PSALTer results panel

$$\mathcal{S} == \iiiint (\rho\,\varphi + h^{\alpha\beta}\,\mathcal{T}_{\alpha\beta} + \frac{1}{2}\alpha_{2}\,\partial_{\alpha}\varphi\,\partial^{\alpha}\varphi +$$
$$\frac{1}{8}\alpha_{1}\,(24\,(1+\varphi)\,\partial_{\alpha}\partial^{\alpha}\varphi - 8\,\partial_{\alpha}h^{\beta}{}_{\beta}\,\partial^{\alpha}\varphi + 8\,\partial^{\alpha}\varphi\,\partial_{\beta}h_{\alpha}{}^{\beta} - 4\,\partial_{\beta}\partial_{\alpha}h^{\alpha\beta} + 4\,\partial_{\beta}\partial^{\beta}h^{\alpha}{}_{\alpha} - \partial_{\beta}h^{\chi}{}_{\chi}\,\partial^{\beta}h^{\alpha}{}_{\alpha} + 2\,\partial^{\beta}h^{\alpha}{}_{\alpha}\,\partial_{\chi}h_{\beta}{}^{\chi} - 2\,\partial_{\beta}h_{\alpha\chi}\,\partial^{\chi}h^{\alpha\beta} + \partial_{\chi}h_{\alpha\beta}\,\partial^{\chi}h^{\alpha\beta}) +$$
$$\alpha_{5}\,(-4\,\partial_{\beta}\partial_{\alpha}h^{\chi}{}_{\chi}\,\partial^{\beta}\partial^{\alpha}\varphi - 8\,\partial_{\beta}\partial_{\alpha}\varphi\,\partial^{\beta}\partial^{\alpha}\varphi + 4\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial_{\alpha}h_{\beta}{}^{\chi} + 4\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial_{\beta}h_{\alpha}{}^{\chi} - 4\,\partial^{\beta}\partial^{\alpha}\varphi\,\partial_{\chi}\partial^{\chi}h_{\alpha\beta} + 4\,\partial_{\alpha}\partial^{\alpha}\varphi\,(2\,\partial_{\beta}\partial^{\beta}\varphi - \partial_{\chi}\partial_{\beta}h^{\beta\chi} + \partial_{\chi}\partial^{\chi}h^{\beta}{}_{\beta}) - \partial_{\chi}\partial_{\beta}h^{\delta}{}_{\delta}\,\partial^{\chi}\partial^{\beta}h^{\alpha}{}_{\alpha} -$$
$$2\,\partial^{\chi}\partial_{\alpha}h^{\alpha\beta}\,\partial_{\delta}\partial_{\beta}h_{\chi}{}^{\delta} - 2\,\partial^{\chi}\partial_{\alpha}h^{\alpha\beta}\,\partial_{\delta}\partial_{\chi}h_{\beta}{}^{\delta} + 4\,\partial^{\chi}\partial^{\beta}h^{\alpha}{}_{\alpha}\,\partial_{\delta}\partial_{\chi}h_{\beta}{}^{\delta} + \partial_{\beta}\partial_{\alpha}h^{\alpha\beta}\,\partial_{\delta}\partial_{\chi}h^{\chi\delta} - 2\,\partial_{\beta}\partial^{\beta}h^{\alpha}{}_{\alpha}\,\partial_{\delta}\partial_{\chi}h^{\chi\delta} - \partial_{\chi}\partial^{\chi}h^{\alpha\beta}\,\partial_{\delta}\partial^{\delta}h_{\alpha\beta} + 4\,\partial^{\chi}\partial_{\alpha}h^{\alpha\beta}\,\partial_{\delta}\partial^{\delta}h_{\beta\chi} -$$
$$2\,\partial^{\chi}\partial^{\beta}h^{\alpha}{}_{\alpha}\,\partial_{\delta}\partial^{\delta}h_{\beta\chi} + \partial_{\beta}\partial^{\beta}h^{\alpha}{}_{\alpha}\,\partial_{\delta}\partial^{\delta}h^{\chi}{}_{\chi} + \partial_{\beta}\partial_{\alpha}h_{\chi\delta}\,\partial^{\delta}\partial^{\chi}h^{\alpha\beta} - \partial_{\chi}\partial_{\beta}h_{\alpha\delta}\,\partial^{\delta}\partial^{\chi}h^{\alpha\beta} - \partial_{\delta}\partial_{\beta}h_{\alpha\chi}\,\partial^{\delta}\partial^{\chi}h^{\alpha\beta} + \partial_{\delta}\partial_{\chi}h_{\alpha\beta}\,\partial^{\delta}\partial^{\chi}h^{\alpha\beta}))[t,x,y,z]\,dz\,dy\,dx\,dt$$

Wave operator

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

$$\begin{array}{c|c} & 1^{-}h^{\perp}{}_{\alpha} \\ \hline 1^{-}h^{\perp}\,\dagger^{\alpha} & 0 \end{array} \qquad \begin{array}{c|c} & 2^{+}h^{\parallel}{}_{\alpha\beta} \\ \hline 2^{+}h^{\parallel}\,\dagger^{\alpha\beta} & \frac{\alpha_{1}k^{2}}{8} \end{array}$$

Saturated propagator

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

$$\begin{array}{c|c} & 1^{-}\mathcal{T}^{\perp}{}_{\alpha} \\ \hline 1^{-}\mathcal{T}^{\perp}\,\dagger^{\alpha} & 0 \end{array} \qquad \begin{array}{c|c} & 2^{+}\mathcal{T}^{\parallel}{}_{\alpha\beta} \\ \hline 2^{+}\mathcal{T}^{\parallel}\,\dagger^{\alpha\beta} & \frac{8}{\alpha_{1}k^{2}} \end{array}$$

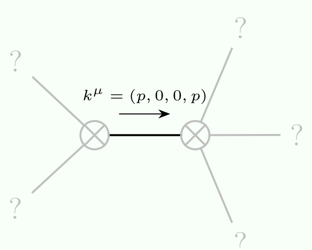
Source constraints

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

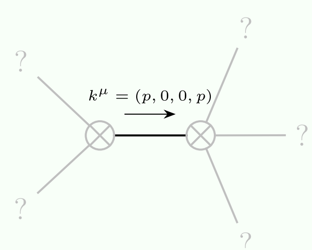
(No particles)

Massless spectrum



Massless particle

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



Massless particle

Pole residue:	$\frac{1+8p^{2}}{6\alpha_{1}+\alpha_{2}} > 0$
Polarisations:	1

Unitarity conditions

$\alpha_{1} > 0 \,\&\&\, \alpha_{2} > -6\,\alpha_{1}$