PSALTer results panel

$$\mathcal{S} == \int\int\int\int (\mathcal{A}^{\alpha\beta\chi}\ \sigma_{\alpha\beta\chi} + f^{\alpha\beta}\ \tau (\Delta+\mathcal{K})_{\alpha\beta} + \frac{1}{3} r_{\cdot 2} (4 \partial_\beta \mathcal{A}_{\alpha\iota\theta} - 2 \partial_\beta \mathcal{A}_{\iota\theta\alpha} + 2 \partial_\beta \mathcal{A}_{\iota\theta\alpha} - \partial_\iota \mathcal{A}_{\alpha\beta\theta} + \partial_\theta \mathcal{A}_{\alpha\beta\iota} - 2 \partial_\theta \mathcal{A}_{\alpha\iota\beta}) \partial^\theta \mathcal{A}^{\alpha\beta\iota} - 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{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^{\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}^{\alpha\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] dz\, dy\, dx\, dt$$

Wave operator

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

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

Saturated propagator

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

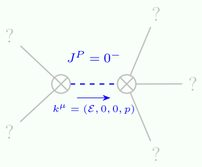
	$1^+_\cdot \sigma^\parallel{}_{\alpha\beta}$	$1^+_\cdot \sigma^\perp{}_{\alpha\beta}$	$1^+_\cdot \tau^\parallel{}_{\alpha\beta}$	$1^-_\cdot \sigma^\parallel{}_{\alpha}$	$1^-_\cdot \sigma^\perp{}_{\alpha}$	$1^-_\cdot \tau^\parallel{}_{\alpha}$	$1^-_\cdot \tau^\perp{}_{\alpha}$
$1^+_\cdot \sigma^\parallel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

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

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

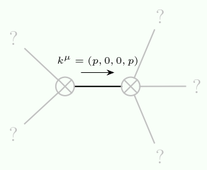
Massive spectrum



Massive particle

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

Massless spectrum



Massless particle

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

Unitarity conditions

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