PSALTer results panel

$$S == \iiiint \Big(\mathcal{A}^{\alpha\beta\chi}\ \sigma_{\alpha\beta\chi} + f^{\alpha\beta}\ \tau(\Delta+\mathcal{K})_{\alpha\beta} - \frac{1}{2}\alpha_{0}\left(\mathcal{A}_{\alpha\chi\beta}\ \mathcal{A}^{\alpha\beta\chi} + \mathcal{A}^{\alpha\beta}{}_{\alpha}\ \mathcal{A}_{\beta}{}^{\chi}{}_{\chi} + 2\ f^{\alpha\beta}\ \partial_{\beta}\mathcal{A}_{\alpha}{}^{\chi}{}_{\chi} - 2\ \partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha} - 2\ f^{\alpha\beta}\ \partial_{\chi}\mathcal{A}_{\alpha}{}^{\chi}{}_{\beta} + 2\ f^{\alpha}{}_{\alpha}\ \partial_{\chi}\mathcal{A}^{\beta\chi}{}_{\beta} \right) - \alpha_{1}\left(\partial_{\chi}\mathcal{A}_{\beta}{}^{\delta}{}_{\delta}\, \partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha} + \left(\partial_{\alpha}\mathcal{A}^{\alpha\beta\chi} - 2\ \partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha} \right) \partial_{\delta}\mathcal{A}_{\beta}{}^{\delta}{}_{\chi} \right) + 4\ \alpha_{3}\ \partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha}\, \partial_{\delta}\mathcal{A}^{\chi\delta}{}_{\chi} - \alpha_{2}\left(\partial_{\chi}\mathcal{A}_{\delta}{}^{\zeta}{}_{\zeta}\, \partial^{\delta}\mathcal{A}^{\beta\chi}{}_{\beta} + \left(\partial_{\beta}\mathcal{A}^{\beta\chi\delta} - 2\ \partial^{\delta}\mathcal{A}^{\beta\chi}{}_{\beta} \right) \partial_{\zeta}\mathcal{A}_{\delta}{}^{\zeta}{}_{\chi} \right) \Big)[t,\ x,\ y,\ z]\ dz\ dy\ dx\ dt$$

Wave operator

$$\begin{array}{c|cccc}
 & {}^{0^+}\mathcal{A}^{\parallel} & {}^{0^+}f^{\parallel} & {}^{0^+}f^{\perp} & {}^{0^-}\mathcal{A}^{\parallel} \\ \hline
{}^{0^+}\mathcal{A}^{\parallel}\,\dagger & \frac{1}{2}\left(\alpha_{0} + 4\left(\alpha_{1} + \alpha_{2} + 3\ \alpha_{3}\right)k^{2}\right) & -\frac{i\,\alpha_{0}\,k}{\sqrt{2}} & 0 & 0 \\
{}^{0^+}f^{\parallel}\,\dagger & \frac{i\,\alpha_{0}\,k}{\sqrt{2}} & 0 & 0 & 0 \\
{}^{0^+}f^{\perp}\,\dagger & 0 & 0 & 0 & 0 \\
{}^{0^-}\mathcal{A}^{\parallel}\,\dagger & 0 & 0 & 0 & \frac{\alpha_{0}}{2}
\end{array}$$

$$\begin{array}{c|ccccccc}
 & {}^{1^+}\mathcal{A}^{\parallel}{}_{\alpha\beta} & {}^{1^+}\mathcal{A}^{\perp}{}_{\alpha\beta} & {}^{1^+}f^{\parallel}{}_{\alpha\beta} & {}^{1^-}\mathcal{A}^{\parallel}{}_{\alpha} & {}^{1^-}\mathcal{A}^{\perp}{}_{\alpha} & {}^{1^-}f^{\parallel}{}_{\alpha} & {}^{1^-}f^{\perp}{}_{\alpha} \\ \hline
{}^{1^+}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta} & \frac{1}{4}\left(\alpha_{0} + 2\left(\alpha_{1} - \alpha_{2}\right)k^{2}\right) & \frac{\alpha_{0}}{2\sqrt{2}} & \frac{i\,\alpha_{0}\,k}{2\sqrt{2}} & 0 & 0 & 0 & 0 \\
{}^{1^+}\mathcal{A}^{\perp}\,\dagger^{\alpha\beta} & \frac{\alpha_{0}}{2\sqrt{2}} & 0 & 0 & 0 & 0 & 0 & 0 \\
{}^{1^+}f^{\parallel}\,\dagger^{\alpha\beta} & -\frac{i\,\alpha_{0}\,k}{2\sqrt{2}} & 0 & 0 & 0 & 0 & 0 & 0 \\
{}^{1^-}\mathcal{A}^{\parallel}\,\dagger^{\alpha} & 0 & 0 & 0 & \frac{\alpha_{0}}{4} + \alpha_{1}\,k^{2} & -\frac{\alpha_{0}}{2\sqrt{2}} & 0 & -\frac{1}{2}\,i\,\alpha_{0}\,k \\
{}^{1^-}\mathcal{A}^{\perp}\,\dagger^{\alpha} & 0 & 0 & 0 & -\frac{\alpha_{0}}{2\sqrt{2}} & 0 & 0 & 0 \\
{}^{1^-}f^{\parallel}\,\dagger^{\alpha} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
{}^{1^-}f^{\perp}\,\dagger^{\alpha} & 0 & 0 & 0 & \frac{i\,\alpha_{0}\,k}{2} & 0 & 0 & 0
\end{array}$$

