PSALTer results panel

$$\mathcal{S} == \iiiint \Big(\mathcal{A}^{\alpha\beta\chi}\ \sigma_{\alpha\beta\chi} + f^{\alpha\beta}\ \tau(\Delta+\mathcal{K})_{\alpha\beta} - \frac{2}{3} t_{\dot{3}} \big(\mathcal{A}^{\alpha\iota}{}_{\alpha}\ \mathcal{A}_{\iota}{}^{\theta}{}_{\theta} - 2\ \mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\, \partial_{\iota} f^{\alpha\iota} + 2\ \mathcal{A}_{\iota}{}^{\theta}{}_{\theta}\, \partial^{\iota} f^{\alpha}{}_{\alpha} - \partial_{\iota} f^{\theta}{}_{\theta} \partial^{\iota} f^{\alpha}{}_{\alpha} - \partial_{\iota} f^{\alpha\iota} \partial_{\theta} f_{\alpha}{}^{\theta} + 2 \partial^{\iota} f^{\alpha}{}_{\alpha} \partial_{\theta} f_{\iota}{}^{\theta} \big) -$$
$$\frac{1}{2} r_{\dot{3}} \big(\partial_{\beta}\mathcal{A}_{\iota}{}^{\theta}{}_{\theta} \partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha} + \partial_{\iota}\mathcal{A}_{\beta}{}^{\theta}{}_{\theta} \partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha} + \partial_{\alpha}\mathcal{A}^{\alpha\beta\iota} \partial_{\theta}\mathcal{A}_{\beta}{}^{\theta}{}_{\iota} - 2 \partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha} \partial_{\theta}\mathcal{A}_{\beta}{}^{\theta}{}_{\iota} + \partial_{\alpha}\mathcal{A}^{\alpha\beta\iota} \partial_{\theta}\mathcal{A}_{\iota}{}^{\theta}{}_{\beta} - 2 \partial^{\iota}\mathcal{A}^{\alpha\beta}{}_{\alpha} \partial_{\theta}\mathcal{A}_{\iota}{}^{\theta}{}_{\beta} + 8 \partial_{\beta}\mathcal{A}_{\iota\theta\alpha} \partial^{\theta}\mathcal{A}^{\alpha\beta\iota} \big) +$$
$$r_{\dot{5}} \big(\partial_{\iota}\mathcal{A}_{\theta}{}^{\kappa}{}_{\kappa} \partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha} - \partial_{\theta}\mathcal{A}_{\iota}{}^{\kappa}{}_{\kappa} \partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha} - (\partial_{\alpha}\mathcal{A}^{\alpha\iota\theta} - 2 \partial^{\theta}\mathcal{A}^{\alpha\iota}{}_{\alpha}) (\partial_{\kappa}\mathcal{A}_{\iota}{}^{\kappa}{}_{\theta} - \partial_{\kappa}\mathcal{A}_{\theta}{}^{\kappa}{}_{\iota}) \big) \Big)[t, x, y, z]\, dz\, dy\, dx\, dt$$

Wave operator

	${}^{0^+}\mathcal{A}^{\parallel}$	${}^{0^+}f^{\parallel}$	${}^{0^+}f^{\perp}$	${}^{0^-}\mathcal{A}^{\parallel}$
${}^{0^+}\mathcal{A}^{\parallel}\,\dagger$	$t_{\dot{3}}$	$-i\sqrt{2}\,k t_{\dot{3}}$	0	0
${}^{0^+}f^{\parallel}\,\dagger$	$i\sqrt{2}\,k t_{\dot{3}}$	$2k^2 t_{\dot{3}}$	0	0
${}^{0^+}f^{\perp}\,\dagger$	0	0	0	0
${}^{0^-}\mathcal{A}^{\parallel}\,\dagger$	0	0	0	0

	${}^{1^+}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	${}^{1^+}\mathcal{A}^{\perp}{}_{\alpha\beta}$	${}^{1^+}f^{\parallel}{}_{\alpha\beta}$	${}^{1^-}\mathcal{A}^{\parallel}{}_{\alpha}$	${}^{1^-}\mathcal{A}^{\perp}{}_{\alpha}$	${}^{1^-}f^{\parallel}{}_{\alpha}$	${}^{1^-}f^{\perp}{}_{\alpha}$
${}^{1^+}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$k^2(2r_{\dot{3}}+r_{\dot{5}})$	0	0	0	0	0	0
${}^{1^+}\mathcal{A}^{\perp}\,\dagger^{\alpha\beta}$	0	0	0	0	0	0	0
${}^{1^+}f^{\parallel}\,\dagger^{\alpha\beta}$	0	0	0	0	0	0	0
${}^{1^-}\mathcal{A}^{\parallel}\,\dagger^{\alpha}$	0	0	0	$k^2\left(\frac{r_{\dot{3}}}{2}+r_{\dot{5}}\right)+\frac{2t_{\dot{3}}}{3}$	$-\frac{\sqrt{2}\,t_{\dot{3}}}{3}$	0	$-\frac{2}{3} i k t_{\dot{3}}$
${}^{1^-}\mathcal{A}^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{\sqrt{2}\,t_{\dot{3}}}{3}$	$\frac{t_{\dot{3}}}{3}$	0	$\frac{1}{3} i\sqrt{2}\,k t_{\dot{3}}$
${}^{1^-}f^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
${}^{1^-}f^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{2ikt_{\dot{3}}}{3}$	$-\frac{1}{3} i\sqrt{2}\,k t_{\dot{3}}$	0	$\frac{2k^2 t_{\dot{3}}}{3}$

