PSALTer results panel

$$S == \iiiint\Big(-\tfrac{1}{2}(\alpha_{0} - 4\beta_{1})\,\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\mathcal{A}_{\beta}{}^{\chi}{}_{\chi} + \mathcal{A}^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi} + f^{\alpha\beta}\,\tau(\Delta+\mathcal{K})_{\alpha\beta} - \alpha_{0}\, f^{\alpha\beta}\,\partial_{\beta}\mathcal{A}_{\alpha}{}^{\chi}{}_{\chi} + \alpha_{0}\,\partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha} - 4\beta_{1}\,\mathcal{A}_{\alpha}{}^{\chi}{}_{\chi}\,\partial_{\beta}f^{\alpha\beta} + 4\beta_{1}\,\mathcal{A}_{\beta}{}^{\chi}{}_{\chi}\,\partial^{\beta}f^{\alpha}{}_{\alpha} - 2\beta_{1}\,\partial_{\beta}f^{\chi}{}_{\chi}\,\partial^{\beta}f^{\alpha}{}_{\alpha} + \alpha_{0}\, f^{\alpha\beta}\,\partial_{\chi}\mathcal{A}_{\alpha}{}^{\chi}{}_{\beta} - \alpha_{0}\, f^{\alpha}{}_{\alpha}\,\partial_{\chi}\mathcal{A}^{\beta\chi}{}_{\beta} - 2\beta_{1}\,\partial_{\beta}f^{\alpha\beta}\,\partial_{\chi}f_{\alpha}{}^{\chi} + 4\beta_{1}\,\partial^{\beta}f^{\alpha}{}_{\alpha}\,\partial_{\chi}f_{\beta}{}^{\chi} - 2\beta_{1}\,\partial_{\alpha}f_{\beta\chi}\,\partial^{\chi}f^{\alpha\beta} - \beta_{1}\,\partial_{\alpha}f_{\chi\beta}\,\partial^{\chi}f^{\alpha\beta} + \beta_{1}\,\partial_{\beta}f_{\alpha\chi}\,\partial^{\chi}f^{\alpha\beta} + \beta_{1}\,\partial_{\chi}f_{\alpha\beta}\,\partial^{\chi}f^{\alpha\beta} + \beta_{1}\,\partial_{\chi}f_{\beta\alpha}\,\partial^{\chi}f^{\alpha\beta} - \tfrac{1}{2}\,\mathcal{A}_{\alpha\chi\beta}\Big((\alpha_{0} - 4\beta_{1})\,\mathcal{A}^{\alpha\beta\chi} - 8\beta_{1}\,\partial^{\chi}f^{\alpha\beta}\Big) + \tfrac{2}{3}\,\alpha_{6}\,\partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\partial_{\delta}\mathcal{A}^{\chi\delta}{}_{\chi}\Big)[t, x, y, z]\,dz\,dy\,dx\,dt$$

Wave operator

	${}^{0^+}\mathcal{A}^{\parallel}$	${}^{0^+}f^{\parallel}$	${}^{0^+}f^{\perp}$	${}^{0^-}\mathcal{A}^{\parallel}$
${}^{0^+}\mathcal{A}^{\parallel}\dagger$	$\frac{\alpha_{0}}{2} - 2\beta_{1} + \alpha_{6}k^2$	$-\frac{i(\alpha_{0}-4\beta_{1})k}{\sqrt{2}}$	0	0
${}^{0^+}f^{\parallel}\dagger$	$\frac{i(\alpha_{0}-4\beta_{1})k}{\sqrt{2}}$	$-4\beta_{1}k^2$	0	0
${}^{0^+}f^{\perp}\dagger$	0	0	0	0
${}^{0^-}\mathcal{A}^{\parallel}\dagger$	0	0	0	$\frac{1}{2}(\alpha_{0} - 4\beta_{1})$

