PSALTer results panel

$$S = \iiint\!\!\iint \Big(-8\,a_0\,\mathcal{A}_{\alpha\chi\beta}\,\mathcal{A}^{\alpha\beta\chi} + 8\,a_0\,\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\mathcal{A}^{\chi}{}_{\beta\chi} + 16\,\mathcal{A}^{\alpha\beta\chi}\,\mathcal{W}_{\alpha\beta\chi} + 16\,\mathcal{T}^{\alpha\beta}\,h_{\alpha\beta} + 8\,a_0\,h^{\alpha\beta}\,\partial_\beta\mathcal{A}^{\chi}{}_{\alpha\chi} - 8\,a_0\,h^{\alpha\beta}\,\partial_\chi\mathcal{A}^{\chi}{}_{\alpha\beta} - 4\,a_0\,h^{\alpha}{}_{\alpha}\,\partial_\chi\mathcal{A}^{\beta\chi}{}_{\beta} + 4\,a_0\,h^{\alpha}{}_{\alpha}\,\partial_\chi\mathcal{A}^{\beta\chi}{}_{\beta} + h_4\,\partial_\beta\mathcal{A}^{\delta}{}_{\chi\delta}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta} - 2\,h_4\,\partial_\beta\mathcal{A}^{\delta}{}_{\chi\delta}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta} - h_4\,\partial_\chi\mathcal{A}^{\delta}{}_{\beta\delta}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta} + 2\,h_4\,\partial_\chi\mathcal{A}^{\delta}{}_{\beta\delta}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta} + h_4\,\partial_\alpha\mathcal{A}^{\delta}{}_{\chi\delta}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta} - h_4\,\partial_\chi\mathcal{A}^{\delta}{}_{\beta\delta}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha} + h_4\,\partial_\alpha\mathcal{A}^{\alpha\beta\chi}\,\partial_\delta\mathcal{A}_{\beta\chi}{}^{\delta} + 2\,h_4\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_\delta\mathcal{A}_{\beta\chi}{}^{\delta} - 2\,h_4\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\partial_\delta\mathcal{A}_{\beta\chi}{}^{\delta} - h_4\,\partial_\alpha\mathcal{A}^{\alpha\beta\chi}\,\partial_\delta\mathcal{A}_{\chi\beta}{}^{\delta} - 2\,h_4\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_\delta\mathcal{A}_{\chi\beta}{}^{\delta} + 2\,h_4\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\partial_\delta\mathcal{A}_{\chi\beta}{}^{\delta}\Big)\Big|_{x,\,y,\,z}\,dz\,dy\,dx\,dt$$

Wave operator

	$\mathcal{T}^{\perp}$	$h^{\parallel}$	$\mathcal{W}_{\mathcal{S}}{}^{\perp t}$	$\mathcal{W}_{\mathcal{S}}{}^{\parallel}$	$\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}}$
$\mathcal{T}^{\perp\dagger}$	0	0	0	$\frac{i\,a_0\,k}{4}$	$\frac{i\,a_0\,k}{8\sqrt{2}}$
$h^{\parallel\dagger}$	0	0	0	$-\frac{i\,a_0\,k}{4\sqrt{3}}$	$\frac{5\,i\,a_0\,k}{8\sqrt{6}}$
$\mathcal{W}_{\mathcal{S}}{}^{\perp t\dagger}$	0	0	0	$\frac{a_0}{2}$	$\frac{a_0}{4\sqrt{2}}$
$\mathcal{W}_{\mathcal{S}}{}^{\parallel\dagger}$	$-\frac{1}{4}\,i\,a_0\,k$	$\frac{i\,a_0\,k}{4\sqrt{3}}$	$\frac{a_0}{2}$	0	$\frac{a_0}{4\sqrt{2}}$
$\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}\dagger}$	$-\frac{i\,a_0\,k}{8\sqrt{2}}$	$-\frac{5\,i\,a_0\,k}{8\sqrt{6}}$	$\frac{a_0}{4\sqrt{2}}$	$\frac{a_0}{4\sqrt{2}}$	$-\frac{a_0}{4}$

