\parallel}$	$0^+_{\cdot}\tau^{\parallel}$	$0^+_{\cdot}\tau^{\perp}$	$0^-_{\cdot}\sigma^{\parallel}$
$0^+_{\cdot}\sigma^{\parallel}\,\dagger$	$\frac{1}{6\,k^2\,r_{\cdot_3}}$	0	0	0
$0^+_{\cdot}\tau^{\parallel}\,\dagger$	0	0	0	0
$0^+_{\cdot}\tau^{\perp}\,\dagger$	0	0	0	0
$0^-_{\cdot}\sigma^{\parallel}\,\dagger$	0	0	0	$\frac{1}{k^2\,r_{\cdot_2} - t_{\cdot_1}}$

	$1^+_{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$1^+_{\cdot}\sigma^{\perp}{}_{\alpha\beta}$	$1^+_{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$1^-_{\cdot}\sigma^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\sigma^{\perp}{}_{\alpha}$	$1^-_{\cdot}\tau^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\tau^{\perp}{}_{\alpha}$
$1^+_{\cdot}\sigma^{\parallel}\,\dagger^{\alpha\beta}$	0	$-\frac{\sqrt{2}}{t_{\cdot_1} + k^2\,t_{\cdot_1}}$	$-\frac{i\,\sqrt{2}\,k}{t_{\cdot_1} + k^2\,t_{\cdot_1}}$	0	0	0	0
$1^+_{\cdot}\sigma^{\perp}\,\dagger^{\alpha\beta}$	$-\frac{\sqrt{2}}{t_{\cdot_1} + k^2\,t_{\cdot_1}}$	$\frac{-2\,k^2\,(2\,r_{\cdot_3} + r_{\cdot_5}) + t_{\cdot_1}}{(1+k^2)^2\,t_{\cdot_1}^2}$	$\frac{-2\,i\,k^3\,(2\,r_{\cdot_3} + r_{\cdot_5}) + i\,k\,t_{\cdot_1}}{(1+k^2)^2\,t_{\cdot_1}^2}$	0	0	0	0
$1^+_{\cdot}\tau^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{i\,\sqrt{2}\,k}{t_{\cdot_1} + k^2\,t_{\cdot_1}}$	$\frac{i\,(2\,k^3\,(2\,r_{\cdot_3} + r_{\cdot_5}) - k\,t_{\cdot_1})}{(1+k^2)^2\,t_{\cdot_1}^2}$	$\frac{-2\,k^4\,(2\,r_{\cdot_3} + r_{\cdot_5}) + k^2\,t_{\cdot_1}}{(1+k^2)^2\,t_{\cdot_1}^2}$	0	0	0	0
$1^-_{\cdot}\sigma^{\parallel}\,\dagger^{\alpha}$	0	0	0	$\frac{1}{k^2\,(2\,r_{\cdot_3} + r_{\cdot_5})}$	$-\frac{1}{\sqrt{2}\,(k^2 + 2\,k^4)\,(2\,r_{\cdot_3} + r_{\cdot_5})}$	0	$-\frac{i}{k\,(1+2\,k^2)\,(2\,r_{\cdot_3} + r_{\cdot_5})}$
$1^-_{\cdot}\sigma^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{1}{\sqrt{2}\,(k^2 + 2\,k^4)\,(2\,r_{\cdot_3} + r_{\cdot_5})}$	$\frac{6\,k^2\,(2\,r_{\cdot_3} + r_{\cdot_5}) + t_{\cdot_1}}{2\,(k + 2\,k^3)^2\,(2\,r_{\cdot_3} + r_{\cdot_5})\,t_{\cdot_1}}$	0	$\frac{i\,(6\,k^2\,(2\,r_{\cdot_3} + r_{\cdot_5}) + t_{\cdot_1})}{\sqrt{2}\,k\,(1+2\,k^2)^2\,(2\,r_{\cdot_3} + r_{\cdot_5})\,t_{\cdot_1}}$
$1^-_{\cdot}\tau^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^-_{\cdot}\tau^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{i}{k\,(1+2\,k^2)\,(2\,r_{\cdot_3} + r_{\cdot_5})}$	$-\frac{i\,(6\,k^2\,(2\,r_{\cdot_3} + r_{\cdot_5}) + t_{\cdot_1})}{\sqrt{2}\,k\,(1+2\,k^2)^2\,(2\,r_{\cdot_3} + r_{\cdot_5})\,t_{\cdot_1}}$	0	$\frac{6\,k^2\,(2\,r_{\cdot_3} + r_{\cdot_5}) + t_{\cdot_1}}{(1+2\,k^2)^2\,(2\,r_{\cdot_3} + r_{\cdot_5})\,t_{\cdot_1}}$

	$2^+_{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$2^+_{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$2^-_{\cdot}\sigma^{\parallel}{}_{\alpha\beta\chi}$
$2^+_{\cdot}\sigma^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{2}{(1+2\,k^2)^2\,t_{\cdot_1}}$	$-\frac{2\,i\,\sqrt{2}\,k}{(1+2\,k^2)^2\,t_{\cdot_1}}$	0
$2^+_{\cdot}\tau^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{2\,i\,\sqrt{2}\,k}{(1+2\,k^2)^2\,t_{\cdot_1}}$	$\frac{4\,k^2}{(1+2\,k^2)^2\,t_{\cdot_1}}$	0
$2^-_{\cdot}\sigma^{\parallel}\,\dagger^{\alpha\beta\chi}$	0	0	$\frac{2}{t_{\cdot_1}}$

Source constraints

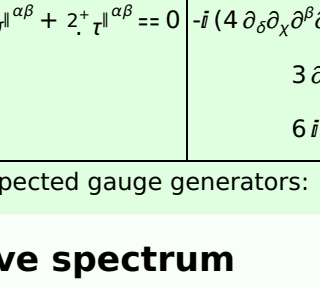
Spin-parity form	Covariant form	Multiplicities
$0^+_{\cdot}\tau^{\perp} == 0$	$\partial_\beta \partial_\alpha \tau\,(\Delta{+}\mathcal{K})^{\alpha\beta} == 0$	1
$0^+_{\cdot}\tau^{\parallel} == 0$	$\partial_\beta \partial_\alpha \tau\,(\Delta{+}\mathcal{K})^{\alpha\beta} == \partial_\beta \partial^\beta \tau\,(\Delta{+}\mathcal{K})^\alpha{}_\alpha$	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:	$-\frac{1}{r_{\cdot_2}} > 0$
Square mass:	$\frac{t_{\cdot_1}}{r_{\cdot_2}} > 0$
Spin:	0
Parity:	Odd

Massless spectrum



Massless particle

Pole residue:	$-\frac{7}{2\,r_{\cdot_3} + r_{\cdot_5}} + \frac{-2\,t_{\cdot_1}\,p^2 - 4\,(2\,r_{\cdot_3} + r_{\cdot_5})\,p^4}{t_{\cdot_1}^2} > 0$
Polarisations:	2

Unitarity conditions

$r_{\cdot_3} \in \mathbb{R}\ \&\&\ r_{\cdot_2} < 0\ \&\&\ t_{\cdot_1} < 0\ \&\&\ r_{\cdot_5} < -2\,r_{\cdot_3}$