PSALTer results panel

$$\mathcal{S} == \iiiint \Big(\rho\,\varphi + h^{\alpha\beta}\,\mathcal{T}_{\alpha\beta} + \frac{1}{2}\,\alpha_{2}\,\partial_{\alpha}\varphi\,\partial^{\alpha}\varphi + \frac{1}{8}\,\alpha_{1}\,(36\,(1 + 2\,\varphi)\,\partial_{\alpha}\partial^{\alpha}\varphi - 12\,\partial_{\alpha}h^{\beta}{}_{\beta}\,\partial^{\alpha}\varphi + 18\,\partial_{\alpha}\varphi\,\partial^{\alpha}\varphi + 12\,\partial^{\alpha}\varphi\,\partial_{\beta}h_{\alpha}{}^{\beta} - 4\,\partial_{\beta}\partial_{\alpha}h^{\alpha\beta} + 4\,\partial_{\beta}\partial^{\beta}h^{\alpha}{}_{\alpha} - \partial_{\beta}h^{\chi}{}_{\chi}\,\partial^{\beta}h^{\alpha}{}_{\alpha} + 2\,\partial^{\beta}h^{\alpha}{}_{\alpha}\,\partial_{\chi}h_{\beta}{}^{\chi} - 2\,\partial_{\beta}h_{\alpha\chi}\,\partial^{\chi}h^{\alpha\beta} + \partial_{\chi}h_{\alpha\beta}\,\partial^{\chi}h^{\alpha\beta}) -$$

$$\alpha_{6}\,(12\,\partial_{\beta}\partial_{\alpha}h^{\chi}{}_{\chi}\,\partial^{\beta}\partial^{\alpha}\varphi + 36\,\partial_{\beta}\partial_{\alpha}\varphi\,\partial^{\beta}\partial^{\alpha}\varphi - 12\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial_{\alpha}h_{\beta}{}^{\chi} - 12\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial_{\beta}h_{\alpha}{}^{\chi} + 12\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial^{\chi}h_{\alpha\beta} + 12\,\partial_{\alpha}\partial^{\alpha}\varphi\,(6\,\partial_{\beta}\partial^{\beta}\varphi - \partial_{\chi}\partial_{\beta}h^{\beta\chi} + \partial_{\chi}\partial^{\chi}h^{\beta}{}_{\beta}) +$$

$$\partial_{\chi}\partial_{\beta}h^{\delta}{}_{\delta}\,\partial^{\chi}\partial^{\beta}h^{\alpha}{}_{\alpha} + 2\,\partial^{\chi}\partial_{\alpha}h^{\alpha\beta}\,\partial_{\delta}\partial_{\beta}h_{\chi}{}^{\delta} + 2\,\partial^{\chi}\partial_{\alpha}h^{\alpha\beta}\,\partial_{\delta}\partial_{\chi}h_{\beta}{}^{\delta} - 4\,\partial^{\chi}\partial^{\beta}h^{\alpha}{}_{\alpha}\,\partial_{\delta}\partial_{\chi}h_{\beta}{}^{\delta} + \partial_{\chi}\partial^{\chi}h^{\alpha\beta}\,\partial_{\delta}\partial^{\delta}h_{\alpha\beta} - 4\,\partial^{\chi}\partial_{\alpha}h^{\alpha\beta}\,\partial_{\delta}\partial^{\delta}h_{\beta\chi} + 2\,\partial^{\chi}\partial^{\beta}h^{\alpha}{}_{\alpha}\,\partial_{\delta}\partial^{\delta}h_{\beta\chi}) +$$

