PSALTer results panel

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

Wave operator

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

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

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

Saturated propagator

$$\begin{array}{c|cccc}
 & {}^{0^+}_{\bullet}\sigma^{\parallel} & {}^{0^+}_{\bullet}\tau^{\parallel} & {}^{0^+}_{\bullet}\tau^{\perp} & {}^{0^-}_{\bullet}\sigma^{\parallel} \\
\hline
{}^{0^+}_{\bullet}\sigma^{\parallel}\,\dagger & \frac{8\beta_{1}}{\alpha_{0}^{2}-4\alpha_{0}\beta_{1}} & -\frac{i\sqrt{2}}{\alpha_{0}k} & 0 & 0 \\
{}^{0^+}_{\bullet}\tau^{\parallel}\,\dagger & \frac{i\sqrt{2}}{\alpha_{0}k} & -\frac{1}{\alpha_{0}k^{2}} & 0 & 0 \\
{}^{0^+}_{\bullet}\tau^{\perp}\,\dagger & 0 & 0 & 0 & 0 \\
{}^{0^-}_{\bullet}\sigma^{\parallel}\,\dagger & 0 & 0 & 0 & \frac{2}{\alpha_{0}-4\beta_{1}+2\alpha_{3}k^{2}}
\end{array}$$

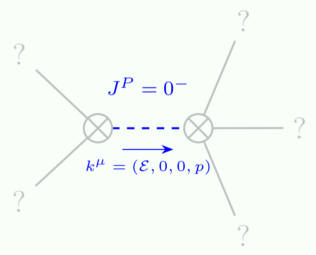
$$\begin{array}{c|ccccccc}
 & {}^{1^+}_{\bullet}\sigma^{\parallel}{}_{\alpha\beta} & {}^{1^+}_{\bullet}\sigma^{\perp}{}_{\alpha\beta} & {}^{1^+}_{\bullet}\tau^{\parallel}{}_{\alpha\beta} & {}^{1^-}_{\bullet}\sigma^{\parallel}{}_{\alpha} & {}^{1^-}_{\bullet}\sigma^{\perp}{}_{\alpha} & {}^{1^-}_{\bullet}\tau^{\parallel}{}_{\alpha}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

$$\begin{array}{c|ccc}
 & {}^{2^+}_{\bullet}\sigma^{\parallel}{}_{\alpha\beta} & {}^{2^+}_{\bullet}\tau^{\parallel}{}_{\alpha\beta} & {}^{2^-}_{\bullet}\sigma^{\parallel}{}_{\alpha\beta\chi} \\
\hline
{}^{2^+}_{\bullet}\sigma^{\parallel}\,\dagger^{\alpha\beta} & -\frac{16\beta_{1}}{\alpha_{0}^{2}-4\alpha_{0}\beta_{1}} & \frac{2i\sqrt{2}}{\alpha_{0}k} & 0 \\
{}^{2^+}_{\bullet}\tau^{\parallel}\,\dagger^{\alpha\beta} & -\frac{2i\sqrt{2}}{\alpha_{0}k} & \frac{2}{\alpha_{0}k^{2}} & 0 \\
{}^{2^-}_{\bullet}\sigma^{\parallel}\,\dagger^{\alpha\beta\chi} & 0 & 0 & \frac{1}{-\frac{\alpha_{0}}{4}+\beta_{1}}
\end{array}$$

Source constraints

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

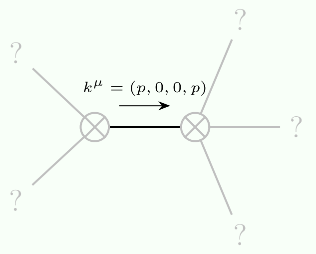
Massive spectrum



Massive particle

Pole residue:	$-\frac{1}{\alpha_{3}} > 0$
Square mass:	$-\frac{\alpha_{0}-4\beta_{1}}{2\alpha_{3}} > 0$
Spin:	0
Parity:	Odd

Massless spectrum



Massless particle

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

Unitarity conditions

$\alpha_{0} > 0 \;\&\&\; \alpha_{3} < 0 \;\&\&\; \beta_{1} < \frac{\alpha_{0}}{4}$