PSALTer results panel

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

Wave operator

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

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

Saturated propagator

	$0^+_.\sigma^\parallel$	$0^+_.\tau^\parallel$	$0^+_.\tau^\perp$	$0^-_.\sigma^\parallel$
$0^+_.\sigma^\parallel\,\dagger$	$\frac{1}{6\,k^2\,r_{.}{}_{3}}$	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	$\frac{1}{k^2\,r_{.}{}_{2} - t_{.}{}_{1}}$

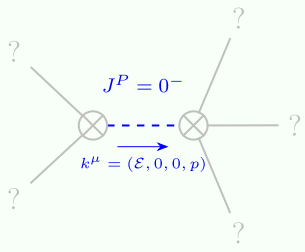
	$1^+_.\sigma^\parallel{}_{\alpha\beta}$	$1^+_.\sigma^\perp{}_{\alpha\beta}$	$1^+_.\tau^\parallel{}_{\alpha\beta}$	$1^-_.\sigma^\parallel{}_{\alpha}$	$1^-_.\sigma^\perp{}_{\alpha}$	$1^-_.\tau^\parallel{}_{\alpha}$	$1^-_.\tau^\perp{}_{\alpha}$
$1^+_.\sigma^\parallel\,\dagger^{\alpha\beta}$	0	$-\frac{\sqrt{2}}{t_{.}{}_{1}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

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

Source constraints

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

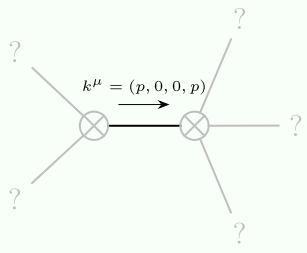
Massive spectrum



Massive particle

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

Massless spectrum



Massless particle

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

Unitarity conditions

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