PSALTer results panel

$$S == \int\int\int\int \left(\frac{1}{4}\left(-2\,a_0\,\mathcal{A}_{\alpha\chi\beta}\,\mathcal{A}^{\alpha\beta\chi} + 2\,a_0\,\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\mathcal{A}^{\chi}{}_{\beta\chi} + 4\,\mathcal{A}^{\alpha\beta\chi}\,\mathcal{W}_{\alpha\beta\chi} + 4\,\mathcal{T}^{\alpha\beta}\,h_{\alpha\beta} + 2\,a_0\,h^{\alpha\beta}\,\partial_\beta\mathcal{A}_\alpha{}^{\chi}{}_{\chi} - 2\,a_0\,h^{\alpha\beta}\,\partial_\chi\mathcal{A}_\alpha{}^{\chi}{}_{\beta} - a_0\,h^{\alpha}{}_{\alpha}\,\partial_\chi\mathcal{A}^{\beta}{}_{\beta}{}^{\chi} + a_0\,h^{\alpha}{}_{\alpha}\,\partial_\chi\mathcal{A}^{\beta\chi}{}_{\beta} - h_1\,\partial_\beta\mathcal{A}_\chi{}^{\delta}{}_{\delta}\,\partial^\chi\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta} - h_1\,\partial_\chi\mathcal{A}_\beta{}^{\delta}{}_{\delta}\,\partial^\chi\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta} - 2\,h_1\,\partial_\beta\mathcal{A}^{\alpha\beta\chi}\,\partial_\delta\mathcal{A}_\alpha{}^{\delta}{}_{\chi} + 4\,h_1\,\partial^\chi\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_\delta\mathcal{A}_\beta{}^{\delta}{}_{\chi}\right)\right)[t, x, y, z]\,dz\,dy\,dx\,dt$$

Wave operator

	$0^+_\cdot h^\perp$	$0^+_\cdot h^\parallel$	$0^+_\cdot \mathcal{A}_S{}^{\perp t}$	$0^+_\cdot \mathcal{A}_S{}^{\parallel}$	$0^+_\cdot \mathcal{A}_S{}^{\perp h}$
$0^+_\cdot h^\perp\,\dagger$	0	0	0	$\frac{i\,a_0\,k}{4}$	$\frac{i\,a_0\,k}{8\sqrt{2}}$
$0^+_\cdot h^\parallel\,\dagger$	0	0	0	$-\frac{i\,a_0\,k}{4\sqrt{3}}$	$\frac{5\,i\,a_0\,k}{8\sqrt{6}}$
$0^+_\cdot \mathcal{A}_S{}^{\perp t}\,\dagger$	0	0	0	$\frac{a_0}{2}$	$\frac{a_0}{4\sqrt{2}}$
$0^+_\cdot \mathcal{A}_S{}^{\parallel}\,\dagger$	$-\frac{1}{4}\,i\,a_0\,k$	$\frac{i\,a_0\,k}{4\sqrt{3}}$	$\frac{a_0}{2}$	$-\frac{2\,k^2\,h_1}{3}$	$\frac{3\,a_0+2\,k^2\,h_1}{12\sqrt{2}}$
$0^+_\cdot \mathcal{A}_S{}^{\perp h}\,\dagger$	$-\frac{i\,a_0\,k}{8\sqrt{2}}$	$-\frac{5\,i\,a_0\,k}{8\sqrt{6}}$	$\frac{a_0}{4\sqrt{2}}$	$\frac{3\,a_0+2\,k^2\,h_1}{12\sqrt{2}}$	$\frac{1}{12}\left(-3\,a_0 - 7\,k^2\,h_1\right)$

