PSALTer results panel

$$\mathcal{S} == \iiint\!\!\int (\tfrac{1}{6}(6 t_1 \mathcal{A}^{\alpha\prime}{}_{\alpha} \mathcal{A}_{\prime}{}^{\theta}{}_{\theta} + 6 \mathcal{A}^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} + 6 f^{\alpha\beta} \tau(\Delta+\mathcal{K})_{\alpha\beta} - 12 t_1 \mathcal{A}_{\alpha}{}^{\theta}{}_{\theta} \partial_\prime f^{\alpha\prime} + 12 t_1 \mathcal{A}_{\prime}{}^{\theta}{}_{\theta} \partial^\prime f^{\alpha}{}_{\alpha} - 6 t_1 \partial_\prime f^{\theta}{}_{\theta} \partial^\prime f^{\alpha}{}_{\alpha} - 6 t_1 \partial_\prime f^{\alpha\prime} \partial_\theta f_{\alpha}{}^{\theta} + 12 t_1 \partial^\prime f^{\alpha}{}_{\alpha} \partial_\theta f_{\prime}{}^{\theta} + 8 r_2 \partial_\beta \mathcal{A}_{\alpha\prime\theta} \partial^\theta \mathcal{A}^{\alpha\beta\prime} - 4 r_2 \partial_\beta \mathcal{A}_{\alpha\theta\prime} \partial^\theta \mathcal{A}^{\alpha\beta\prime} + 4 r_2 \partial_\beta \mathcal{A}_{\prime\theta\alpha} \partial^\theta \mathcal{A}^{\alpha\beta\prime} - 2 r_2 \partial_\prime \mathcal{A}_{\alpha\beta\theta} \partial^\theta \mathcal{A}^{\alpha\beta\prime} + 2 r_2 \partial_\theta \mathcal{A}_{\alpha\beta\prime} \partial^\theta \mathcal{A}^{\alpha\beta\prime} - 4 r_2 \partial_\theta \mathcal{A}_{\alpha\prime\beta} \partial^\theta \mathcal{A}^{\alpha\beta\prime} + 6 r_5 \partial_\prime \mathcal{A}_{\theta}{}^{\kappa}{}_{\kappa} \partial^\theta \mathcal{A}^{\alpha\prime}{}_{\alpha} - 6 r_5 \partial_\theta \mathcal{A}_{\prime}{}^{\kappa}{}_{\kappa} \partial^\theta \mathcal{A}^{\alpha\prime}{}_{\alpha} + 4 t_1 \mathcal{A}_{\prime\theta\alpha} \partial^\theta f^{\alpha\prime} + 4 t_2 \mathcal{A}_{\prime\theta\alpha} \partial^\theta f^{\alpha\prime} - 4 t_1 \partial_\alpha f_{\prime\theta} \partial^\theta f^{\alpha\prime} + 2 t_2 \partial_\alpha f_{\prime\theta} \partial^\theta f^{\alpha\prime} - 4 t_1 \partial_\alpha f_{\theta\prime} \partial^\theta f^{\alpha\prime} - t_2 \partial_\alpha f_{\theta\prime} \partial^\theta f^{\alpha\prime} + 2 t_1 \partial_\prime f_{\alpha\theta} \partial^\theta f^{\alpha\prime} - t_2 \partial_\prime f_{\alpha\theta} \partial^\theta f^{\alpha\prime} + 4 t_1 \partial_\theta f_{\alpha\prime} \partial^\theta f^{\alpha\prime} + t_2 \partial_\theta f_{\alpha\prime} \partial^\theta f^{\alpha\prime} + 2 t_1 \partial_\theta f_{\prime\alpha} \partial^\theta f^{\alpha\prime} - t_2 \partial_\theta f_{\prime\alpha} \partial^\theta f^{\alpha\prime} + 2 (t_1 + t_2) \mathcal{A}_{\alpha\prime\theta} (\mathcal{A}^{\alpha\prime\theta} + 2 \partial^\theta f^{\alpha\prime}) + 2 \mathcal{A}_{\alpha\theta\prime} ((t_1 - 2 t_2) \mathcal{A}^{\alpha\prime\theta} + 2 (2 t_1 - t_2) \partial^\theta f^{\alpha\prime}) - 6 r_5 \partial_\alpha \mathcal{A}^{\alpha\prime\theta} \partial_\kappa \mathcal{A}_{\prime}{}^{\kappa}{}_{\theta} + 12 r_5 \partial^\theta \mathcal{A}^{\alpha\prime}{}_{\alpha} \partial_\kappa \mathcal{A}_{\prime}{}^{\kappa}{}_{\theta} + 6 r_5 \partial_\alpha \mathcal{A}^{\alpha\prime\theta} \partial_\kappa \mathcal{A}_{\theta}{}^{\kappa}{}_{\prime} - 12 r_5 \partial^\theta \mathcal{A}^{\alpha\prime}{}_{\alpha} \partial_\kappa \mathcal{A}_{\theta}{}^{\kappa}{}_{\prime}))[t, x, y, z]\, dt\, dz\, dy\, dx\, dt$$

