PSALTer results panel

$$\mathcal{S} == \iiiint \Big(-\tfrac{1}{2}(\alpha_0 - 4\beta_1)\,\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\mathcal{A}_{\beta}{}^{\chi}{}_{\chi} + \mathcal{A}^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi} + f^{\alpha\beta}\,\tau(\Delta+\mathcal{K})_{\alpha\beta} - \alpha_0\, f^{\alpha\beta}\,\partial_{\beta}\mathcal{A}_{\alpha}{}^{\chi}{}_{\chi} + \alpha_0\,\partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha} - 4\beta_1\,\mathcal{A}_{\alpha}{}^{\chi}{}_{\chi}\,\partial_{\beta}f^{\alpha\beta} + 4\beta_1\,\mathcal{A}_{\beta}{}^{\chi}{}_{\chi}\,\partial^{\beta}f^{\alpha}{}_{\alpha} - 2\beta_1\,\partial_{\beta}f^{\chi}{}_{\chi}\,\partial^{\beta}f^{\alpha}{}_{\alpha} + \alpha_0\, f^{\alpha\beta}\,\partial_{\chi}\mathcal{A}_{\alpha}{}^{\chi}{}_{\beta} - \alpha_0\, f^{\alpha}{}_{\alpha}\,\partial_{\chi}\mathcal{A}^{\beta\chi}{}_{\beta} - 2\beta_1\,\partial_{\beta}f^{\alpha\beta}\,\partial_{\chi}f_{\alpha}{}^{\chi} + 4\beta_1\,\partial^{\beta}f^{\alpha}{}_{\alpha}\,\partial_{\chi}f_{\beta}{}^{\chi} - 2\beta_1\,\partial_{\alpha}f_{\beta\chi}\,\partial^{\chi}f^{\alpha\beta} - \beta_1\,\partial_{\alpha}f_{\chi\beta}\,\partial^{\chi}f^{\alpha\beta} + \beta_1\,\partial_{\beta}f_{\alpha\chi}\,\partial^{\chi}f^{\alpha\beta} + \beta_1\,\partial_{\chi}f_{\alpha\beta}\,\partial^{\chi}f^{\alpha\beta} + \beta_1\,\partial_{\chi}f_{\beta\alpha}\,\partial^{\chi}f^{\alpha\beta} - \tfrac{1}{2}\,\mathcal{A}_{\alpha\chi\beta}\,\big((\alpha_0 - 4\beta_1)\,\mathcal{A}^{\alpha\beta\chi} - 8\beta_1\,\partial^{\chi}f^{\alpha\beta}\big) + \tfrac{2}{3}\,\alpha_6\,\partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\partial_{\delta}\mathcal{A}^{\chi\delta}{}_{\chi}\Big)[t,x,y,z]\,dz\,dy\,dx\,dt$$

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	$\frac{2}{\alpha_0 - 4\beta_1}$

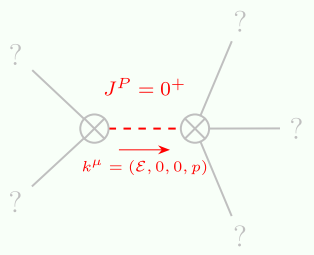
	$1^+\sigma^{\parallel}{}_{\alpha\beta}$	$1^+\sigma^{\perp}{}_{\alpha\beta}$	$1^+\tau^{\parallel}{}_{\alpha\beta}$	$1^-\sigma^{\parallel}{}_{\alpha}$	$1^-\sigma^{\perp}{}_{\alpha}$	$1^-\tau^{\parallel}{}_{\alpha}$	$1^-\tau^{\perp}{}_{\alpha}$
$1^+\sigma^{\parallel}\dagger^{\alpha\beta}$	0	$\frac{2\sqrt{2}}{(\alpha_0-4\beta_1)(1+k^2)}$	$\frac{2i\sqrt{2}\,k}{(\alpha_0-4\beta_1)(1+k^2)}$	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

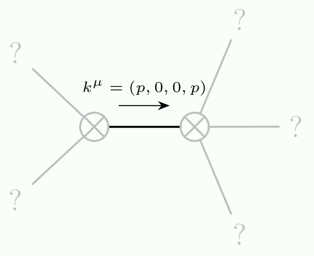
Massive spectrum



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

Unitarity conditions

$\alpha_0 > 0$ && $\alpha_6 > 0$ && $(\beta_1 < 0 \,||\, \beta_1 > \frac{\alpha_0}{4})$