	$1^+_\cdot \mathcal{A}_S{}^{\perp}{}_{\alpha\beta}$	$1^-_\cdot h^\perp{}_\alpha$	$1^-_\cdot \mathcal{A}_S{}^{\perp t}{}_\alpha$	$1^-_\cdot \mathcal{A}_S{}^{\parallel t}{}_\alpha$	$1^-_\cdot \mathcal{A}_S{}^{\perp h}{}_\alpha$	$1^-_\cdot \mathcal{A}_S{}^{\parallel h}{}_\alpha$
$1^+_\cdot \mathcal{A}_S{}^{\perp}\,\dagger^{\alpha\beta}$	$\frac{a_0}{4}$	0	0	0	0	0
$1^-_\cdot h^\perp\,\dagger^{\alpha}$	0	0	$-\frac{i\,a_0\,k}{4\sqrt{6}}$	$\frac{1}{4}\,i\,\sqrt{\frac{5}{6}}\,a_0\,k$	$\frac{i\,a_0\,k}{8\sqrt{3}}$	$-\frac{i\,a_0\,k}{4\sqrt{6}}$
$1^-_\cdot \mathcal{A}_S{}^{\perp t}\,\dagger^{\alpha}$	0	$\frac{i\,a_0\,k}{4\sqrt{6}}$	$\frac{1}{12}\left(-4\,a_0 - k^2\,h_1\right)$	$\frac{1}{12}\,\sqrt{5}\left(2\,a_0 + k^2\,h_1\right)$	$\frac{a_0+k^2\,h_1}{12\sqrt{2}}$	$\frac{1}{12}\left(a_0 - k^2\,h_1\right)$
$1^-_\cdot \mathcal{A}_S{}^{\parallel t}\,\dagger^{\alpha}$	0	$-\frac{1}{4}\,i\,\sqrt{\frac{5}{6}}\,a_0\,k$	$\frac{1}{12}\,\sqrt{5}\left(2\,a_0 + k^2\,h_1\right)$	$\frac{1}{12}\left(4\,a_0 - 5\,k^2\,h_1\right)$	$\frac{1}{12}\,\sqrt{\frac{5}{2}}\left(a_0 - k^2\,h_1\right)$	$\frac{1}{12}\,\sqrt{5}\left(a_0 + k^2\,h_1\right)$
$1^-_\cdot \mathcal{A}_S{}^{\perp h}\,\dagger^{\alpha}$	0	$-\frac{i\,a_0\,k}{8\sqrt{3}}$	$\frac{a_0+k^2\,h_1}{12\sqrt{2}}$	$\frac{1}{12}\,\sqrt{\frac{5}{2}}\left(a_0 - k^2\,h_1\right)$	$\frac{1}{24}\left(2\,a_0 - k^2\,h_1\right)$	$\frac{-4\,a_0+k^2\,h_1}{12\sqrt{2}}$
$1^-_\cdot \mathcal{A}_S{}^{\parallel h}\,\dagger^{\alpha}$	0	$\frac{i\,a_0\,k}{4\sqrt{6}}$	$\frac{1}{12}\left(a_0 - k^2\,h_1\right)$	$\frac{1}{12}\,\sqrt{5}\left(a_0 + k^2\,h_1\right)$	$\frac{-4\,a_0+k^2\,h_1}{12\sqrt{2}}$	$\frac{1}{12}\left(-a_0 - k^2\,h_1\right)$

	$2^+_\cdot h^\parallel{}_{\alpha\beta}$	$2^+_\cdot \mathcal{A}_S{}^{\parallel}{}_{\alpha\beta}$	$2^+_\cdot \mathcal{A}_S{}^{\perp}{}_{\alpha\beta}$	$2^-_\cdot \mathcal{A}_S{}^{\parallel}{}_{\alpha\beta\chi}$
$2^+_\cdot h^\parallel\,\dagger^{\alpha\beta}$	0	$-\frac{i\,a_0\,k}{4\sqrt{3}}$	$-\frac{i\,a_0\,k}{2\sqrt{6}}$	0
$2^+_\cdot \mathcal{A}_S{}^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{i\,a_0\,k}{4\sqrt{3}}$	$\frac{1}{6}\left(-3\,a_0 - k^2\,h_1\right)$	$-\frac{k^2\,h_1}{3\sqrt{2}}$	0
$2^+_\cdot \mathcal{A}_S{}^{\perp}\,\dagger^{\alpha\beta}$	$\frac{i\,a_0\,k}{2\sqrt{6}}$	$-\frac{k^2\,h_1}{3\sqrt{2}}$	$\frac{a_0}{4} - \frac{k^2\,h_1}{3}$	0
$2^-_\cdot \mathcal{A}_S{}^{\parallel}\,\dagger^{\alpha\beta\chi}$	0	0	0	$\frac{a_0}{4}$

	$3^-_\cdot \mathcal{A}_S{}^{\parallel}{}_{\alpha\beta\chi}$
$3^-_\cdot \mathcal{A}_S{}^{\parallel}\,\dagger^{\alpha\beta\chi}$	$-\frac{a_0}{2}$