$$\begin{array}{c|ccc}
 & {}^{2^+}\mathcal{A}^{\parallel}{}_{\alpha\beta} & {}^{2^+}f^{\parallel}{}_{\alpha\beta} & {}^{2^-}\mathcal{A}^{\parallel}{}_{\alpha\beta\chi} \\ \hline
{}^{2^+}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta} & \frac{1}{4}\left(-\alpha_{0} + 2\left(\alpha_{1} + \alpha_{2}\right)k^{2}\right) & \frac{i\,\alpha_{0}\,k}{2\sqrt{2}} & 0 \\
{}^{2^+}f^{\parallel}\,\dagger^{\alpha\beta} & -\frac{i\,\alpha_{0}\,k}{2\sqrt{2}} & 0 & 0 \\
{}^{2^-}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta\chi} & 0 & 0 & -\frac{\alpha_{0}}{4}
\end{array}$$

Saturated propagator

$$\begin{array}{c|cccc}
 & {}^{0^+}\sigma^{\parallel} & {}^{0^+}\tau^{\parallel} & {}^{0^+}\tau^{\perp} & {}^{0^-}\sigma^{\parallel} \\ \hline
{}^{0^+}\sigma^{\parallel}\,\dagger & 0 & -\frac{i\sqrt{2}}{\alpha_{0}\,k} & 0 & 0 \\
{}^{0^+}\tau^{\parallel}\,\dagger & \frac{i\sqrt{2}}{\alpha_{0}\,k} & -\frac{4\left(\alpha_{1}+\alpha_{2}+3\ \alpha_{3}\right)+\frac{\alpha_{0}}{k^{2}}}{\alpha_{0}^{2}} & 0 & 0 \\
{}^{0^+}\tau^{\perp}\,\dagger & 0 & 0 & 0 & 0 \\
{}^{0^-}\sigma^{\parallel}\,\dagger & 0 & 0 & 0 & \frac{2}{\alpha_{0}}
\end{array}$$

