PSALTer results panel

$$S = \iiiint \Big(\tfrac{1}{6}\Big(2\,t_{\tilde 1}\,\mathcal{A}^{\alpha\prime}{}_{\alpha}\,\mathcal{A}_{\iota\,\theta}{}^{\theta} - 4\,t_{\tilde 3}\,\mathcal{A}^{\alpha\prime}{}_{\alpha}\,\mathcal{A}_{\iota\,\theta}{}^{\theta} + 6\,\mathcal{A}^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi} + 6\,f^{\alpha\beta}{}_{\tau}\,(\Delta+\mathcal{K})_{\alpha\beta} - 4\,t_{\tilde 1}\,\mathcal{A}_{\alpha\,\theta}{}^{\theta}\,\partial_\iota f^{\alpha\prime} + 8\,t_{\tilde 3}\,\mathcal{A}_{\alpha\,\theta}{}^{\theta}\,\partial_\iota f^{\alpha\prime} + 4\,t_{\tilde 1}\,\mathcal{A}_{\iota\,\theta}{}^{\theta}\,\partial^\iota f^{\alpha}{}_\alpha - 8\,t_{\tilde 3}\,\mathcal{A}_{\iota\,\theta}{}^{\theta}\,\partial^\iota f^{\alpha}{}_\alpha - $$
$$2\,t_{\tilde 1}\,\partial_\iota f^{\theta}{}_{\theta}\,\partial^\iota f^{\alpha}{}_\alpha + 4\,t_{\tilde 3}\,\partial_\iota f^{\theta}{}_{\theta}\,\partial^\iota f^{\alpha}{}_\alpha - 2\,t_{\tilde 1}\,\partial_\iota f^{\alpha\prime}\,\partial\theta f_\alpha{}^\theta + 4\,t_{\tilde 3}\,\partial_\iota f^{\alpha\prime}\,\partial\theta f_\alpha{}^\theta + 4\,t_{\tilde 1}\,\partial^\iota f^{\alpha}{}_\alpha\,\partial\theta f_\iota{}^\theta - 8\,t_{\tilde 3}\,\partial^\iota f^{\alpha}{}_\alpha\,\partial\theta f_\iota{}^\theta + 8\,r_{\tilde 2}\,\partial_\beta \mathcal{A}_{\alpha\iota\theta}\,\partial^\theta \mathcal{A}^{\alpha\beta\iota} - $$
$$4\,r_{\tilde 2}\,\partial_\beta \mathcal{A}_{\alpha\theta\iota}\,\partial^\theta \mathcal{A}^{\alpha\beta\iota} + 4\,r_{\tilde 2}\,\partial_\beta \mathcal{A}_{\iota\theta\alpha}\,\partial^\theta \mathcal{A}^{\alpha\beta\iota} - 2\,r_{\tilde 2}\,\partial_\iota \mathcal{A}_{\alpha\beta\theta}\,\partial^\theta \mathcal{A}^{\alpha\beta\iota} + 2\,r_{\tilde 2}\,\partial_\theta \mathcal{A}_{\alpha\beta\iota}\,\partial^\theta \mathcal{A}^{\alpha\beta\iota} - 4\,r_{\tilde 2}\,\partial_\theta \mathcal{A}_{\alpha\iota\beta}\,\partial^\theta \mathcal{A}^{\alpha\beta\iota} + 4\,t_{\tilde 1}\,\mathcal{A}_{\iota\theta\alpha}\,\partial^\theta f^{\alpha\prime} + 4\,t_{\tilde 2}\,\mathcal{A}_{\iota\theta\alpha}\,\partial^\theta f^{\alpha\prime} - $$
$$4\,t_{\tilde 1}\,\partial_\theta f_{\iota\alpha}\,\partial^\theta f^{\alpha\prime} + 2\,t_{\tilde 2}\,\partial_\theta f_{\iota\alpha}\,\partial^\theta f^{\alpha\prime} - 4\,t_{\tilde 1}\,\partial_\theta f_{\iota\alpha}\,\partial^\theta f^{\alpha\prime} - t_{\tilde 2}\,\partial_\theta f_{\alpha\iota}\,\partial^\theta f^{\alpha\prime} + 2\,t_{\tilde 1}\,\partial_\iota f_{\alpha\theta}\,\partial^\theta f^{\alpha\prime} - t_{\tilde 2}\,\partial_\iota f_{\alpha\theta}\,\partial^\theta f^{\alpha\prime} + 4\,t_{\tilde 1}\,\partial_\theta f_{\alpha\iota}\,\partial^\theta f^{\alpha\prime} + t_{\tilde 2}\,\partial_\theta f_{\alpha\iota}\,\partial^\theta f^{\alpha\prime} + $$
$$2\,t_{\tilde 1}\,\partial_\theta f_{\iota\alpha}\,\partial^\theta f^{\alpha\prime} - t_{\tilde 2}\,\partial_\theta f_{\iota\alpha}\,\partial^\theta f^{\alpha\prime} + 2\,\big(t_{\tilde 1}+t_{\tilde 2}\big)\,\mathcal{A}_{\alpha\iota\theta}\,\big(\mathcal{A}^{\alpha\iota\theta} + 2\,\partial^\theta f^{\alpha\prime}\big) + 2\,\mathcal{A}_{\alpha\theta\iota}\,\big(\big(t_{\tilde 1}-2\,t_{\tilde 2}\big)\,\mathcal{A}^{\alpha\iota\theta} + 2\,\big(2\,t_{\tilde 1}-t_{\tilde 2}\big)\,\partial^\theta f^{\alpha\prime}\big)\big)\Big)[t,x,y,z]\,dz\,dy\,dx\,dt$$