	${}^{2^+}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	${}^{2^+}f^{\parallel}{}_{\alpha\beta}$	${}^{2^-}\mathcal{A}^{\parallel}{}_{\alpha\beta\chi}$
${}^{2^+}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$-\frac{3k^2 r_{\dot{3}}}{2}$	0	0
${}^{2^+}f^{\parallel}\,\dagger^{\alpha\beta}$	0	0	0
${}^{2^-}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta\chi}$	0	0	0

Saturated propagator

	${}^{0^+}\sigma^{\parallel}$	${}^{0^+}\tau^{\parallel}$	${}^{0^+}\tau^{\perp}$	${}^{0^-}\sigma^{\parallel}$
${}^{0^+}\sigma^{\parallel}\,\dagger$	$\frac{1}{(1+2k^2)^2 t_{\dot{3}}}$	$-\frac{i\sqrt{2}\,k}{(1+2k^2)^2 t_{\dot{3}}}$	0	0
${}^{0^+}\tau^{\parallel}\,\dagger$	$\frac{i\sqrt{2}\,k}{(1+2k^2)^2 t_{\dot{3}}}$	$\frac{2k^2}{(1+2k^2)^2 t_{\dot{3}}}$	0	0
${}^{0^+}\tau^{\perp}\,\dagger$	0	0	0	0
${}^{0^-}\sigma^{\parallel}\,\dagger$	0	0	0	0

	${}^{1^+}\sigma^{\parallel}{}_{\alpha\beta}$	${}^{1^+}\sigma^{\perp}{}_{\alpha\beta}$	${}^{1^+}\tau^{\parallel}{}_{\alpha\beta}$	${}^{1^-}\sigma^{\parallel}{}_{\alpha}$	${}^{1^-}\sigma^{\perp}{}_{\alpha}$	${}^{1^-}\tau^{\parallel}{}_{\alpha}$	${}^{1^-}\tau^{\perp}{}_{\alpha}$
${}^{1^+}\sigma^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{1}{k^2(2r_{\dot{3}}+r_{\dot{5}})}$	0	0	0	0	0	0
${}^{1^+}\sigma^{\perp}\,\dagger^{\alpha\beta}$	0	0	0	0	0	0	0
${}^{1^+}\tau^{\parallel}\,\dagger^{\alpha\beta}$	0	0	0	0	0	0	0
${}^{1^-}\sigma^{\parallel}\,\dagger^{\alpha}$	0	0	0	$\frac{2}{k^2(r_{\dot{3}}+2r_{\dot{5}})}$	$\frac{2\sqrt{2}}{k^2(1+2k^2)(r_{\dot{3}}+2r_{\dot{5}})}$	0	$\frac{4i}{k(1+2k^2)(r_{\dot{3}}+2r_{\dot{5}})}$
${}^{1^-}\sigma^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{2\sqrt{2}}{k^2(1+2k^2)(r_{\dot{3}}+2r_{\dot{5}})}$	$\frac{3k^2(r_{\dot{3}}+2r_{\dot{5}})+4t_{\dot{3}}}{(k+2k^3)^2(r_{\dot{3}}+2r_{\dot{5}})t_{\dot{3}}}$	0	$\frac{i\sqrt{2}\,(3k^2(r_{\dot{3}}+2r_{\dot{5}})+4t_{\dot{3}})}{k(1+2k^2)^2(r_{\dot{3}}+2r_{\dot{5}})t_{\dot{3}}}$
${}^{1^-}\tau^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
${}^{1^-}\tau^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{4i}{k(1+2k^2)(r_{\dot{3}}+2r_{\dot{5}})}$	$-\frac{i\sqrt{2}\,(3k^2(r_{\dot{3}}+2r_{\dot{5}})+4t_{\dot{3}})}{k(1+2k^2)^2(r_{\dot{3}}+2r_{\dot{5}})t_{\dot{3}}}$	0	$\frac{6k^2(r_{\dot{3}}+2r_{\dot{5}})+8t_{\dot{3}}}{(1+2k^2)^2(r_{\dot{3}}+2r_{\dot{5}})t_{\dot{3}}}$