	$\mathcal{W}_{\mathcal{S}}{}^{\perp}{}_{\alpha\beta}$	$h^{\perp}{}_{\alpha}$	$\mathcal{W}_{\mathcal{S}}{}^{\perp t}{}_{\alpha}$	$\mathcal{W}_{\mathcal{S}}{}^{\parallel t}{}_{\alpha}$	$\mathcal{W}_{\mathcal{S}}{}^{\perp\mathrm{th}}{}_{\alpha}$	$\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}}{}_{\alpha}$
$\mathcal{W}_{\mathcal{S}}{}^{\perp}{}_{\alpha\beta}$	$\frac{1}{16}\left(4\,a_0 - k^2\,h_4\right)$	0	0	0	0	0
$h^{\perp\dagger}{}^{\alpha}$	0	0	$-\frac{i\,a_0\,k}{4\sqrt{6}}$	$\frac{1}{4}\,i\,\sqrt{\frac{5}{6}}\,a_0\,k$	$\frac{i\,a_0\,k}{8\sqrt{3}}$	$-\frac{i\,a_0\,k}{4\sqrt{6}}$
$\mathcal{W}_{\mathcal{S}}{}^{\perp t\dagger}{}^{\alpha}$	0	$\frac{i\,a_0\,k}{4\sqrt{6}}$	$-\frac{a_0}{3}$	$\frac{\sqrt{5}\,a_0}{6}$	$\frac{a_0}{12\sqrt{2}}$	$\frac{a_0}{12}$
$\mathcal{W}_{\mathcal{S}}{}^{\parallel t\dagger}{}^{\alpha}$	0	$-\frac{1}{4}\,i\,\sqrt{\frac{5}{6}}\,a_0\,k$	$\frac{\sqrt{5}\,a_0}{6}$	$\frac{a_0}{3}$	$\frac{1}{12}\,\sqrt{\frac{5}{2}}\,a_0$	$\frac{\sqrt{5}\,a_0}{12}$
$\mathcal{W}_{\mathcal{S}}{}^{\perp\mathrm{th}\dagger}{}^{\alpha}$	0	$-\frac{i\,a_0\,k}{8\sqrt{3}}$	$\frac{a_0}{12\sqrt{2}}$	$\frac{1}{12}\,\sqrt{\frac{5}{2}}\,a_0$	$\frac{a_0}{12}$	$-\frac{a_0}{3\sqrt{2}}$
$\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}\dagger}{}^{\alpha}$	0	$\frac{i\,a_0\,k}{4\sqrt{6}}$	$\frac{a_0}{12}$	$\frac{\sqrt{5}\,a_0}{12}$	$-\frac{a_0}{3\sqrt{2}}$	$\frac{1}{48}\left(-4\,a_0 - 9\,k^2\,h_4\right)$

	$h^{\parallel}{}_{\alpha\beta}$	$\mathcal{W}_{\mathcal{S}}{}^{\parallel}{}_{\alpha\beta}$	$\mathcal{W}_{\mathcal{S}}{}^{\perp}{}_{\alpha\beta}$	$\mathcal{W}_{\mathcal{S}}{}^{\parallel}{}_{\alpha\beta\chi}$
$h^{\parallel\dagger}{}^{\alpha\beta}$	0	$-\frac{i\,a_0\,k}{4\sqrt{3}}$	$-\frac{i\,a_0\,k}{2\sqrt{6}}$	0
$\mathcal{W}_{\mathcal{S}}{}^{\parallel\dagger}{}^{\alpha\beta}$	$\frac{i\,a_0\,k}{4\sqrt{3}}$	$-\frac{a_0}{2}$	0	0
$\mathcal{W}_{\mathcal{S}}{}^{\perp\dagger}{}^{\alpha\beta}$	$\frac{i\,a_0\,k}{2\sqrt{6}}$	0	$\frac{a_0}{4}$	0
$\mathcal{W}_{\mathcal{S}}{}^{\parallel\dagger}{}^{\alpha\beta\chi}$	0	0	0	$\frac{a_0}{4}$

	$\mathcal{W}_{\mathcal{S}}{}^{\parallel}{}_{\alpha\beta\chi}$
$\mathcal{W}_{\mathcal{S}}{}^{\parallel\dagger}{}^{\alpha\beta\chi}$	$-\frac{a_0}{2}$

