PSALTer results panel

$$S == \int\int\int\int\Big(\frac{1}{6}\Big(2\Big(t_{1}. - 2\,t_{3}.\Big)\,\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} - 4\,t_{1}.\,\mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\,\partial_{\prime}f^{\alpha\prime} + 8\,t_{3}.\,\mathcal{A}_{\alpha}{}^{\theta}{}_{\theta}\,\partial_{\prime}f^{\alpha\prime} + 4\,t_{1}.\,\mathcal{A}_{\prime}{}^{\theta}{}_{\theta}\,\partial^{\prime}f^{\alpha}{}_{\alpha} - 8\,t_{3}.\,\mathcal{A}_{\prime}{}^{\theta}{}_{\theta}\,\partial^{\prime}f^{\alpha}{}_{\alpha} - 2\,t_{1}.\,\partial_{\prime}f^{\theta}{}_{\theta}\,\partial^{\prime}f^{\alpha}{}_{\alpha} + 4\,t_{3}.\,\partial_{\prime}f^{\theta}{}_{\theta}\,\partial^{\prime}f^{\alpha}{}_{\alpha} - 2\,t_{1}.\,\partial_{\prime}f^{\alpha\prime}\,\partial_{\theta}f_{\alpha}{}^{\theta} + 4\,t_{3}.\,\partial_{\prime}f^{\alpha\prime}\,\partial_{\theta}f_{\alpha}{}^{\theta} + 4\,t_{1}.\,\partial^{\prime}f^{\alpha}{}_{\alpha}\,\partial_{\theta}f_{\prime}{}^{\theta} - 8\,t_{3}.\,\partial^{\prime}f^{\alpha}{}_{\alpha}\,\partial_{\theta}f_{\prime}{}^{\theta} + 6\,r_{5}.\,\partial_{\prime}\mathcal{A}_{\theta}{}^{\kappa}{}_{\kappa}\,\partial^{\theta}\mathcal{A}^{\alpha\prime}{}_{\alpha} - 6\,r_{5}.\,\partial_{\theta}\mathcal{A}_{\prime}{}^{\kappa}{}_{\kappa}\,\partial^{\theta}\mathcal{A}^{\alpha\prime}{}_{\alpha} - 6\,t_{1}.\,\partial_{\alpha}f_{\prime\theta}\,\partial^{\theta}f^{\alpha\prime} - 3\,t_{1}.\,\partial_{\alpha}f_{\theta\prime}\,\partial^{\theta}f^{\alpha\prime} + 3\,t_{1}.\,\partial_{\prime}f_{\alpha\theta}\,\partial^{\theta}f^{\alpha\prime} + 3\,t_{1}.\,\partial_{\theta}f_{\alpha\prime}\,\partial^{\theta}f^{\alpha\prime} + 3\,t_{1}.\,\partial_{\theta}f_{\prime\alpha}\,\partial^{\theta}f^{\alpha\prime} + 6\,t_{1}.\,\mathcal{A}_{\alpha\theta\prime}\,\big(\mathcal{A}^{\alpha\prime\theta} + 2\,\partial^{\theta}f^{\alpha\prime}\big) - 6\,r_{5}.\,\partial_{\alpha}\mathcal{A}^{\alpha\prime\theta}\,\partial_{\kappa}\mathcal{A}_{\prime}{}^{\kappa}{}_{\theta} + 12\,r_{5}.\,\partial^{\theta}\mathcal{A}^{\alpha\prime}{}_{\alpha}\,\partial_{\kappa}\mathcal{A}_{\prime}{}^{\kappa}{}_{\theta} + 6\,r_{5}.\,\partial_{\alpha}\mathcal{A}^{\alpha\prime\theta}\,\partial_{\kappa}\mathcal{A}_{\theta}{}^{\kappa}{}_{\prime} - 12\,r_{5}.\,\partial^{\theta}\mathcal{A}^{\alpha\prime}{}_{\alpha}\,\partial_{\kappa}\mathcal{A}_{\theta}{}^{\kappa}{}_{\prime}\Big)\Big)[t,\,x,\,y,\,z]\,dt\,dz\,dy\,dx\,dt$$

Wave operator

	$\overset{0^+}{\cdot}\mathcal{A}^{\parallel}$	$\overset{0^+}{\cdot}f^{\parallel}$	$\overset{0^+}{\cdot}f^{\perp}$	$\overset{0^-}{\cdot}\mathcal{A}^{\parallel}$
$\overset{0^+}{\cdot}\mathcal{A}^{\parallel}\,\dagger$	$t_{3}.$	$-i\,\sqrt{2}\,k\,t_{3}.$	0	0
$\overset{0^+}{\cdot}f^{\parallel}\,\dagger$	$i\,\sqrt{2}\,k\,t_{3}.$	$2\,k^2\,t_{3}.$	0	0
$\overset{0^+}{\cdot}f^{\perp}\,\dagger$	0	0	0	0
$\overset{0^-}{\cdot}\mathcal{A}^{\parallel}\,\dagger$	0	0	0	$-t_{1}.$

