PSALTer results panel

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

Wave operator

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

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

Saturated propagator

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

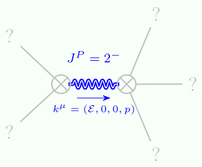
	$1^+_{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$1^+_{\cdot}\sigma^{\perp}{}_{\alpha\beta}$	$1^+_{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$1^-_{\cdot}\sigma^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\sigma^{\perp}{}_{\alpha}$	$1^-_{\cdot}\tau^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\tau^{\perp}{}_{\alpha}$
$1^+_{\cdot}\sigma^{\parallel}\,\dagger^{\alpha\beta}$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

	$2^+_{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$2^+_{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$2^-_{\cdot}\sigma^{\parallel}{}_{\alpha\beta\chi}$
$2^+_{\cdot}\sigma^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{2}{(1+2\,k^2)^2\,t_{\cdot 1}}$	$-\frac{2\,i\,\sqrt{2}\,k}{(1+2\,k^2)^2\,t_{\cdot 1}}$	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
$0^+_{\cdot}\tau^{\parallel} == 0$	$\partial_\beta \partial_\alpha \tau(\Delta+\mathcal{K})^{\alpha\beta} == \partial_\beta \partial^{\beta} \tau(\Delta+\mathcal{K})^{\alpha}{}_{\alpha}$	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
$-2\,i\,k\ 2^+_{\cdot}\sigma^{\parallel}{}^{\alpha\beta} + 2^+_{\cdot}\tau^{\parallel}{}^{\alpha\beta} == 0$	$-i\,(4\,\partial_\delta \partial_\chi \partial^{\beta} \partial^{\alpha} \tau(\Delta+\mathcal{K})^{\chi\delta} + 2\,\partial_\delta \partial^{\delta} \partial^{\beta} \partial^{\alpha} \tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 3\,\partial_\delta \partial^{\delta} \partial_\chi \partial^{\alpha} \tau(\Delta+\mathcal{K})^{\beta\chi} - 3\,\partial_\delta \partial^{\delta} \partial_\chi \partial^{\alpha} \tau(\Delta+\mathcal{K})^{\chi\beta} - 3\,\partial_\delta \partial^{\delta} \partial_\chi \partial^{\beta} \tau(\Delta+\mathcal{K})^{\alpha\chi} - 3\,\partial_\delta \partial^{\delta} \partial_\chi \partial^{\beta} \tau(\Delta+\mathcal{K})^{\chi\alpha} + 3\,\partial_\delta \partial^{\delta} \partial_\chi \partial^{\chi} \tau(\Delta+\mathcal{K})^{\alpha\beta} +$ $3\,\partial_\delta \partial^{\delta} \partial_\chi \partial^{\chi} \tau(\Delta+\mathcal{K})^{\beta\alpha} + 4\,i\,k^{\chi}\,\partial_\epsilon \partial_\chi \partial^{\beta} \partial^{\alpha} \sigma^{\delta\ \epsilon}_{\ \delta} - 6\,i\,k^{\chi}\,\partial_\epsilon \partial_\delta \partial_\chi \partial^{\alpha} \sigma^{\delta\beta\epsilon} - 6\,i\,k^{\chi}\,\partial_\epsilon \partial_\delta \partial_\chi \partial^{\beta} \sigma^{\delta\alpha\epsilon} + 6\,i\,k^{\chi}\,\partial_\epsilon \partial^{\epsilon} \partial_\delta \partial_\chi \sigma^{\alpha\beta\delta} + 6\,i\,k^{\chi}\,\partial_\epsilon \partial^{\epsilon} \partial_\delta \partial_\chi \sigma^{\beta\alpha\delta} + 2\,\eta^{\alpha\beta}\,\partial_\epsilon \partial^{\epsilon} \partial_\delta \partial_\chi \tau(\Delta+\mathcal{K})^{\chi\delta} - 2\,\eta^{\alpha\beta}\,\partial_\epsilon \partial^{\epsilon} \partial_\delta \partial^{\delta} \tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 4\,i\,\eta^{\alpha\beta}\,k^{\chi}\,\partial_\phi \partial^{\phi} \partial_\epsilon \partial_\chi \sigma^{\delta\ \epsilon}_{\ \delta}) == 0$	5
Total expected gauge generators:		16

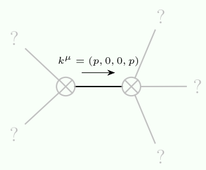
Massive spectrum



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



Massless particle

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

Unitarity conditions

$r_{\cdot 3} \in \mathbb{R}\ \&\&\ r_{\cdot 5} < -2\,r_{\cdot 3}\ \&\&\ 2\,r_{\cdot 3} + r_{\cdot 5} < r_{\cdot 1} < 0\ \&\&\ t_{\cdot 1} > 0$