$$\alpha_{5}\,(9\,\partial_{\alpha}\partial^{\alpha}\varphi\,(9\,\partial_{\beta}\partial^{\beta}\varphi - 2\,\partial_{\chi}\partial_{\beta}h^{\beta\chi} + 2\,\partial_{\chi}\partial^{\chi}h^{\beta}{}_{\beta}) + \partial_{\beta}\partial_{\alpha}h^{\alpha\beta}\,\partial_{\delta}\partial_{\chi}h^{\chi\delta} + \partial_{\beta}\partial^{\beta}h^{\alpha}{}_{\alpha}\,(-2\,\partial_{\delta}\partial_{\chi}h^{\chi\delta} + \partial_{\delta}\partial^{\delta}h^{\chi}{}_{\chi})) + \alpha_{7}\,(9\,\partial_{\alpha}\partial^{\alpha}\varphi\,\partial_{\beta}\partial^{\beta}\varphi + 6\,\partial_{\beta}\partial_{\alpha}h^{\chi}{}_{\chi}\,\partial^{\beta}\partial^{\alpha}\varphi + 18\,\partial_{\beta}\partial_{\alpha}\varphi\,\partial^{\beta}\partial^{\alpha}\varphi -$$

$$6\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial_{\alpha}h_{\beta}{}^{\chi} - 6\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial_{\beta}h_{\alpha}{}^{\chi} + 6\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial^{\chi}h_{\alpha\beta} + \partial_{\beta}\partial_{\alpha}h_{\chi\delta}\,\partial^{\delta}\partial^{\chi}h^{\alpha\beta} - \partial_{\chi}\partial_{\beta}h_{\alpha\delta}\,\partial^{\delta}\partial^{\chi}h^{\alpha\beta} - \partial_{\delta}\partial_{\beta}h_{\alpha\chi}\,\partial^{\delta}\partial^{\chi}h^{\alpha\beta} + \partial_{\delta}\partial_{\chi}h_{\alpha\beta}\,\partial^{\delta}\partial^{\chi}h^{\alpha\beta})\Big)[t, x, y, z]\,dz\,dy\,dx\,dt$$

Wave operator

$$\begin{array}{c|ccc}
 & {}^{0^+}\varphi & {}^{0^+}h^{\perp} & {}^{0^+}h^{\parallel} \\
\hline
{}^{0^+}\varphi\,\dagger & \frac{1}{4}\,k^{2}\,(9\,\alpha_{1} + 2\,(\alpha_{2} + 54\,(3\,\alpha_{5} - 4\,\alpha_{6} + \alpha_{7})\,k^{2})) & 0 & -\frac{3}{4}\,\sqrt{3}\,k^{2}\,(\alpha_{1} - 4\,(3\,\alpha_{5} - 4\,\alpha_{6} + \alpha_{7})\,k^{2}) \\
{}^{0^+}h^{\perp}\,\dagger & 0 & 0 & 0 \\
{}^{0^+}h^{\parallel}\,\dagger & -\frac{3}{4}\,\sqrt{3}\,k^{2}\,(\alpha_{1} - 4\,(3\,\alpha_{5} - 4\,\alpha_{6} + \alpha_{7})\,k^{2}) & 0 & -\frac{\alpha_{1}\,k^{2}}{4} + (3\,\alpha_{5} - 4\,\alpha_{6} + \alpha_{7})\,k^{4}
\end{array}$$

$$\begin{array}{c|c}
 & {}^{1^-}h^{\perp}{}_{\alpha} \\
\hline
{}^{1^-}h^{\perp}\,\dagger^{\alpha} & 0
\end{array}$$

$$\begin{array}{c|c}
 & {}^{2^+}h^{\parallel}{}_{\alpha\beta} \\
\hline
{}^{2^+}h^{\parallel}\,\dagger^{\alpha\beta} & \frac{\alpha_{1}\,k^{2}}{8} + (-\alpha_{6} + \alpha_{7})\,k^{4}
\end{array}$$