	${}^{1^+}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	${}^{1^+}\mathcal{A}^{\perp}{}_{\alpha\beta}$	${}^{1^+}f^{\parallel}{}_{\alpha\beta}$	${}^{1^-}\mathcal{A}^{\parallel}{}_{\alpha}$	${}^{1^-}\mathcal{A}^{\perp}{}_{\alpha}$	${}^{1^-}f^{\parallel}{}_{\alpha}$	${}^{1^-}f^{\perp}{}_{\alpha}$
${}^{1^+}\mathcal{A}^{\parallel}\dagger^{\alpha\beta}$	$\frac{1}{4}(\alpha_{0} - 4\beta_{1})$	$\frac{\alpha_{0}-4\beta_{1}}{2\sqrt{2}}$	$\frac{i(\alpha_{0}-4\beta_{1})k}{2\sqrt{2}}$	0	0	0	0
${}^{1^+}\mathcal{A}^{\perp}\dagger^{\alpha\beta}$	$\frac{\alpha_{0}-4\beta_{1}}{2\sqrt{2}}$	0	0	0	0	0	0
${}^{1^+}f^{\parallel}\dagger^{\alpha\beta}$	$-\frac{i(\alpha_{0}-4\beta_{1})k}{2\sqrt{2}}$	0	0	0	0	0	0
${}^{1^-}\mathcal{A}^{\parallel}\dagger^{\alpha}$	0	0	0	$\frac{1}{4}(\alpha_{0} - 4\beta_{1})$	$-\frac{\alpha_{0}-4\beta_{1}}{2\sqrt{2}}$	0	$-\frac{1}{2}i(\alpha_{0} - 4\beta_{1})k$
${}^{1^-}\mathcal{A}^{\perp}\dagger^{\alpha}$	0	0	0	$-\frac{\alpha_{0}-4\beta_{1}}{2\sqrt{2}}$	0	0	0
${}^{1^-}f^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0
${}^{1^-}f^{\perp}\dagger^{\alpha}$	0	0	0	$\frac{1}{2}i(\alpha_{0} - 4\beta_{1})k$	0	0	0

	${}^{2^+}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	${}^{2^+}f^{\parallel}{}_{\alpha\beta}$	${}^{2^-}\mathcal{A}^{\parallel}{}_{\alpha\beta\chi}$
${}^{2^+}\mathcal{A}^{\parallel}\dagger^{\alpha\beta}$	$-\frac{\alpha_{0}}{4} + \beta_{1}$	$\frac{i(\alpha_{0}-4\beta_{1})k}{2\sqrt{2}}$	0
${}^{2^+}f^{\parallel}\dagger^{\alpha\beta}$	$-\frac{i(\alpha_{0}-4\beta_{1})k}{2\sqrt{2}}$	$2\beta_{1}k^2$	0
${}^{2^-}\mathcal{A}^{\parallel}\dagger^{\alpha\beta\chi}$	0	0	$-\frac{\alpha_{0}}{4} + \beta_{1}$

Saturated propagator

	${}^{0^+}\sigma^{\parallel}$	${}^{0^+}\tau^{\parallel}$	${}^{0^+}\tau^{\perp}$	${}^{0^-}\sigma^{\parallel}$
${}^{0^+}\sigma^{\parallel}\dagger$	$\frac{8\beta_{1}}{\alpha_{0}^2-4\alpha_{0}\beta_{1}+8\alpha_{6}\beta_{1}k^2}$	$-\frac{i\sqrt{2}(\alpha_{0}-4\beta_{1})}{\alpha_{0}(\alpha_{0}-4\beta_{1})k+8\alpha_{6}\beta_{1}k^3}$	0	0
${}^{0^+}\tau^{\parallel}\dagger$	$\frac{i\sqrt{2}(\alpha_{0}-4\beta_{1})}{\alpha_{0}(\alpha_{0}-4\beta_{1})k+8\alpha_{6}\beta_{1}k^3}$	$-\frac{\alpha_{0}-4\beta_{1}+2\alpha_{6}k^2}{k^2(\alpha_{0}^2-4\alpha_{0}\beta_{1}+8\alpha_{6}\beta_{1}k^2)}$	0	0
${}^{0^+}\tau^{\perp}\dagger$	0	0	0	0
${}^{0^-}\sigma^{\parallel}\dagger$	0	0	0	$\frac{2}{\alpha_{0}-4\beta_{1}}$

