PSALTer results panel

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

Wave operator

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

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

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

Saturated propagator

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

	$1^+_{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$1^+_{\cdot}\sigma^{\perp}{}_{\alpha\beta}$	$1^+_{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$1^-_{\cdot}\sigma^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\sigma^{\perp}{}_{\alpha}$	$1^-_{\cdot}\tau^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\tau^{\perp}{}_{\alpha}$
$1^+_{\cdot}\sigma^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{6}{(3+2\,k^2)^2\,t_{\cdot 1}}$	$-\frac{6\sqrt{2}}{(3+2\,k^2)^2\,t_{\cdot 1}}$	$-\frac{6\,i\sqrt{2}\,k}{(3+2\,k^2)^2\,t_{\cdot 1}}$	0	0	0	0
$1^+_{\cdot}\sigma^{\perp}\,\dagger^{\alpha\beta}$	$-\frac{6\sqrt{2}}{(3+2\,k^2)^2\,t_{\cdot 1}}$	$\frac{12}{(3+2\,k^2)^2\,t_{\cdot 1}}$	$\frac{12\,i\,k}{(3+2\,k^2)^2\,t_{\cdot 1}}$	0	0	0	0
$1^+_{\cdot}\tau^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{6\,i\sqrt{2}\,k}{(3+2\,k^2)^2\,t_{\cdot 1}}$	$-\frac{12\,i\,k}{(3+2\,k^2)^2\,t_{\cdot 1}}$	$\frac{12\,k^2}{(3+2\,k^2)^2\,t_{\cdot 1}}$	0	0	0	0
$1^-_{\cdot}\sigma^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	$\frac{\sqrt{2}}{t_{\cdot 1}+2\,k^2\,t_{\cdot 1}}$	0	$\frac{2\,i\,k}{t_{\cdot 1}+2\,k^2\,t_{\cdot 1}}$
$1^-_{\cdot}\sigma^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{\sqrt{2}}{t_{\cdot 1}+2\,k^2\,t_{\cdot 1}}$	$\frac{2\,k^2\,r_{\cdot 1}\,{}_1+t_{\cdot 1}}{(t_{\cdot 1}+2\,k^2\,t_{\cdot 1})^2}$	0	$\frac{i\sqrt{2}\,k\,(2\,k^2\,r_{\cdot 1}\,{}_1+t_{\cdot 1})}{(t_{\cdot 1}+2\,k^2\,t_{\cdot 1})^2}$
$1^-_{\cdot}\tau^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^-_{\cdot}\tau^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{2\,i\,k}{t_{\cdot 1}+2\,k^2\,t_{\cdot 1}}$	$-\frac{i\sqrt{2}\,k\,(2\,k^2\,r_{\cdot 1}\,{}_1+t_{\cdot 1})}{(t_{\cdot 1}+2\,k^2\,t_{\cdot 1})^2}$	0	$\frac{2\,k^2\,(2\,k^2\,r_{\cdot 1}\,{}_1+t_{\cdot 1})}{(t_{\cdot 1}+2\,k^2\,t_{\cdot 1})^2}$

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

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
$-2\,i\,k\,0^+_{\cdot}\sigma^{\parallel} + 0^+_{\cdot}\tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} + \partial_{\beta}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha}{}_{\alpha} + 2\,\partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha}{}_{\alpha}{}^{\beta} == 0$	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
$-2\,i\,k\,1^+_{\cdot}\sigma^{\parallel}{}^{\alpha\beta} + 1^+_{\cdot}\tau^{\parallel}{}^{\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\beta\alpha\chi} ==$ $\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\beta\chi}$	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
$-2\,i\,k\,2^+_{\cdot}\sigma^{\parallel}{}^{\alpha\beta} + 2^+_{\cdot}\tau^{\parallel}{}^{\alpha\beta} == 0$	$-i\,(4\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} -$ $3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} +$ $3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 4\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\sigma^{\delta}{}_{\delta}{}^{\epsilon} -$ $6\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\delta\beta\epsilon} - 6\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\delta\alpha\epsilon} + 6\,i\,k^{\chi}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\alpha\beta\delta} + 6\,i\,k^{\chi}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\beta\alpha\delta} +$ $2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\tau(\Delta+\mathcal{K})^{\chi\delta} - 2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 4\,i\,\eta^{\alpha\beta}\,k^{\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial_{\chi}\sigma^{\delta}{}_{\delta}{}^{\epsilon}) == 0$	5
Total expected gauge generators:			19

Massive spectrum

Massive particle

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

Massless spectrum

(No particles)

Unitarity conditions

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