Saturated propagator

	$0^+_\cdot \mathcal{T}^\perp$	$0^+_\cdot \mathcal{T}^\parallel$	$0^+_\cdot \mathcal{W}_S{}^{\perp t}$	$0^+_\cdot \mathcal{W}_S{}^{\parallel}$	$0^+_\cdot \mathcal{W}_S{}^{\perp h}$
$0^+_\cdot \mathcal{T}^\perp\,\dagger$	$-\frac{4\,k^2\left(a_0 - 6\,k^2\,h_1\right)}{3\,a_0^2\,(4+k^2)^2}$	0	$-\frac{8\,i\,k\left(a_0 - 6\,k^2\,h_1\right)}{3\,a_0^2\,(4+k^2)^2}$	$\frac{10\,i\,k}{12\,a_0+3\,a_0\,k^2}$	$\frac{4\,i\,\sqrt{2}\,k}{12\,a_0+3\,a_0\,k^2}$
$0^+_\cdot \mathcal{T}^\parallel\,\dagger$	0	$\frac{4\left(\frac{a_0}{k^2} + 2\,h_1\right)}{a_0^2}$	0	$-\frac{2\,i}{\sqrt{3}\,a_0\,k}$	$\frac{4\,i\,\sqrt{\frac{2}{3}}}{a_0\,k}$
$0^+_\cdot \mathcal{W}_S{}^{\perp t}\,\dagger$	$\frac{8\,i\,k\left(a_0 - 6\,k^2\,h_1\right)}{3\,a_0^2\,(4+k^2)^2}$	0	$-\frac{16\left(a_0 - 6\,k^2\,h_1\right)}{3\,a_0^2\,(4+k^2)^2}$	$\frac{20}{12\,a_0+3\,a_0\,k^2}$	$\frac{8\,\sqrt{2}}{12\,a_0+3\,a_0\,k^2}$
$0^+_\cdot \mathcal{W}_S{}^{\parallel}\,\dagger$	$-\frac{10\,i\,k}{12\,a_0+3\,a_0\,k^2}$	$\frac{2\,i}{\sqrt{3}\,a_0\,k}$	$\frac{20}{12\,a_0+3\,a_0\,k^2}$	0	0
$0^+_\cdot \mathcal{W}_S{}^{\perp h}\,\dagger$	$-\frac{4\,i\,\sqrt{2}\,k}{12\,a_0+3\,a_0\,k^2}$	$-\frac{4\,i\,\sqrt{\frac{2}{3}}}{a_0\,k}$	$\frac{8\,\sqrt{2}}{12\,a_0+3\,a_0\,k^2}$	0	0

	$1^+_\cdot \mathcal{W}_S{}^{\perp}{}_{\alpha\beta}$	$1^-_\cdot \mathcal{T}^\perp{}_\alpha$	$1^-_\cdot \mathcal{W}_S{}^{\perp t}{}_\alpha$	$1^-_\cdot \mathcal{W}_S{}^{\parallel t}{}_\alpha$	$1^-_\cdot \mathcal{W}_S{}^{\perp h}{}_\alpha$	$1^-_\cdot \mathcal{W}_S{}^{\parallel h}{}_\alpha$
$1^+_\cdot \mathcal{W}_S{}^{\perp}\,\dagger^{\alpha\beta}$	$\frac{4}{a_0}$	0	0	0	0	0
$1^-_\cdot \mathcal{T}^\perp\,\dagger^{\alpha}$	0	$\frac{2\,k^2\left(a_0 + 4\,k^2\,h_1\right)}{a_0^2\,(2+k^2)^2}$	$-\frac{2\,i\,\sqrt{\frac{2}{3}}\,k\left(a_0 + a_0\,k^2 - 4\,k^2\,h_1\right)}{a_0^2\,(2+k^2)^2}$	$\frac{i\,\sqrt{\frac{10}{3}}\,k}{a_0\,(2+k^2)}$	$\frac{2\,i\,k\left(a_0\,(4+k^2) + 8\,k^2\,h_1\right)}{\sqrt{3}\,a_0^2\,(2+k^2)^2}$	$-\frac{4\,i\,\sqrt{\frac{2}{3}}\,k}{a_0\,(2+k^2)}$
$1^-_\cdot \mathcal{W}_S{}^{\perp t}\,\dagger^{\alpha}$	0	$\frac{2\,i\,\sqrt{\frac{2}{3}}\,k\left(a_0 + a_0\,k^2 - 4\,k^2\,h_1\right)}{a_0^2\,(2+k^2)^2}$	$\frac{-4\,a_0\left(13+10\,k^2+k^4\right)+48\,k^2\,h_1}{9\,a_0^2\,(2+k^2)^2}$	$\frac{2\,\sqrt{5}\,(5+k^2)}{9\,a_0\,(2+k^2)}$	$\frac{2\,\sqrt{2}\left(a_0\,(4+k^2+k^4) + 24\,k^2\,h_1\right)}{9\,a_0^2\,(2+k^2)^2}$	$\frac{8+16\,k^2}{18\,a_0+9\,a_0\,k^2}$
$1^-_\cdot \mathcal{W}_S{}^{\parallel t}\,\dagger^{\alpha}$	0	$-\frac{i\,\sqrt{\frac{10}{3}}\,k}{a_0\,(2+k^2)}$	$\frac{2\,\sqrt{5}\,(5+k^2)}{9\,a_0\,(2+k^2)}$	$\frac{7}{9\,a_0}$	$-\frac{\sqrt{10}\,(-4+k^2)}{9\,a_0\,(2+k^2)}$	$\frac{4\,\sqrt{5}}{9\,a_0}$
$1^-_\cdot \mathcal{W}_S{}^{\perp h}\,\dagger^{\alpha}$	0	$-\frac{2\,i\,k\left(a_0\,(4+k^2) + 8\,k^2\,h_1\right)}{\sqrt{3}\,a_0^2\,(2+k^2)^2}$	$\frac{2\,\sqrt{2}\left(a_0\,(4+k^2+k^4) + 24\,k^2\,h_1\right)}{9\,a_0^2\,(2+k^2)^2}$	$-\frac{\sqrt{10}\,(-4+k^2)}{9\,a_0\,(2+k^2)}$	$\frac{-2\,a_0\left(-32-8\,k^2+k^4\right)+96\,k^2\,h_1}{9\,a_0^2\,(2+k^2)^2}$	$-\frac{8\,\sqrt{2}\,(5+k^2)}{9\,a_0\,(2+k^2)}$
$1^-_\cdot \mathcal{W}_S{}^{\parallel h}\,\dagger^{\alpha}$	0	$\frac{4\,i\,\sqrt{\frac{2}{3}}\,k}{a_0\,(2+k^2)}$	$\frac{8+16\,k^2}{18\,a_0+9\,a_0\,k^2}$	$\frac{4\,\sqrt{5}}{9\,a_0}$	$-\frac{8\,\sqrt{2}\,(5+k^2)}{9\,a_0\,(2+k^2)}$	$-\frac{4}{9\,a_0}$