Saturated propagator

	$\mathcal{T}^{\perp}$	$\mathcal{T}^{\parallel}$	$\mathcal{W}_{\mathcal{S}}{}^{\perp t}$	$\mathcal{W}_{\mathcal{S}}{}^{\parallel}$	$\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}}$
$\mathcal{T}^{\perp\dagger}$	$-\frac{4\,k^2}{3\,a_0\,(4+k^2)^2}$	0	$-\frac{8\,i\,k}{3\,a_0\,(4+k^2)^2}$	$\frac{10\,i\,k}{12\,a_0+3\,a_0\,k^2}$	$\frac{4\,i\,\sqrt{2}\,k}{12\,a_0+3\,a_0\,k^2}$
$\mathcal{T}^{\parallel\dagger}$	0	$\frac{4}{a_0\,k^2}$	0	$-\frac{2\,i}{\sqrt{3}\,a_0\,k}$	$\frac{4\,i\,\sqrt{\frac{2}{3}}}{a_0\,k}$
$\mathcal{W}_{\mathcal{S}}{}^{\perp t\dagger}$	$\frac{8\,i\,k}{3\,a_0\,(4+k^2)^2}$	0	$-\frac{16}{3\,a_0\,(4+k^2)^2}$	$\frac{20}{12\,a_0+3\,a_0\,k^2}$	$\frac{8\,\sqrt{2}}{12\,a_0+3\,a_0\,k^2}$
$\mathcal{W}_{\mathcal{S}}{}^{\parallel\dagger}$	$-\frac{10\,i\,k}{12\,a_0+3\,a_0\,k^2}$	$\frac{2\,i}{\sqrt{3}\,a_0\,k}$	$\frac{20}{12\,a_0+3\,a_0\,k^2}$	0	0
$\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}\dagger}$	$-\frac{4\,i\,\sqrt{2}\,k}{12\,a_0+3\,a_0\,k^2}$	$-\frac{4\,i\,\sqrt{\frac{2}{3}}}{a_0\,k}$	$\frac{8\,\sqrt{2}}{12\,a_0+3\,a_0\,k^2}$	0	0

	$\mathcal{W}_{\mathcal{S}}{}^{\perp}{}_{\alpha\beta}$	$\mathcal{T}^{\perp}{}_{\alpha}$	$\mathcal{W}_{\mathcal{S}}{}^{\perp t}{}_{\alpha}$	$\mathcal{W}_{\mathcal{S}}{}^{\parallel t}{}_{\alpha}$	$\mathcal{W}_{\mathcal{S}}{}^{\perp\mathrm{th}}{}_{\alpha}$	$\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}}{}_{\alpha}$
$\mathcal{W}_{\mathcal{S}}{}^{\perp}{}_{\alpha\beta}$	$\frac{16}{4\,a_0 - k^2\,h_4}$	0	0	0	0	0
$\mathcal{T}^{\perp\dagger}{}^{\alpha\beta}$	0	$\frac{24\,a_0\,k^2+26\,k^4\,h_4}{a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$-\frac{2\,i\,\sqrt{\frac{2}{3}}\,k\left(12\,a_0\,(1+k^2)+k^2\,(5+9\,k^2)\,h_4\right)}{a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$\frac{i\,\sqrt{30}\,k\left(4\,a_0-k^2\,h_4\right)}{a_0\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$\frac{2\,i\,k\left(12\,a_0\,(4+k^2)+k^2\,(44+9\,k^2)\,h_4\right)}{\sqrt{3}\,a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$-\frac{16\,i\,\sqrt{6}\,k}{(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$
$\mathcal{W}_{\mathcal{S}}{}^{\perp t\dagger}{}^{\alpha}$	0	$\frac{2\,i\,\sqrt{\frac{2}{3}}\,k\left(12\,a_0\,(1+k^2)+k^2\,(5+9\,k^2)\,h_4\right)}{a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$-\frac{4\left(4\,a_0\,(13+10\,k^2+k^4)+k^2\,(3-2\,k^2-5\,k^4)\,h_4\right)}{3\,a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$\frac{2\,\sqrt{5}\left(4\,a_0\,(5+k^2)+3\,k^2\,(1+k^2)\,h_4\right)}{3\,a_0\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$\frac{2\,\sqrt{2}\left(4\,a_0\,(4+k^2+k^4)-k^2\,(12+29\,k^2+5\,k^4)\,h_4\right)}{3\,a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$\frac{32\,(1+2\,k^2)}{3\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$
$\mathcal{W}_{\mathcal{S}}{}^{\parallel t\dagger}{}^{\alpha}$	0	$\frac{i\,\sqrt{30}\,k\left(-4\,a_0+k^2\,h_4\right)}{a_0\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$\frac{2\,\sqrt{5}\left(4\,a_0\,(5+k^2)+3\,k^2\,(1+k^2)\,h_4\right)}{3\,a_0\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$\frac{3}{a_0}-\frac{80}{36\,a_0+3\,k^2\,h_4}$	$-\frac{\sqrt{10}\left(4\,a_0\,(-4+k^2)+3\,k^2\,(4+k^2)\,h_4\right)}{3\,a_0\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$\frac{16\,\sqrt{5}}{36\,a_0+3\,k^2\,h_4}$
$\mathcal{W}_{\mathcal{S}}{}^{\perp\mathrm{th}\dagger}{}^{\alpha}$	0	$-\frac{2\,i\,k\left(12\,a_0\,(4+k^2)+k^2\,(44+9\,k^2)\,h_4\right)}{\sqrt{3}\,a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$\frac{2\,\sqrt{2}\left(4\,a_0\,(4+k^2+k^4)-k^2\,(12+29\,k^2+5\,k^4)\,h_4\right)}{3\,a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$-\frac{\sqrt{10}\left(4\,a_0\,(-4+k^2)+3\,k^2\,(4+k^2)\,h_4\right)}{3\,a_0\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$\frac{-8\,a_0\left(-32-8\,k^2+k^4\right)+2\,k^2\,(4+k^2)\,(36+5\,k^2)\,h_4}{3\,a_0\,(2+k^2)^2\left(12\,a_0+k^2\,h_4\right)}$	$-\frac{32\,\sqrt{2}\,(5+k^2)}{3\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$
$\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}\dagger}{}^{\alpha}$	0	$\frac{16\,i\,\sqrt{6}\,k}{(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$\frac{32\,(1+2\,k^2)}{3\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$-\frac{16}{36\,a_0+3\,k^2\,h_4}$	$-\frac{32\,\sqrt{2}\,(5+k^2)}{3\,(2+k^2)\left(12\,a_0+k^2\,h_4\right)}$	$-\frac{16}{36\,a_0+3\,k^2\,h_4}$

