PSALTer results panel

$$S == \int\int\int\int \left(\frac{1}{6}\left(-4\,t_{.3}\,\mathcal{A}^{\alpha\,\prime}{}_{\alpha}\,\mathcal{A}_{\prime}{}^{\theta}{}_{\theta} + 6\,\mathcal{A}^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi} + 6\,f^{\alpha\beta}\,\tau\,(\Delta+\mathcal{K})_{\alpha\beta} + 8\,t_{.3}\,\mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\,\partial_{\prime} f^{\alpha\,\prime} - 15\,r_{.3}\,\partial_{\beta}\mathcal{A}_{\prime}{}^{\theta}{}_{\theta}\,\partial^{\prime}\mathcal{A}^{\alpha\beta}{}_{\alpha} + 9\,r_{.3}\,\partial_{\prime}\mathcal{A}_{\beta}{}^{\theta}{}_{\theta}\,\partial^{\prime}\mathcal{A}^{\alpha\beta}{}_{\alpha} - 8\,t_{.3}\,\mathcal{A}_{\prime}{}^{\theta}{}_{\theta}\,\partial^{\prime} f^{\alpha}{}_{\alpha} + 4\,t_{.3}\,\partial_{\prime} f^{\theta}{}_{\theta}\,\partial^{\prime} f^{\alpha}{}_{\alpha} + 9\,r_{.3}\,\partial_{\alpha}\mathcal{A}^{\alpha\beta\,\prime}\,\partial_{\theta}\mathcal{A}_{\beta}{}^{\theta}{}_{\prime} - 18\,r_{.3}\,\partial^{\prime}\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\partial_{\theta}\mathcal{A}_{\beta}{}^{\theta}{}_{\prime} - 15\,r_{.3}\,\partial_{\alpha}\mathcal{A}^{\alpha\beta\,\prime}\,\partial_{\theta}\mathcal{A}_{\prime}{}^{\theta}{}_{\beta} + 30\,r_{.3}\,\partial^{\prime}\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\partial_{\theta}\mathcal{A}_{\prime}{}^{\theta}{}_{\beta} + 4\,t_{.3}\,\partial_{\prime} f^{\alpha\,\prime}\,\partial_{\theta} f_{\alpha}{}^{\theta} - 8\,t_{.3}\,\partial^{\prime} f^{\alpha}{}_{\alpha}\,\partial_{\theta} f_{\prime}{}^{\theta} + 8\,r_{.2}\,\partial_{\beta}\mathcal{A}_{\alpha\,\prime\,\theta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\,\prime} - 4\,r_{.2}\,\partial_{\beta}\mathcal{A}_{\alpha\theta\,\prime}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\,\prime} + 4\,r_{.2}\,\partial_{\beta}\mathcal{A}_{\prime\,\theta\alpha}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\,\prime} - 24\,r_{.3}\,\partial_{\beta}\mathcal{A}_{\prime\,\theta\alpha}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\,\prime} - 2\,r_{.2}\,\partial_{\prime}\mathcal{A}_{\alpha\beta\theta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\,\prime} + 2\,r_{.2}\,\partial_{\theta}\mathcal{A}_{\alpha\beta\,\prime}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\,\prime} - 4\,r_{.2}\,\partial_{\theta}\mathcal{A}_{\alpha\,\prime\,\beta}\,\partial^{\theta}\mathcal{A}^{\alpha\beta\,\prime} + 4\,t_{.2}\,\mathcal{A}_{\prime\,\theta\alpha}\,\partial^{\theta} f^{\alpha\,\prime} + 2\,t_{.2}\,\partial_{\alpha} f_{\prime\,\theta}\,\partial^{\theta} f^{\alpha\,\prime} - t_{.2}\,\partial_{\alpha} f_{\theta\,\prime}\,\partial^{\theta} f^{\alpha\,\prime} - t_{.2}\,\partial_{\prime} f_{\alpha\theta}\,\partial^{\theta} f^{\alpha\,\prime} + t_{.2}\,\partial_{\theta} f_{\alpha\,\prime}\,\partial^{\theta} f^{\alpha\,\prime} - t_{.2}\,\partial_{\theta} f_{\prime\,\alpha}\,\partial^{\theta} f^{\alpha\,\prime} - 4\,t_{.2}\,\mathcal{A}_{\alpha\theta\,\prime}\left(\mathcal{A}^{\alpha\,\prime\,\theta} + \partial^{\theta} f^{\alpha\,\prime}\right) + 2\,t_{.2}\,\mathcal{A}_{\alpha\,\prime\,\theta}\left(\mathcal{A}^{\alpha\,\prime\,\theta} + 2\,\partial^{\theta} f^{\alpha\,\prime}\right)\right)\right)[t, x, y, z]\,dz\,dy\,dx\,dt$$

