PSALTer results panel

$$
\begin{aligned}
\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}(12\partial_{\alpha}\partial^{\alpha}\varphi - 4\partial_{\alpha}h^{\beta}{}_{\beta}\partial^{\alpha}\varphi - 6\partial_{\alpha}\varphi\partial^{\alpha}\varphi + 4\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}(4\partial_{\beta}\partial_{\alpha}h^{\chi}{}_{\chi}\partial^{\beta}\partial^{\alpha}\varphi + 4\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_{\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}(\partial_{\alpha}\partial^{\alpha}\varphi(9\partial_{\beta}\partial^{\beta}\varphi - 6\partial_{\chi}\partial_{\beta}h^{\beta\chi} + 6\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}(\partial_{\alpha}\partial^{\alpha}\varphi\partial_{\beta}\partial^{\beta}\varphi + 2\partial_{\beta}\partial_{\alpha}h^{\chi}{}_{\chi}\partial^{\beta}\partial^{\alpha}\varphi + 2\partial_{\beta}\partial_{\alpha}\varphi\partial^{\beta}\partial^{\alpha}\varphi - \\
&2\partial^{\beta}\partial^{\alpha}\varphi\partial_{\chi}\partial_{\alpha}h_{\beta}{}^{\chi} - 2\partial^{\beta}\partial^{\alpha}\varphi\partial_{\chi}\partial_{\beta}h_{\alpha}{}^{\chi} + 2\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}))[t, x, y, z]\,dz\,dy\,dx\,dt
\end{aligned}
$$

Wave operator

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

$$
\begin{array}{c|c}
 & 1^{-}h^{\perp}{}_{\alpha} \\
\hline
1^{-}h^{\perp\dagger\alpha} & 0
\end{array}
\qquad
\begin{array}{c|c}
 & 2^{+}h^{\parallel}{}_{\alpha\beta} \\
\hline
2^{+}h^{\parallel\dagger\alpha\beta} & \frac{\alpha_{1}k^{2}}{8} + (-\alpha_{6} + \alpha_{7})k^{4}
\end{array}
$$

Saturated propagator

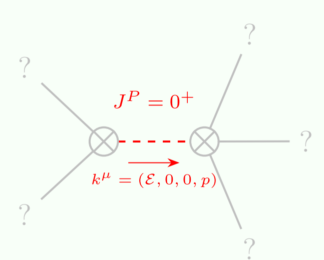
$$
\begin{array}{c|ccc}
 & 0^{+}\rho & 0^{+}\mathcal{T}^{\perp} & 0^{+}\mathcal{T}^{\parallel} \\
\hline
0^{+}\rho^{\dagger} & \frac{2}{\alpha_{2}k^{2}} & 0 & -\frac{2\sqrt{3}}{\alpha_{2}k^{2}} \\
0^{+}\mathcal{T}^{\perp\dagger} & 0 & 0 & 0 \\
0^{+}\mathcal{T}^{\parallel\dagger} & -\frac{2\sqrt{3}}{\alpha_{2}k^{2}}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

$$
\begin{array}{c|c}
 & 1^{-}\mathcal{T}^{\perp}{}_{\alpha} \\
\hline
1^{-}\mathcal{T}^{\perp\dagger\alpha} & 0
\end{array}
\qquad
\begin{array}{c|c}
 & 2^{+}\mathcal{T}^{\parallel}{}_{\alpha\beta} \\
\hline
2^{+}\mathcal{T}^{\parallel\dagger\alpha\beta} & \frac{8}{k^{2}(\alpha_{1}+8(-\alpha_{6}+\alpha_{7})k^{2})}
\end{array}
$$

Source constraints

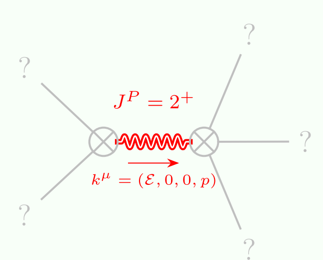
Spin-parity form	Covariant form	Multiplicities
$0^{+}\mathcal{T}^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\mathcal{T}^{\alpha\beta} == 0$	1
$1^{-}\mathcal{T}^{\perp\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\mathcal{T}^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\mathcal{T}^{\alpha\beta}$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

Massive spectrum



Massive particle

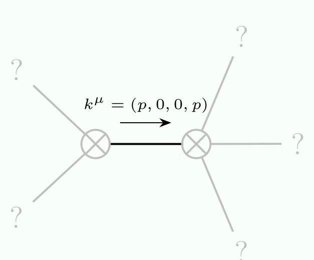
Pole residue:	$\frac{4}{\alpha_{1}} > 0$
Square mass:	$\frac{\alpha_{1}}{4(3\alpha_{5}-4\alpha_{6}+\alpha_{7})} > 0$
Spin:	0
Parity:	Even



Massive particle

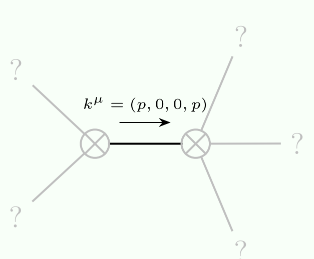
Pole residue:	$-\frac{8}{\alpha_{1}} > 0$
Square mass:	$\frac{\alpha_{1}}{8\alpha_{6}-8\alpha_{7}} > 0$
Spin:	2
Parity:	Even

Massless spectrum



Massless particle

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



Massless particle

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

Unitarity conditions

(Demonstrably impossible)