	$2^+_\cdot \mathcal{T}^\parallel{}_{\alpha\beta}$	$2^+_\cdot \mathcal{W}_S{}^{\parallel}{}_{\alpha\beta}$	$2^+_\cdot \mathcal{W}_S{}^{\perp}{}_{\alpha\beta}$	$2^-_\cdot \mathcal{W}_S{}^{\parallel}{}_{\alpha\beta\chi}$
$2^+_\cdot \mathcal{T}^\parallel\,\dagger^{\alpha\beta}$	$\frac{8\left(-\frac{a_0}{k^2} + h_1\right)}{a_0^2}$	$\frac{4\,i}{\sqrt{3}\,a_0\,k}$	$-\frac{8\,i\,\sqrt{\frac{2}{3}}}{a_0\,k}$	0
$2^+_\cdot \mathcal{W}_S{}^{\parallel}\,\dagger^{\alpha\beta}$	$-\frac{4\,i}{\sqrt{3}\,a_0\,k}$	$-\frac{8}{3\,a_0}$	$\frac{4\,\sqrt{2}}{3\,a_0}$	0
$2^+_\cdot \mathcal{W}_S{}^{\perp}\,\dagger^{\alpha\beta}$	$\frac{8\,i\,\sqrt{\frac{2}{3}}}{a_0\,k}$	$\frac{4\,\sqrt{2}}{3\,a_0}$	$-\frac{4}{3\,a_0}$	0
$2^-_\cdot \mathcal{W}_S{}^{\parallel}\,\dagger^{\alpha\beta\chi}$	0	0	0	$\frac{4}{a_0}$

	$3^-_\cdot \mathcal{W}_S{}^{\parallel}{}_{\alpha\beta\chi}$
$3^-_\cdot \mathcal{W}_S{}^{\parallel}\,\dagger^{\alpha\beta\chi}$	$-\frac{2}{a_0}$

Source constraints

Spin-parity form	Covariant form	Multiplicities
$k\,{}^{0^+}_{\cdot}\mathcal{W}_S{}^{\perp t} + 2\,i\,{}^{0^+}_{\cdot}\mathcal{T}^{\perp} == 0$	$2\,\partial_\beta\partial_\alpha\mathcal{T}^{\alpha\beta} == \partial_\chi\partial_\beta\partial_\alpha\mathcal{W}^{\alpha\beta\chi}$	1
$2\,k\,{}^{1^-}_{\cdot}\mathcal{W}_S{}^{\perp h}{}^{\alpha} + k\,{}^{1^-}_{\cdot}\mathcal{W}_S{}^{\perp t}{}^{\alpha} + 6\,i\,{}^{1^-}_{\cdot}\mathcal{T}^{\perp}{}^{\alpha} == 0$	$2\,\partial_\chi\partial_\beta\partial^\alpha\mathcal{T}^{\beta\chi} + \partial_\delta\partial^\delta\partial_\chi\partial_\beta\mathcal{W}^{\beta\alpha\chi} == 2\,\partial_\chi\partial^\chi\partial_\beta\mathcal{T}^{\alpha\beta} + \partial_\delta\partial_\chi\partial_\beta\partial^\alpha\mathcal{W}^{\beta\chi\delta}$	3
Total expected gauge generators:		4

Massive spectrum

(No particles)

Massless spectrum

Massless particle

Pole residue:	$-\frac{p^2}{a_0} > 0$
Polarisations:	2

Unitarity conditions

$a_0 < 0$