Wave operator

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

	$1^+_.\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$1^+_.\mathcal{A}^{\perp}{}_{\alpha\beta}$	$1^+_.f^{\parallel}{}_{\alpha\beta}$	$1^-_.\mathcal{A}^{\parallel}{}_{\alpha}$	$1^-_.\mathcal{A}^{\perp}{}_{\alpha}$	$1^-_.f^{\parallel}{}_{\alpha}$	$1^-_.f^{\perp}{}_{\alpha}$
$1^+_.\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{2\,t_{.2}}{3}$	$\frac{\sqrt{2}\,t_{.2}}{3}$	$\frac{1}{3}\,i\sqrt{2}\,k\,t_{.2}$	0	0	0	0
$1^+_.\mathcal{A}^{\perp}\,\dagger^{\alpha\beta}$	$\frac{\sqrt{2}\,t_{.2}}{3}$	$\frac{t_{.2}}{3}$	$\frac{i\,k\,t_{.2}}{3}$	0	0	0	0
$1^+_.f^{\parallel}\,\dagger^{\alpha\beta}$	$-\frac{1}{3}\,i\sqrt{2}\,k\,t_{.2}$	$-\frac{1}{3}\,i\,k\,t_{.2}$	$\frac{k^2\,t_{.2}}{3}$	0	0	0	0
$1^-_.\mathcal{A}^{\parallel}\,\dagger^{\alpha}$	0	0	0	$\frac{1}{6}\left(-9\,k^2\,r_{.3}+4\,t_{.3}\right)$	$-\frac{\sqrt{2}\,t_{.3}}{3}$	0	$-\frac{2}{3}\,i\,k\,t_{.3}$
$1^-_.\mathcal{A}^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{\sqrt{2}\,t_{.3}}{3}$	$\frac{t_{.3}}{3}$	0	$\frac{1}{3}\,i\sqrt{2}\,k\,t_{.3}$
$1^-_.f^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^-_.f^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{2\,i\,k\,t_{.3}}{3}$	$-\frac{1}{3}\,i\sqrt{2}\,k\,t_{.3}$	0	$\frac{2\,k^2\,t_{.3}}{3}$