$$\begin{array}{c|ccccccc}
 & {}^{1^+}\sigma^{\parallel}{}_{\alpha\beta} & {}^{1^+}\sigma^{\perp}{}_{\alpha\beta} & {}^{1^+}\tau^{\parallel}{}_{\alpha\beta} & {}^{1^-}\sigma^{\parallel}{}_{\alpha} & {}^{1^-}\sigma^{\perp}{}_{\alpha} & {}^{1^-}\tau^{\parallel}{}_{\alpha} & {}^{1^-}\tau^{\perp}{}_{\alpha} \\ \hline
{}^{1^+}\sigma^{\parallel}\,\dagger^{\alpha\beta} & 0 & \frac{2\sqrt{2}}{\alpha_{0}+\alpha_{0}\,k^{2}} & \frac{2\,i\sqrt{2}\,k}{\alpha_{0}+\alpha_{0}\,k^{2}} & 0 & 0 & 0 & 0 \\
{}^{1^+}\sigma^{\perp}\,\dagger^{\alpha\beta} & \frac{2\sqrt{2}}{\alpha_{0}+\alpha_{0}\,k^{2}} & -\frac{2\left(\alpha_{0}+2\left(\alpha_{1}-\alpha_{2}\right)k^{2}\right)}{\alpha_{0}^{2}\left(1+k^{2}\right)^{2}} & -\frac{2\,i\,k\left(\alpha_{0}+2\left(\alpha_{1}-\alpha_{2}\right)k^{2}\right)}{\alpha_{0}^{2}\left(1+k^{2}\right)^{2}} & 0 & 0 & 0 & 0 \\
{}^{1^+}\tau^{\parallel}\,\dagger^{\alpha\beta} & -\frac{2\,i\sqrt{2}\,k}{\alpha_{0}+\alpha_{0}\,k^{2}} & \frac{2\,i\,k\left(\alpha_{0}+2\left(\alpha_{1}-\alpha_{2}\right)k^{2}\right)}{\alpha_{0}^{2}\left(1+k^{2}\right)^{2}} & -\frac{2\,k^{2}\left(\alpha_{0}+2\left(\alpha_{1}-\alpha_{2}\right)k^{2}\right)}{\alpha_{0}^{2}\left(1+k^{2}\right)^{2}} & 0 & 0 & 0 & 0 \\
{}^{1^-}\sigma^{\parallel}\,\dagger^{\alpha} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{2}}{\alpha_{0}+2\,\alpha_{0}\,k^{2}} & 0 & -\frac{4\,i\,k}{\alpha_{0}+2\,\alpha_{0}\,k^{2}} \\
{}^{1^-}\sigma^{\perp}\,\dagger^{\alpha} & 0 & 0 & 0 & -\frac{2\sqrt{2}}{\alpha_{0}+2\,\alpha_{0}\,k^{2}} & -\frac{2\left(\alpha_{0}+4\,\alpha_{1}\,k^{2}\right)}{\left(\alpha_{0}+2\,\alpha_{0}\,k^{2}\right)^{2}} & 0 & -\frac{2\,i\sqrt{2}\,k\left(\alpha_{0}+4\,\alpha_{1}\,k^{2}\right)}{\left(\alpha_{0}+2\,\alpha_{0}\,k^{2}\right)^{2}} \\
{}^{1^-}\tau^{\parallel}\,\dagger^{\alpha} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
{}^{1^-}\tau^{\perp}\,\dagger^{\alpha} & 0 & 0 & 0 & \frac{4\,i\,k}{\alpha_{0}+2\,\alpha_{0}\,k^{2}} & \frac{2\,i\sqrt{2}\,k\left(\alpha_{0}+4\,\alpha_{1}\,k^{2}\right)}{\left(\alpha_{0}+2\,\alpha_{0}\,k^{2}\right)^{2}} & 0 & -\frac{4\,k^{2}\left(\alpha_{0}+4\,\alpha_{1}\,k^{2}\right)}{\left(\alpha_{0}+2\,\alpha_{0}\,k^{2}\right)^{2}}
\end{array}$$

$$\begin{array}{c|ccc}
 & {}^{2^+}\sigma^{\parallel}{}_{\alpha\beta} & {}^{2^+}\tau^{\parallel}{}_{\alpha\beta} & {}^{2^-}\sigma^{\parallel}{}_{\alpha\beta\chi} \\ \hline
{}^{2^+}\sigma^{\parallel}\,\dagger^{\alpha\beta} & 0 & \frac{2\,i\sqrt{2}}{\alpha_{0}\,k} & 0 \\
{}^{2^+}\tau^{\parallel}\,\dagger^{\alpha\beta} & -\frac{2\,i\sqrt{2}}{\alpha_{0}\,k} & \frac{2\left(\alpha_{0}-2\left(\alpha_{1}+\alpha_{2}\right)k^{2}\right)}{\alpha_{0}^{2}\,k^{2}} & 0 \\
{}^{2^-}\sigma^{\parallel}\,\dagger^{\alpha\beta\chi} & 0 & 0 & -\frac{4}{\alpha_{0}}
\end{array}$$

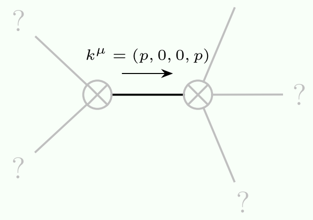
Source constraints

Spin-parity form	Covariant form	Multiplicities
${}^{0^+}\tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$2\,i\,k\ {}^{1^-}\sigma^{\perp\alpha} + {}^{1^-}\tau^{\perp\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial_{\beta}\sigma^{\beta\alpha\chi}$	3
${}^{1^-}\tau^{\parallel\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau(\Delta+\mathcal{K})^{\beta\alpha}$	3
$i\,k\ {}^{1^+}\sigma^{\perp\alpha\beta} + {}^{1^+}\tau^{\parallel\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\ \partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\chi\alpha\beta} == \partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 2\ \partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta}$	3
Total expected gauge generators:		10

Massive spectrum

(No particles)

Massless spectrum



Massless particle

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

Unitarity conditions

$\alpha_{0} > 0$