	$\overset{1^+}{\cdot}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$\overset{1^+}{\cdot}\mathcal{A}^{\perp}{}_{\alpha\beta}$	$\overset{1^+}{\cdot}f^{\parallel}{}_{\alpha\beta}$	$\overset{1^-}{\cdot}\mathcal{A}^{\parallel}{}_{\alpha}$	$\overset{1^-}{\cdot}\mathcal{A}^{\perp}{}_{\alpha}$	$\overset{1^-}{\cdot}f^{\parallel}{}_{\alpha}$	$\overset{1^-}{\cdot}f^{\perp}{}_{\alpha}$
$\overset{1^+}{\cdot}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$k^2\,r_{5}. - \frac{t_{1}.}{2}$	$-\frac{t_{1}.}{\sqrt{2}}$	$-\frac{i\,k\,t_{1}.}{\sqrt{2}}$	0	0	0	0
$\overset{1^+}{\cdot}\mathcal{A}^{\perp}\,\dagger^{\alpha\beta}$	$-\frac{t_{1}.}{\sqrt{2}}$	0	0	0	0	0	0
$\overset{1^+}{\cdot}f^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{i\,k\,t_{1}.}{\sqrt{2}}$	0	0	0	0	0	0
$\overset{1^-}{\cdot}\mathcal{A}^{\parallel}\,\dagger^{\alpha}$	0	0	0	$\frac{1}{6}\left(6\,k^2\,r_{5}. + t_{1}. + 4\,t_{3}.\right)$	$\frac{t_{1}. - 2\,t_{3}.}{3\,\sqrt{2}}$	0	$\frac{1}{3}\,i\,k\left(t_{1}. - 2\,t_{3}.\right)$
$\overset{1^-}{\cdot}\mathcal{A}^{\perp}\,\dagger^{\alpha}$	0	0	0	$\frac{t_{1}. - 2\,t_{3}.}{3\,\sqrt{2}}$	$\frac{t_{1}. + t_{3}.}{3}$	0	$\frac{1}{3}\,i\,\sqrt{2}\,k\left(t_{1}. + t_{3}.\right)$
$\overset{1^-}{\cdot}f^{\parallel}\,\dagger^{\alpha}$	0	0	0	0	0	0	0
$\overset{1^-}{\cdot}f^{\perp}\,\dagger^{\alpha}$	0	0	0	$-\frac{1}{3}\,i\,k\left(t_{1}. - 2\,t_{3}.\right)$	$-\frac{1}{3}\,i\,\sqrt{2}\,k\left(t_{1}. + t_{3}.\right)$	0	$\frac{2}{3}\,k^2\left(t_{1}. + t_{3}.\right)$

	$\overset{2^+}{\cdot}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	$\overset{2^+}{\cdot}f^{\parallel}{}_{\alpha\beta}$	$\overset{2^-}{\cdot}\mathcal{A}^{\parallel}{}_{\alpha\beta\chi}$
$\overset{2^+}{\cdot}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{t_{1}.}{2}$	$-\frac{i\,k\,t_{1}.}{\sqrt{2}}$	0
$\overset{2^+}{\cdot}f^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{i\,k\,t_{1}.}{\sqrt{2}}$	$k^2\,t_{1}.$	0
$\overset{2^-}{\cdot}\mathcal{A}^{\parallel}\,\dagger^{\alpha\beta\chi}$	0	0	$\frac{t_{1}.}{2}$

Saturated propagator

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

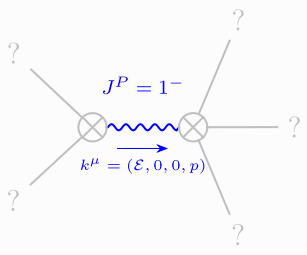
	$\overset{1^+}{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$\overset{1^+}{\cdot}\sigma^{\perp}{}_{\alpha\beta}$	$\overset{1^+}{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$\overset{1^-}{\cdot}\sigma^{\parallel}{}_{\alpha}$	$\overset{1^-}{\cdot}\sigma^{\perp}{}_{\alpha}$	$\overset{1^-}{\cdot}\tau^{\parallel}{}_{\alpha}$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