Saturated propagator

$$\begin{array}{c|ccc}
 & {}^{0^+}\rho & {}^{0^+}\mathcal{T}^{\perp} & {}^{0^+}\mathcal{T}^{\parallel} \\
\hline
{}^{0^+}\rho\,\dagger & \frac{2}{(18\,\alpha_{1} + \alpha_{2})\,k^{2}} & 0 & -\frac{6\,\sqrt{3}}{(18\,\alpha_{1} + \alpha_{2})\,k^{2}} \\
{}^{0^+}\mathcal{T}^{\perp}\,\dagger & 0 & 0 & 0 \\
{}^{0^+}\mathcal{T}^{\parallel}\,\dagger & -\frac{6\,\sqrt{3}}{(18\,\alpha_{1} + \alpha_{2})\,k^{2}} & 0 & -\frac{2\,(9\,\alpha_{1} + 2\,(\alpha_{2} + 54\,(3\,\alpha_{5} - 4\,\alpha_{6} + \alpha_{7})\,k^{2}))}{(18\,\alpha_{1} + \alpha_{2})\,k^{2}\,(\alpha_{1} - 4\,(3\,\alpha_{5} - 4\,\alpha_{6} + \alpha_{7})\,k^{2})}
\end{array}$$

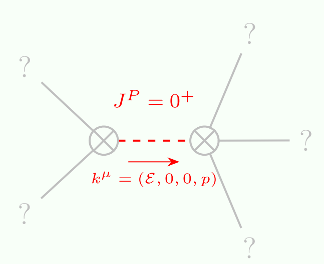
$$\begin{array}{c|c}
 & {}^{1^-}\mathcal{T}^{\perp}{}_{\alpha} \\
\hline
{}^{1^-}\mathcal{T}^{\perp}\,\dagger^{\alpha} & 0
\end{array}$$

$$\begin{array}{c|c}
 & {}^{2^+}\mathcal{T}^{\parallel}{}_{\alpha\beta} \\
\hline
{}^{2^+}\mathcal{T}^{\parallel}\,\dagger^{\alpha\beta} & \frac{8}{k^{2}\,(\alpha_{1} + 8\,(-\alpha_{6} + \alpha_{7})\,k^{2})}
\end{array}$$

Source constraints

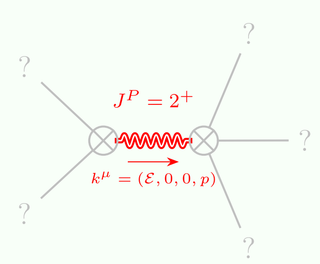
Spin-parity form	Covariant form	Multiplicities
${}^{0^+}\mathcal{T}^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\mathcal{T}^{\alpha\beta} == 0$	1
${}^{1^-}\mathcal{T}^{\perp\,\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\mathcal{T}^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\mathcal{T}^{\alpha\beta}$	3
Total expected gauge generators:		4

Massive spectrum



Massive particle

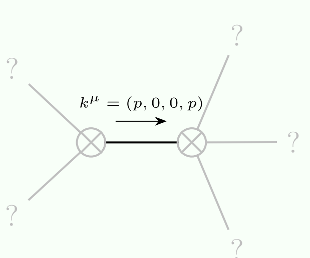
Pole residue:	$\frac{4}{\alpha_{1}} > 0$
Square mass:	$\frac{\alpha_{1}}{4\,(3\,\alpha_{5} - 4\,\alpha_{6} + \alpha_{7})} > 0$
Spin:	0
Parity:	Even



Massive particle

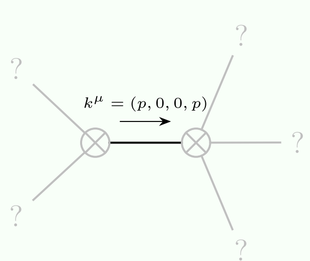
Pole residue:	$-\frac{8}{\alpha_{1}} > 0$
Square mass:	$\frac{\alpha_{1}}{8\,\alpha_{6} - 8\,\alpha_{7}} > 0$
Spin:	2
Parity:	Even

Massless spectrum



Massless particle

Pole residue:	$\frac{p^{2}}{\alpha_{1}} > 0$
Polarisations:	2



Massless particle

Pole residue:	$\frac{1 + 18\,p^{2}}{18\,\alpha_{1} + \alpha_{2}} > 0$
Polarisations:	1

Unitarity conditions

(Demonstrably impossible)