PSALTer results panel

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

Wave operator

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

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

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

Saturated propagator

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

	$1^+_{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$1^+_{\cdot}\sigma^{\perp}{}_{\alpha\beta}$	$1^+_{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$1^-_{\cdot}\sigma^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\sigma^{\perp}{}_{\alpha}$	$1^-_{\cdot}\tau^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\tau^{\perp}{}_{\alpha}$
$1^+_{\cdot}\sigma^{\parallel}\dagger^{\alpha\beta}$	$\frac{6}{(3+2k^2)^2 t_{1}.}$	$-\frac{6\sqrt{2}}{(3+2k^2)^2 t_{1}.}$	$-\frac{6 i\sqrt{2}\,k}{(3+2k^2)^2 t_{1}.}$	0	0	0	0
$1^+_{\cdot}\sigma^{\perp}\dagger^{\alpha\beta}$	$-\frac{6\sqrt{2}}{(3+2k^2)^2 t_{1}.}$	$\frac{12}{(3+2k^2)^2 t_{1}.}$	$\frac{12 i k}{(3+2k^2)^2 t_{1}.}$	0	0	0	0
$1^+_{\cdot}\tau^{\parallel}\dagger^{\alpha\beta}$	$\frac{6 i\sqrt{2}\,k}{(3+2k^2)^2 t_{1}.}$	$-\frac{12 i k}{(3+2k^2)^2 t_{1}.}$	$\frac{12 k^2}{(3+2k^2)^2 t_{1}.}$	0	0	0	0
$1^-_{\cdot}\sigma^{\parallel}\dagger^{\alpha}$	0	0	0	0	$\frac{\sqrt{2}}{t_{1}.+2k^2 t_{1}.}$	0	$\frac{2 i k}{t_{1}.+2k^2 t_{1}.}$
$1^-_{\cdot}\sigma^{\perp}\dagger^{\alpha}$	0	0	0	$\frac{\sqrt{2}}{t_{1}.+2k^2 t_{1}.}$	$\frac{2k^2 r_{1}.+t_{1}.}{(t_{1}.+2k^2 t_{1}.)^2}$	0	$\frac{i\sqrt{2}\,k(2k^2 r_{1}.+t_{1}.)}{(t_{1}.+2k^2 t_{1}.)^2}$
$1^-_{\cdot}\tau^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^-_{\cdot}\tau^{\perp}\dagger^{\alpha}$	0	0	0	$-\frac{2 i k}{t_{1}.+2k^2 t_{1}.}$	$-\frac{i\sqrt{2}\,k(2k^2 r_{1}.+t_{1}.)}{(t_{1}.+2k^2 t_{1}.)^2}$	0	$\frac{2k^2(2k^2 r_{1}.+t_{1}.)}{(t_{1}.+2k^2 t_{1}.)^2}$

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

Source constraints

Spin-parity form	Covariant form	Multiplicities
$0^-_{\cdot}\sigma^{\parallel} == 0$	$\epsilon\eta_{\alpha\beta\chi\delta}\,\partial^{\delta}\sigma^{\alpha\beta\chi} == 0$	1
$0^+_{\cdot}\tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == 0$	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
$2 i k\ 1^-_{\cdot}\sigma^{\perp\alpha} + 1^-_{\cdot}\tau^{\perp\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\beta\alpha\chi}$	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
$-2 i k\ 1^+_{\cdot}\sigma^{\parallel\alpha\beta} + 1^+_{\cdot}\tau^{\parallel\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\beta\alpha\chi} == \partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\beta\chi}$	3
$2\ 1^+_{\cdot}\sigma^{\parallel\alpha\beta} + 1^+_{\cdot}\sigma^{\perp\alpha\beta} == 0$	$\partial_{\chi}\sigma^{\alpha\beta\chi} + \partial_{\chi}\sigma^{\chi\alpha\beta} == \partial_{\chi}\sigma^{\beta\alpha\chi}$	3
$-2 i k\ 2^+_{\cdot}\sigma^{\parallel\alpha\beta} + 2^+_{\cdot}\tau^{\parallel\alpha\beta} == 0$	$-i(4\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 4 i\ k^{\chi}\ \partial_{\epsilon}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\sigma^{\delta}{}_{\delta}{}^{\epsilon} - 6 i\ k^{\chi}\ \partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\delta}\sigma^{\delta\beta\epsilon} - 6 i\ k^{\chi}\ \partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\delta\alpha\epsilon} + 6 i\ k^{\chi}\ \partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\alpha\beta\delta} + 6 i\ k^{\chi}\ \partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\beta\alpha\delta} + 2\ \eta^{\alpha\beta}\ \partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\tau(\Delta+\mathcal{K})^{\chi\delta} - 2\ \eta^{\alpha\beta}\ \partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 4 i\ \eta^{\alpha\beta}\ k^{\chi}\ \partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial_{\chi}\sigma^{\delta}{}_{\delta}{}^{\epsilon}) == 0$	5
Total expected gauge generators:			20

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

(No particles)

Unitarity conditions

$r_{1}. < 0\ \&\&\ t_{1}. > 0$