	$\overset{2^+}{\cdot}\sigma^{\parallel}{}_{\alpha\beta}$	$\overset{2^+}{\cdot}\tau^{\parallel}{}_{\alpha\beta}$	$\overset{2^-}{\cdot}\sigma^{\parallel}{}_{\alpha\beta\chi}$
$\overset{2^+}{\cdot}\sigma^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{2}{\left(1+2\,k^2\right)^2\,t_{1}.}$	$-\frac{2\,i\,\sqrt{2}\,k}{\left(1+2\,k^2\right)^2\,t_{1}.}$	0
$\overset{2^+}{\cdot}\tau^{\parallel}\,\dagger^{\alpha\beta}$	$\frac{2\,i\,\sqrt{2}\,k}{\left(1+2\,k^2\right)^2\,t_{1}.}$	$\frac{4\,k^2}{\left(1+2\,k^2\right)^2\,t_{1}.}$	0
$\overset{2^-}{\cdot}\sigma^{\parallel}\,\dagger^{\alpha\beta\chi}$	0	0	$\frac{2}{t_{1}.}$

Source constraints

Spin-parity form	Covariant form	Multiplicities
$\overset{0^+}{\cdot}\tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$-2\,i\,k\,\overset{0^+}{\cdot}\sigma^{\parallel} + \overset{0^+}{\cdot}\tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\beta}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\alpha}{}_{\alpha} + 2\,\partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha}{}_{\alpha}{}^{\beta}$	1
$2\,i\,k\,\overset{1^-}{\cdot}\sigma^{\perp}{}^{\alpha} + \overset{1^-}{\cdot}\tau^{\perp}{}^{\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial_{\beta}\sigma^{\beta\alpha\chi}$	3
$\overset{1^-}{\cdot}\tau^{\parallel}{}^{\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau\,(\Delta+\mathcal{K})^{\beta\alpha}$	3
$i\,k\,\overset{1^+}{\cdot}\sigma^{\perp}{}^{\alpha\beta} + \overset{1^+}{\cdot}\tau^{\parallel}{}^{\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\chi\alpha\beta} == \partial_{\chi}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau\,(\Delta+\mathcal{K})^{\beta\alpha} + 2\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta}$	3
$-2\,i\,k\,\overset{2^+}{\cdot}\sigma^{\parallel}{}^{\alpha\beta} + \overset{2^+}{\cdot}\tau^{\parallel}{}^{\alpha\beta} == 0$	$-i\Big(4\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\chi\delta} + 2\,\partial_{\delta}\partial^{\delta}\partial^{\beta}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau\,(\Delta+\mathcal{K})^{\beta\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\alpha\chi} - 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau\,(\Delta+\mathcal{K})^{\chi\alpha} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau\,(\Delta+\mathcal{K})^{\alpha\beta} + 3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau\,(\Delta+\mathcal{K})^{\beta\alpha} + 4\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\sigma^{\delta}{}_{\delta}{}^{\epsilon} - 6\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\delta\beta\epsilon} - 6\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\delta\alpha\epsilon} + 6\,i\,k^{\chi}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\alpha\beta\delta} + 6\,i\,k^{\chi}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\beta\alpha\delta} + 2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\tau\,(\Delta+\mathcal{K})^{\chi\delta} - 2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\tau\,(\Delta+\mathcal{K})^{\chi}{}_{\chi} - 4\,i\,\eta^{\alpha\beta}\,k^{\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial_{\chi}\sigma^{\delta}{}_{\delta}{}^{\epsilon}\Big) == 0$	5
Total expected gauge generators:		16

Massive spectrum



Massive particle

Pole residue:	$\frac{6\,t_{1}.\,t_{3}.\,(t_{1}.+t_{3}.)-3\,r_{5}.\,(t_{1}.^2+2\,t_{3}.^2)}{2\,r_{5}.\,(t_{1}.+t_{3}.)\,(-3\,t_{1}.\,t_{3}.+r_{5}.\,(t_{1}.+t_{3}.))} > 0$
Square mass:	$-\frac{3\,t_{1}.\,t_{3}.}{2\,r_{5}.\,t_{1}.+2\,r_{5}.\,t_{3}.} > 0$
Spin:	1
Parity:	Odd

Massless spectrum

(There are no massless particles)

Gauge symmetries

(Not yet implemented in PSALTer)

Unitarity conditions

$$\Big(t_{3}. < 0\;\&\&\;0 < t_{1}. < -t_{3}.\;\&\&\;r_{5}. < 0\Big) \,||\, \Big(t_{3}. > 0\;\&\&\;\Big(\big(t_{1}. < -t_{3}.\;\&\&\;r_{5}. < 0\big) \,||\, \big(t_{1}. > 0\;\&\&\;r_{5}. < 0\big)\Big)\Big)$$

Validity assumptions

(Not yet implemented in PSALTer)