Wave operator

	$0^+\mathcal{A}^\parallel$	$0^+ f^\parallel$	$0^+ f^\perp$	$0^- \mathcal{A}^\parallel$
$0^+\mathcal{A}^\parallel\dagger$	$t_{\tilde 3}$	$-i\,\sqrt{2}\,k\,t_{\tilde 3}$	0	0
$0^+ f^\parallel\dagger$	$i\,\sqrt{2}\,k\,t_{\tilde 3}$	$2\,k^2\,t_{\tilde 3}$	0	0
$0^+ f^\perp\dagger$	0	0	0	0
$0^-\mathcal{A}^\parallel\dagger$	0	0	0	$k^2\,r_{\tilde 2}+t_{\tilde 2}$

	$1^+\mathcal{A}^\parallel{}_{\alpha\beta}$	$1^+\mathcal{A}^\perp{}_{\alpha\beta}$	$1^+ f^\parallel{}_{\alpha\beta}$	$1^-\mathcal{A}^\parallel{}_\alpha$	$1^-\mathcal{A}^\perp{}_\alpha$	$1^- f^\parallel{}_\alpha$	$1^- f^\perp{}_\alpha$
$1^+\mathcal{A}^\parallel\dagger^{\alpha\beta}$	$\tfrac{1}{6}\big(t_{\tilde 1}+4\,t_{\tilde 2}\big)$	$-\tfrac{t_{\tilde 1}-2\,t_{\tilde 2}}{3\sqrt{2}}$	$-\tfrac{i\,k\,(t_{\tilde 1}-2\,t_{\tilde 2})}{3\sqrt{2}}$	0	0	0	0
$1^+\mathcal{A}^\perp\dagger^{\alpha\beta}$	$-\tfrac{t_{\tilde 1}-2\,t_{\tilde 2}}{3\sqrt{2}}$	$\tfrac{t_{\tilde 1}+t_{\tilde 2}}{3}$	$\tfrac{1}{3}\,i\,k\big(t_{\tilde 1}+t_{\tilde 2}\big)$	0	0	0	0
$1^+ f^\parallel\dagger^{\alpha\beta}$	$\tfrac{i\,k\,(t_{\tilde 1}-2\,t_{\tilde 2})}{3\sqrt{2}}$	$-\tfrac{1}{3}\,i\,k\big(t_{\tilde 1}+t_{\tilde 2}\big)$	$\tfrac{1}{3}\,k^2\big(t_{\tilde 1}+t_{\tilde 2}\big)$	0	0	0	0
$1^-\mathcal{A}^\parallel\dagger^\alpha$	0	0	0	$\tfrac{1}{6}\big(t_{\tilde 1}+4\,t_{\tilde 3}\big)$	$\tfrac{t_{\tilde 1}-2\,t_{\tilde 3}}{3\sqrt{2}}$	0	$\tfrac{1}{3}\,i\,k\big(t_{\tilde 1}-2\,t_{\tilde 3}\big)$
$1^-\mathcal{A}^\perp\dagger^\alpha$	0	0	0	$\tfrac{t_{\tilde 1}-2\,t_{\tilde 3}}{3\sqrt{2}}$	$\tfrac{t_{\tilde 1}+t_{\tilde 3}}{3}$	0	$\tfrac{1}{3}\,i\,\sqrt{2}\,k\big(t_{\tilde 1}+t_{\tilde 3}\big)$