Wave operator

	$0^+_{\cdot}\mathcal{A}^{\parallel}$	$0^+_{\cdot}f^{\parallel}$	$0^+_{\cdot}f^{\perp}$	$0^-_{\cdot}\mathcal{A}^{\parallel}$
$0^+_{\cdot}\mathcal{A}^{\parallel}\dagger$	$-t_1$	$i\sqrt{2}\,k t_1$	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	$k^2 r_2 + t_2$

	$1^+_{\cdot}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$1^+_{\cdot}\mathcal{A}^{\perp}{}_{\alpha\beta}$	$1^+_{\cdot}f^{\parallel}{}_{\alpha\beta}$	$1^-_{\cdot}\mathcal{A}^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\mathcal{A}^{\perp}{}_{\alpha}$	$1^-_{\cdot}f^{\parallel}{}_{\alpha}$	$1^-_{\cdot}f^{\perp}{}_{\alpha}$
$1^+_{\cdot}\mathcal{A}^{\parallel}\dagger^{\alpha\beta}$	$\frac{1}{6}(6k^2 r_5 + t_1 + 4t_2)$	$-\frac{t_1 - 2t_2}{3\sqrt{2}}$	$-\frac{i\,k\,(t_1 - 2t_2)}{3\sqrt{2}}$	0	0	0	0
$1^+_{\cdot}\mathcal{A}^{\perp}\dagger^{\alpha\beta}$	$-\frac{t_1 - 2t_2}{3\sqrt{2}}$	$\frac{t_1 + t_2}{3}$	$\frac{1}{3} i k (t_1 + t_2)$	0	0	0	0
$1^+_{\cdot}f^{\parallel}\dagger^{\alpha\beta}$	$\frac{i\,k\,(t_1 - 2t_2)}{3\sqrt{2}}$	$-\frac{1}{3} i k (t_1 + t_2)$	$\frac{1}{3} k^2 (t_1 + t_2)$	0	0	0	0
$1^-_{\cdot}\mathcal{A}^{\parallel}\dagger^{\alpha}$	0	0	0	$k^2 r_5 - \frac{t_1}{2}$	$\frac{t_1}{\sqrt{2}}$	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	$\frac{t_1}{2}$