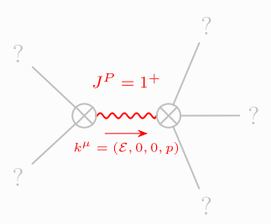
	$\mathcal{T}^{\parallel}{}_{\alpha\beta}$	$\mathcal{W}_{\mathcal{S}}{}^{\parallel}{}_{\alpha\beta}$	$\mathcal{W}_{\mathcal{S}}{}^{\perp}{}_{\alpha\beta}$	$\mathcal{W}_{\mathcal{S}}{}^{\parallel}{}_{\alpha\beta\chi}$
$\mathcal{T}^{\parallel\dagger}{}^{\alpha\beta}$	$-\frac{8}{a_0\,k^2}$	$\frac{4\,i}{\sqrt{3}\,a_0\,k}$	$-\frac{8\,i\,\sqrt{\frac{2}{3}}}{a_0\,k}$	0
$\mathcal{W}_{\mathcal{S}}{}^{\parallel\dagger}{}^{\alpha\beta}$	$-\frac{4\,i}{\sqrt{3}\,a_0\,k}$	$-\frac{8}{3\,a_0}$	$\frac{4\,\sqrt{2}}{3\,a_0}$	0
$\mathcal{W}_{\mathcal{S}}{}^{\perp\dagger}{}^{\alpha\beta}$	$\frac{8\,i\,\sqrt{\frac{2}{3}}}{a_0\,k}$	$\frac{4\,\sqrt{2}}{3\,a_0}$	$-\frac{4}{3\,a_0}$	0
$\mathcal{W}_{\mathcal{S}}{}^{\parallel\dagger}{}^{\alpha\beta\chi}$	0	0	0	$\frac{4}{a_0}$

	$\mathcal{W}_{\mathcal{S}}{}^{\parallel}{}_{\alpha\beta\chi}$
$\mathcal{W}_{\mathcal{S}}{}^{\parallel\dagger}{}^{\alpha\beta\chi}$	$-\frac{2}{a_0}$

Source constraints

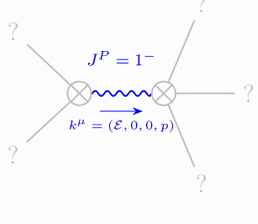
Spin-parity form	Covariant form	Multiplicities
$k\,\mathcal{W}_{\mathcal{S}}{}^{\perp t} + 2\,i\,\mathcal{T}^{\perp} == 0$	$2\,\partial_\beta\partial_\alpha\mathcal{T}^{\alpha\beta} == \partial_\chi\partial_\beta\partial_\alpha\mathcal{W}^{\alpha\beta\chi}$	1
$2\,k\,\mathcal{W}_{\mathcal{S}}{}^{\mathrm{th}\,\alpha}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

Massive spectrum



Massive particle

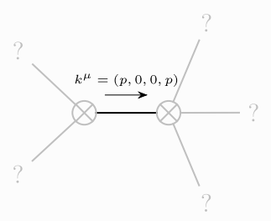
Pole residue:	$-\frac{16}{h_4} > 0$
Square mass:	$\frac{4\,a_0}{h_4} > 0$
Spin:	1
Parity:	Even



Massive particle

Pole residue:	$\frac{960\,a_0 - 304\,h_4}{6\,a_0\,h_4 - h_4^2} > 0$
Square mass:	$-\frac{12\,a_0}{h_4} > 0$
Spin:	1
Parity:	Odd

Massless spectrum



Massless particle

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

Gauge symmetries

(Not yet implemented in PSALTer)

Unitarity conditions

(Unitarity is demonstrably impossible)

Validity assumptions

(Not yet implemented in PSALTer)