$1^- f^\parallel\dagger^\alpha$	0	0	0	0	0	0	0
$1^- f^\perp\dagger^\alpha$	0	0	0	$-\tfrac{1}{3}\,i\,k\big(t_{\tilde 1}-2\,t_{\tilde 3}\big)$	$-\tfrac{1}{3}\,i\,\sqrt{2}\,k\big(t_{\tilde 1}+t_{\tilde 3}\big)$	0	$\tfrac{2}{3}\,k^2\big(t_{\tilde 1}+t_{\tilde 3}\big)$

	$2^+\mathcal{A}^\parallel{}_{\alpha\beta}$	$2^+ f^\parallel{}_{\alpha\beta}$	$2^-\mathcal{A}^\parallel{}_{\alpha\beta\chi}$
$2^+\mathcal{A}^\parallel\dagger^{\alpha\beta}$	$\tfrac{t_{\tilde 1}}{2}$	$-\tfrac{i\,k\,t_{\tilde 1}}{\sqrt{2}}$	0
$2^+ f^\parallel\dagger^{\alpha\beta}$	$\tfrac{i\,k\,t_{\tilde 1}}{\sqrt{2}}$	$k^2\,t_{\tilde 1}$	0
$2^-\mathcal{A}^\parallel\dagger^{\alpha\beta\chi}$	0	0	$\tfrac{t_{\tilde 1}}{2}$

Saturated propagator

	$0^+\sigma^\parallel$	$0^+\tau^\parallel$	$0^+\tau^\perp$	$0^-\sigma^\parallel$
$0^+\sigma^\parallel\dagger$	$\tfrac{1}{(1+2\,k^2)^2\,t_{\tilde 3}}$	$-\tfrac{i\,\sqrt{2}\,k}{(1+2\,k^2)^2\,t_{\tilde 3}}$	0	0
$0^+\tau^\parallel\dagger$	$\tfrac{i\,\sqrt{2}\,k}{(1+2\,k^2)^2\,t_{\tilde 3}}$	$\tfrac{2\,k^2}{(1+2\,k^2)^2\,t_{\tilde 3}}$	0	0
$0^+\tau^\perp\dagger$	0	0	0	0
$0^-\sigma^\parallel\dagger$	0	0	0	$\tfrac{1}{k^2\,r_{\tilde 2}+t_{\tilde 2}}$

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

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

Source constraints

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

Massive spectrum

Massive particle

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

Massless spectrum

(No particles)

Unitarity conditions

$r_{\tilde 2} < 0\ \&\&\ t_{\tilde 2} > 0$