PSALTer results panel

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

Wave operator

	$0^{+}\,\mathcal{A}^{\parallel}$	$0^{+}\,f^{\parallel}$	$0^{+}\,f^{\perp}$	$0^{-}\,\mathcal{A}^{\parallel}$
$0^{+}\,\mathcal{A}^{\parallel}\dagger$	$-t_{1}$	$i\sqrt{2}\,k t_{1}$	0	0
$0^{+}\,f^{\parallel}\dagger$	$-i\sqrt{2}\,k t_{1}$	$-2k^{2} t_{1}$	0	0
$0^{+}\,f^{\perp}\dagger$	0	0	0	0
$0^{-}\,\mathcal{A}^{\parallel}\dagger$	0	0	0	0

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

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

Saturated propagator

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

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

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

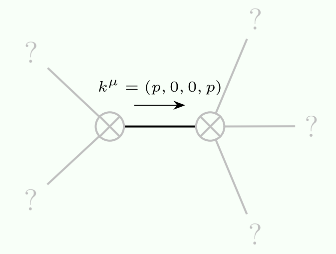
Source constraints

Spin-parity form	Covariant form	Multiplicities
$0^{-}\,\sigma^{\parallel} == 0$	$\epsilon\eta_{\alpha\beta\chi\delta}\ \partial^{\delta}\sigma^{\alpha\beta\chi} == 0$	1
$0^{+}\,\tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$-2 i k\ 0^{+}\,\sigma^{\parallel} + 0^{+}\,\tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\beta}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha}{}_{\alpha} + 2\,\partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha}{}_{\alpha}{}^{\beta}$	1
$2 i k\ 1^{-}\,\sigma^{\perp\alpha} + 1^{-}\,\tau^{\perp\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial_{\beta}\sigma^{\beta\alpha\chi}$	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:		17

Massive spectrum

(No particles)

Massless spectrum



Massless particle

Pole residue:	$\frac{9}{r_{5}} + \frac{2p^{2}}{t_{1}} + \frac{2 r_{5} p^{4}}{t_{1}^{2}} > 0$
Polarisations:	2

Unitarity conditions

$r_{5} > 0\ \&\&\ (t_{1} < 0\ \|\ t_{1} > 0)$