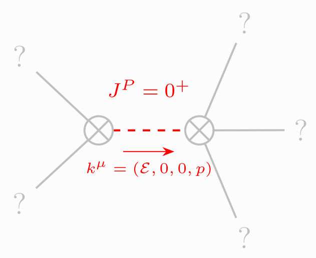
	${}^{1^+}\sigma^{\parallel}{}_{\alpha\beta}$	${}^{1^+}\sigma^{\perp}{}_{\alpha\beta}$	${}^{1^+}\tau^{\parallel}{}_{\alpha\beta}$	${}^{1^-}\sigma^{\parallel}{}_{\alpha}$	${}^{1^-}\sigma^{\perp}{}_{\alpha}$	${}^{1^-}\tau^{\parallel}{}_{\alpha}$	${}^{1^-}\tau^{\perp}{}_{\alpha}$
${}^{1^+}\sigma^{\parallel}\dagger^{\alpha\beta}$	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
${}^{1^+}\sigma^{\perp}\dagger^{\alpha\beta}$	$\frac{2\sqrt{2}}{(\alpha_{0}-4\beta_{1})(1+k^2)}$	$-\frac{2}{(\alpha_{0}-4\beta_{1})(1+k^2)^2}$	$-\frac{2ik}{(\alpha_{0}-4\beta_{1})(1+k^2)^2}$	0	0	0	0
${}^{1^+}\tau^{\parallel}\dagger^{\alpha\beta}$	$-\frac{2i\sqrt{2}k}{(\alpha_{0}-4\beta_{1})(1+k^2)}$	$\frac{2ik}{(\alpha_{0}-4\beta_{1})(1+k^2)^2}$	$-\frac{2k^2}{(\alpha_{0}-4\beta_{1})(1+k^2)^2}$	0	0	0	0
${}^{1^-}\sigma^{\parallel}\dagger^{\alpha}$	0	0	0	0	$-\frac{2\sqrt{2}}{(\alpha_{0}-4\beta_{1})(1+2k^2)}$	0	$-\frac{4ik}{(\alpha_{0}-4\beta_{1})(1+2k^2)}$
${}^{1^-}\sigma^{\perp}\dagger^{\alpha}$	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	$-\frac{2i\sqrt{2}k}{(\alpha_{0}-4\beta_{1})(1+2k^2)^2}$
${}^{1^-}\tau^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0
${}^{1^-}\tau^{\perp}\dagger^{\alpha}$	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	$-\frac{4k^2}{(\alpha_{0}-4\beta_{1})(1+2k^2)^2}$

	${}^{2^+}\sigma^{\parallel}{}_{\alpha\beta}$	${}^{2^+}\tau^{\parallel}{}_{\alpha\beta}$	${}^{2^-}\sigma^{\parallel}{}_{\alpha\beta\chi}$
${}^{2^+}\sigma^{\parallel}\dagger^{\alpha\beta}$	$-\frac{16\beta_{1}}{\alpha_{0}^2-4\alpha_{0}\beta_{1}}$	$\frac{2i\sqrt{2}}{\alpha_{0}k}$	0
${}^{2^+}\tau^{\parallel}\dagger^{\alpha\beta}$	$-\frac{2i\sqrt{2}}{\alpha_{0}k}$	$\frac{2}{\alpha_{0}k^2}$	0
${}^{2^-}\sigma^{\parallel}\dagger^{\alpha\beta\chi}$	0	0	$\frac{1}{-\frac{\alpha_{0}}{4}+\beta_{1}}$

Source constraints

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

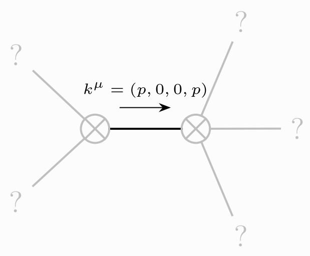
Massive spectrum



Massive particle

Pole residue:	$\frac{1}{\alpha_{0}} + \frac{1}{\alpha_{6}} - \frac{1}{4\beta_{1}} > 0$
Square mass:	$-\frac{\alpha_{0}(\alpha_{0}-4\beta_{1})}{8\alpha_{6}\beta_{1}} > 0$
Spin:	0
Parity:	Even

Massless spectrum



Massless particle

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

Gauge symmetries

(Not yet implemented in PSALTer)

Unitarity conditions

$\alpha_{0} > 0 \;\&\&\; \alpha_{6} > 0 \;\&\&\; \left(\beta_{1} < 0 \,\|\, \beta_{1} > \frac{\alpha_{0}}{4}\right)$

Validity assumptions

(Not yet implemented in PSALTer)