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

Saturated propagator

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

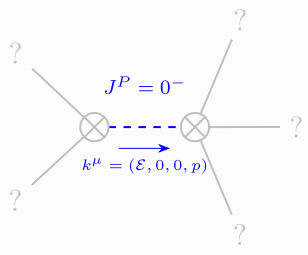
	$1^+_.\sigma^{\parallel}{}_{\alpha\beta}$	$1^+_.\sigma^{\perp}{}_{\alpha\beta}$	$1^+_.\tau^{\parallel}{}_{\alpha\beta}$	$1^-_.\sigma^{\parallel}{}_{\alpha}$	$1^-_.\sigma^{\perp}{}_{\alpha}$	$1^-_.\tau^{\parallel}{}_{\alpha}$	$1^-_.\tau^{\perp}{}_{\alpha}$
$1^+_.\sigma^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{6}{\left(3+k^2\right)^2 t_{.2}}$	$\frac{3\sqrt{2}}{\left(3+k^2\right)^2 t_{.2}}$	$\frac{3\,i\sqrt{2}\,k}{\left(3+k^2\right)^2 t_{.2}}$	0	0	0	0
$1^+_.\sigma^{\perp}\,\dagger^{\alpha\beta}$	$\frac{3\sqrt{2}}{\left(3+k^2\right)^2 t_{.2}}$	$\frac{3}{\left(3+k^2\right)^2 t_{.2}}$	$\frac{3\,i\,k}{\left(3+k^2\right)^2 t_{.2}}$	0	0	0	0
$1^+_.\tau^{\parallel}\,\dagger^{\alpha\beta}$	$-\frac{3\,i\sqrt{2}\,k}{\left(3+k^2\right)^2 t_{.2}}$	$-\frac{3\,i\,k}{\left(3+k^2\right)^2 t_{.2}}$	$\frac{3\,k^2}{\left(3+k^2\right)^2 t_{.2}}$	0	0	0	0
$1^-_.\sigma^{\parallel}\,\dagger^{\alpha}$	0	0	0	$-\frac{2}{3\,k^2\,r_{.3}}$	$-\frac{2\sqrt{2}}{3\,k^2\,r_{.3}+6\,k^4\,r_{.3}}$	0	$-\frac{4\,i}{3\,k\,r_{.3}+6\,k^3\,r_{.3}}$
$1^-_.\sigma^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{2\sqrt{2}}{3\,k^2\,r_{.3}+6\,k^4\,r_{.3}}$	$\frac{9\,k^2\,r_{.3}-4\,t_{.3}}{3\left(k+2\,k^3\right)^2 r_{.3}\,t_{.3}}$	0	$\frac{i\sqrt{2}\left(9\,k^2\,r_{.3}-4\,t_{.3}\right)}{3\,k\left(1+2\,k^2\right)^2 r_{.3}\,t_{.3}}$
$1^-_.\tau^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
$1^-_.\tau^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{4\,i}{3\,k\,r_{.3}+6\,k^3\,r_{.3}}$	$-\frac{i\sqrt{2}\left(9\,k^2\,r_{.3}-4\,t_{.3}\right)}{3\,k\left(1+2\,k^2\right)^2 r_{.3}\,t_{.3}}$	0	$\frac{2\left(9\,k^2\,r_{.3}-4\,t_{.3}\right)}{3\left(1+2\,k^2\right)^2 r_{.3}\,t_{.3}}$

	$2^+_.\sigma^{\parallel}{}_{\alpha\beta}$	$2^+_.\tau^{\parallel}{}_{\alpha\beta}$	$2^-_.\sigma^{\parallel}{}_{\alpha\beta\chi}$
$2^+_.\sigma^{\parallel}\,\dagger^{\alpha\beta}$	$-\frac{2}{3\,k^2\,r_{.3}}$	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
$0^+_.\tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$-2\,i\,k\,{}^{0^+_.}\sigma^{\parallel} + {}^{0^+_.}\tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\beta}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\alpha}{}_{\alpha} + 2\,\partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha\ \ \beta}_{\ \alpha}$	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
$i\,k\,{}^{1^+_.}\sigma^{\parallel\,\alpha\beta} + {}^{1^+_.}\tau^{\parallel\,\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} + \partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\beta\chi} == \partial_{\chi}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau\,(\Delta+\mathcal{K})^{\beta\alpha} + \partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\beta\alpha\chi}$	3
${}^{1^+_.}\sigma^{\parallel\,\alpha\beta} == {}^{1^+_.}\sigma^{\perp\,\alpha\beta}$	$3\,\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\beta\alpha\chi} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\chi\alpha\beta} == 3\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\beta\chi}$	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^{\delta}\sigma^{\alpha\beta\chi} + 2\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\sigma^{\chi\alpha\beta} + 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^{\delta}\sigma^{\beta\chi\alpha} + 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:		24

Massive spectrum



Massive particle

Pole residue:	$-\frac{1}{r_{.2}} > 0$
Square mass:	$-\frac{t_{.2}}{r_{.2}} > 0$
Spin:	0
Parity:	Odd

Massless spectrum

(There are no massless particles)

Gauge symmetries

(Not yet implemented in PSALTer)

Unitarity conditions

$r_{.2} < 0\ \&\&\ t_{.2} > 0$

Validity assumptions

(Not yet implemented in PSALTer)