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	$\frac{1}{k^2 r_2 + t_2}$

	$1^+_{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$1^+_{\cdot}\sigma^{\perp}{}_{\alpha\beta}$	$1^+_{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$1^-_{\cdot}\sigma^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\sigma^{\perp}{}_{\alpha}$	$1^-_{\cdot}\tau^{\parallel}{}_{\alpha}$	$1^-_{\cdot}\tau^{\perp}{}_{\alpha}$
$1^+_{\cdot}\sigma^{\parallel}\dagger^{\alpha\beta}$	$\frac{2(t_1 + t_2)}{3t_1 t_2 + 2k^2 r_5 (t_1 + t_2)}$	$\frac{\sqrt{2}\,(t_1 - 2t_2)}{(1+k^2)(3t_1 t_2 + 2k^2 r_5 (t_1 + t_2))}$	$\frac{i\sqrt{2}\,k\,(t_1 - 2t_2)}{(1+k^2)(3t_1 t_2 + 2k^2 r_5 (t_1 + t_2))}$	0	0	0	0
$1^+_{\cdot}\sigma^{\perp}\dagger^{\alpha\beta}$	$\frac{\sqrt{2}\,(t_1 - 2t_2)}{(1+k^2)(3t_1 t_2 + 2k^2 r_5 (t_1 + t_2))}$	$\frac{6k^2 r_5 + t_1 + 4t_2}{(1+k^2)^2 (3t_1 t_2 + 2k^2 r_5 (t_1 + t_2))}$	$\frac{i k (6k^2 r_5 + t_1 + 4t_2)}{(1+k^2)^2 (3t_1 t_2 + 2k^2 r_5 (t_1 + t_2))}$	0	0	0	0
$1^+_{\cdot}\tau^{\parallel}\dagger^{\alpha\beta}$	$-\frac{i\sqrt{2}\,k\,(t_1 - 2t_2)}{(1+k^2)(3t_1 t_2 + 2k^2 r_5 (t_1 + t_2))}$	$-\frac{i k (6k^2 r_5 + t_1 + 4t_2)}{(1+k^2)^2 (3t_1 t_2 + 2k^2 r_5 (t_1 + t_2))}$	$\frac{k^2 (6k^2 r_5 + t_1 + 4t_2)}{(1+k^2)^2 (3t_1 t_2 + 2k^2 r_5 (t_1 + t_2))}$	0	0	0	0
$1^-_{\cdot}\sigma^{\parallel}\dagger^{\alpha}$	0	0	0	0	$\frac{\sqrt{2}}{t_1 + 2k^2 t_1}$	0	$\frac{2ik}{t_1 + 2k^2 t_1}$
$1^-_{\cdot}\sigma^{\perp}\dagger^{\alpha}$	0	0	0	$\frac{\sqrt{2}}{t_1 + 2k^2 t_1}$	$\frac{-2k^2 r_5 + t_1}{(t_1 + 2k^2 t_1)^2}$	0	$-\frac{i\sqrt{2}\,k\,(2k^2 r_5 - t_1)}{(t_1 + 2k^2 t_1)^2}$
$1^-_{\cdot}\tau^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^-_{\cdot}\tau^{\perp}\dagger^{\alpha}$	0	0	0	$-\frac{2ik}{t_1 + 2k^2 t_1}$	$\frac{i\sqrt{2}\,k\,(2k^2 r_5 - t_1)}{(t_1 + 2k^2 t_1)^2}$	0	$\frac{-4k^4 r_5 + 2k^2 t_1}{(t_1 + 2k^2 t_1)^2}$

	$2^+_{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$2^+_{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$2^-_{\cdot}\sigma^{\parallel}{}_{\alpha\beta\chi}$
$2^+_{\cdot}\sigma^{\parallel}\dagger^{\alpha\beta}$	$\frac{2}{(1+2k^2)^2 t_1}$	$-\frac{2i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	0
$2^+_{\cdot}\tau^{\parallel}\dagger^{\alpha\beta}$	$\frac{2i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	$\frac{4k^2}{(1+2k^2)^2 t_1}$	0
$2^-_{\cdot}\sigma^{\parallel}\dagger^{\alpha\beta\chi}$	0	0	$\frac{2}{t_1}$