	${}^{2^+}\sigma^{\parallel}{}_{\alpha\beta}$	${}^{2^+}\tau^{\parallel}{}_{\alpha\beta}$	${}^{2^-}\sigma^{\parallel}{}_{\alpha\beta\chi}$
${}^{2^+}\sigma^{\parallel}\,\dagger^{\alpha\beta}$	$-\frac{2}{3k^2 r_{\dot{3}}}$	0	0
${}^{2^+}\tau^{\parallel}\,\dagger^{\alpha\beta}$	0	0	0
${}^{2^-}\sigma^{\parallel}\,\dagger^{\alpha\beta\chi}$	0	0	0

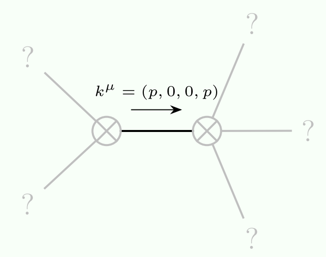
Source constraints

Spin-parity form	Covariant form	Multiplicities
${}^{0^-}\sigma^{\parallel} == 0$	True	1
${}^{0^+}\tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$-2ik\,{}^{0^+}\sigma^{\parallel} + {}^{0^+}\tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\beta}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha}{}_{\alpha} + 2\,\partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha}{}_{\alpha}{}^{\beta}$	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
${}^{1^+}\tau^{\parallel\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha}$	3
${}^{1^+}\sigma^{\perp\alpha\beta} == 0$	$\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\chi\alpha\beta} == \partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta}$	3
${}^{2^-}\sigma^{\parallel\alpha\beta\chi} == 0$	$3\,\partial_{\epsilon}\partial_{\delta}\partial^{\chi}\partial^{\alpha}\sigma^{\delta\beta\epsilon} + 3\,\partial_{\epsilon}\partial^{\epsilon}\partial^{\chi}\partial^{\alpha}\sigma^{\delta\beta}{}_{\delta} + 2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\beta}\sigma^{\alpha\chi\delta} + 4\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\beta}\sigma^{\chi\alpha\delta} + 2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\beta}\sigma^{\delta\alpha\chi} + 2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\chi}\sigma^{\beta\alpha\delta} +$ $4\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\chi}\sigma^{\delta\alpha\beta} + 2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\sigma^{\alpha\beta\chi} + 3\,\eta^{\beta\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial^{\alpha}\sigma^{\delta}{}_{\delta}{}^{\epsilon} + 3\,\eta^{\alpha\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial_{\delta}\sigma^{\delta\beta\epsilon} + 3\,\eta^{\beta\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial^{\epsilon}\sigma^{\delta\alpha}{}_{\delta} ==$ $3\,\partial_{\epsilon}\partial_{\delta}\partial^{\chi}\partial^{\beta}\sigma^{\delta\alpha\epsilon} + 3\,\partial_{\epsilon}\partial^{\epsilon}\partial^{\chi}\partial^{\beta}\sigma^{\delta\alpha}{}_{\delta} + 2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\alpha}\sigma^{\beta\chi\delta} + 4\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\alpha}\sigma^{\delta\beta\chi} + 2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\chi}\sigma^{\alpha\beta\delta} +$ $2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\sigma^{\beta\alpha\chi} + 4\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\sigma^{\chi\alpha\beta} + 3\,\eta^{\alpha\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial^{\beta}\sigma^{\delta}{}_{\delta}{}^{\epsilon} + 3\,\eta^{\beta\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial_{\delta}\sigma^{\delta\alpha\epsilon} + 3\,\eta^{\alpha\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial^{\epsilon}\sigma^{\delta\beta}{}_{\delta}$	5
${}^{2^+}\tau^{\parallel\alpha\beta} == 0$	$4\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi}{}_{\chi} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} +$ $3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\tau(\Delta+\mathcal{K})^{\chi\delta} == 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} +$ $3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + 2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\tau(\Delta+\mathcal{K})^{\chi}{}_{\chi}$	5
Total expected gauge generators:		25

Massive spectrum

(No particles)

Massless spectrum



Massless particle

Pole residue:	$-\frac{26}{r_{\dot{3}}} + \frac{39}{2r_{\dot{3}}+r_{\dot{5}}} - \frac{216}{r_{\dot{3}}+2r_{\dot{5}}} > 0$
Polarisations:	2

Unitarity conditions

$$(r_{\dot{3}} < 0\ \&\&\ (r_{\dot{5}} < -\frac{r_{\dot{3}}}{2}\ \|\ r_{\dot{5}} > -2r_{\dot{3}}))\ \|\ (r_{\dot{3}} > 0\ \&\&\ -2r_{\dot{3}} < r_{\dot{5}} < -\frac{r_{\dot{3}}}{2})$$