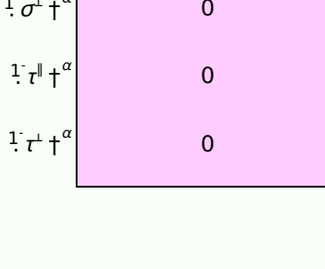
Source constraints

Spin-parity form	Covariant form	Multiplicities
$0^+_{\cdot}\tau^{\perp} == 0$	$\partial_\beta \partial_\alpha \tau(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$-2ik\,0^+_{\cdot}\sigma^{\parallel} + 0^+_{\cdot}\tau^{\parallel} == 0$	$\partial_\beta \partial_\alpha \tau(\Delta+\mathcal{K})^{\alpha\beta} == \partial_\beta \partial^\beta \tau(\Delta+\mathcal{K})^{\alpha}{}_{\alpha} + 2\,\partial_\chi \partial^\chi \partial_\beta \sigma^{\alpha\ \beta}_{\ \alpha}$	1
$2ik\,1^-_{\cdot}\sigma^{\perp\,\alpha} + 1^-_{\cdot}\tau^{\perp\,\alpha} == 0$	$\partial_\chi \partial_\beta \partial^\alpha \tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_\chi \partial^\chi \partial_\beta \tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_\delta \partial^\delta \partial_\chi \partial_\beta \sigma^{\beta\alpha\chi}$	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
$ik\,1^+_{\cdot}\sigma^{\perp\,\alpha\beta} + 1^+_{\cdot}\tau^{\parallel\,\alpha\beta} == 0$	$\partial_\chi \partial^\alpha \tau(\Delta+\mathcal{K})^{\beta\chi} + \partial_\chi \partial^\beta \tau(\Delta+\mathcal{K})^{\chi\alpha} + \partial_\chi \partial^\chi \tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_\delta \partial_\chi \partial^\alpha \sigma^{\chi\beta\delta} + 2\,\partial_\delta \partial^\delta \partial_\chi \sigma^{\chi\alpha\beta} == \partial_\chi \partial^\alpha \tau(\Delta+\mathcal{K})^{\chi\beta} + \partial_\chi \partial^\beta \tau(\Delta+\mathcal{K})^{\alpha\chi} + \partial_\chi \partial^\chi \tau(\Delta+\mathcal{K})^{\beta\alpha} + 2\,\partial_\delta \partial_\chi \partial^\beta \sigma^{\chi\alpha\delta}$	3
$-2ik\,2^+_{\cdot}\sigma^{\parallel\,\alpha\beta} + 2^+_{\cdot}\tau^{\parallel\,\alpha\beta} == 0$	$-i\,(4\,\partial_\delta \partial_\chi \partial^\beta \partial^\alpha \tau(\Delta+\mathcal{K})^{\chi\delta} + 2\,\partial_\delta \partial^\delta \partial^\beta \partial^\alpha \tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 3\,\partial_\delta \partial^\delta \partial_\chi \partial^\alpha \tau(\Delta+\mathcal{K})^{\beta\chi} - 3\,\partial_\delta \partial^\delta \partial_\chi \partial^\alpha \tau(\Delta+\mathcal{K})^{\chi\beta} - 3\,\partial_\delta \partial^\delta \partial_\chi \partial^\beta \tau(\Delta+\mathcal{K})^{\alpha\chi} - 3\,\partial_\delta \partial^\delta \partial_\chi \partial^\beta \tau(\Delta+\mathcal{K})^{\chi\alpha} + 3\,\partial_\delta \partial^\delta \partial_\chi \partial^\chi \tau(\Delta+\mathcal{K})^{\alpha\beta} + 3\,\partial_\delta \partial^\delta \partial_\chi \partial^\chi \tau(\Delta+\mathcal{K})^{\beta\alpha} + 4\,i\,k^\chi\,\partial_\epsilon \partial_\chi \partial^\beta \partial^\alpha \sigma^{\delta\ \epsilon}_{\ \delta} - 6\,i\,k^\chi\,\partial_\epsilon \partial_\delta \partial_\chi \partial^\alpha \sigma^{\delta\beta\epsilon} - 6\,i\,k^\chi\,\partial_\epsilon \partial_\delta \partial_\chi \partial^\beta \sigma^{\delta\alpha\epsilon} + 6\,i\,k^\chi\,\partial_\epsilon \partial^\epsilon \partial_\delta \partial_\chi \sigma^{\alpha\beta\delta} + 6\,i\,k^\chi\,\partial_\epsilon \partial^\epsilon \partial_\delta \partial_\chi \sigma^{\beta\alpha\delta} + 2\,\eta^{\alpha\beta}\,\partial_\epsilon \partial^\epsilon \partial_\delta \partial_\chi \tau(\Delta+\mathcal{K})^{\chi\delta} - 2\,\eta^{\alpha\beta}\,\partial_\epsilon \partial^\epsilon \partial_\delta \partial^\delta \tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 4\,i\,\eta^{\alpha\beta}\,k^\chi\,\partial_\phi \partial^\phi \partial_\epsilon \partial_\chi \sigma^{\delta\ \epsilon}_{\ \delta}) == 0$	5
Total expected gauge generators:		16

Massive spectrum

Massive particle

Pole residue:	$-\frac{1}{r_2} > 0$
Square mass:	$-\frac{t_2}{r_2} > 0$
Spin:	0
Parity:	Odd



Massive particle

Pole residue:	$\frac{-3t_1 t_2 (t_1 + t_2) + 3r_5 (t_1^2 + 2t_2^2)}{r_5 (t_1 + t_2)(-3t_1 t_2 + 2r_5 (t_1 + t_2))} > 0$
Square mass:	$-\frac{3t_1 t_2}{2r_5 t_1 + 2r_5 t_2} > 0$
Spin:	1
Parity:	Even

Massless spectrum

(No particles)

Unitarity conditions

$r_2 < 0 \;\&\&\; t_2 > 0 \;\&\&\; r_5 > 0 \;\&\&\; -t_2 < t_1 < 0$