PSALTer results panel

$$\mathcal{S} == \iiiint \big(\mathcal{A}^{\alpha\beta\chi}\ \sigma_{\alpha\beta\chi} + f^{\alpha\beta}\ \tau(\Delta+\mathcal{K})_{\alpha\beta} + 2\beta_1 \big(-\mathcal{A}_{\alpha\chi\beta}\ \mathcal{A}^{\alpha\beta\chi} + (2\ \mathcal{A}_{\beta\chi\alpha} - \partial_\alpha f_{\chi\beta} + \partial_\chi f_{\alpha\beta})\partial^\chi f^{\alpha\beta} + \mathcal{A}_{\alpha\beta\chi}\ (\mathcal{A}^{\alpha\beta\chi} + 2\partial^\chi f^{\alpha\beta})\big) + 2\alpha_1 (-\partial_\chi \mathcal{A}_{\alpha\beta\delta} + \partial_\delta \mathcal{A}_{\alpha\beta\chi})\partial^\delta \mathcal{A}^{\alpha\beta\chi}\big)[t,x,y,z]\, dz\, dy\, dx\, dt$$

Wave operator

	${}^{0^+}\mathcal{A}^{\parallel}$	${}^{0^+}f^{\parallel}$	${}^{0^+}f^{\perp}$	${}^{0^-}\mathcal{A}^{\parallel}$
${}^{0^+}\mathcal{A}^{\parallel}\dagger$	$\beta_1 + 2\alpha_1 k^2$	$-i\sqrt{2}\beta_1 k$	0	0
${}^{0^+}f^{\parallel}\dagger$	$i\sqrt{2}\beta_1 k$	$2\beta_1 k^2$	0	0
${}^{0^+}f^{\perp}\dagger$	0	0	0	0
${}^{0^-}\mathcal{A}^{\parallel}\dagger$	0	0	0	$4\beta_1 + 2\alpha_1 k^2$

	${}^{1^+}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	${}^{1^+}\mathcal{A}^{\perp}{}_{\alpha\beta}$	${}^{1^+}f^{\parallel}{}_{\alpha\beta}$	${}^{1^-}\mathcal{A}^{\parallel}{}_{\alpha}$	${}^{1^-}\mathcal{A}^{\perp}{}_{\alpha}$	${}^{1^-}f^{\parallel}{}_{\alpha}$	${}^{1^-}f^{\perp}{}_{\alpha}$
${}^{1^+}\mathcal{A}^{\parallel}\dagger^{\alpha\beta}$	$3\beta_1 + 2\alpha_1 k^2$	$\sqrt{2}\beta_1$	$i\sqrt{2}\beta_1 k$	0	0	0	0
${}^{1^+}\mathcal{A}^{\perp}\dagger^{\alpha\beta}$	$\sqrt{2}\beta_1$	$2\beta_1$	$2i\beta_1 k$	0	0	0	0
${}^{1^+}f^{\parallel}\dagger^{\alpha\beta}$	$-i\sqrt{2}\beta_1 k$	$-2i\beta_1 k$	$2\beta_1 k^2$	0	0	0	0
${}^{1^-}\mathcal{A}^{\parallel}\dagger^{\alpha}$	0	0	0	$\beta_1 + 2\alpha_1 k^2$	0	0	0
${}^{1^-}\mathcal{A}^{\perp}\dagger^{\alpha}$	0	0	0	0	β_1	0	$i\sqrt{2}\beta_1 k$
${}^{1^-}f^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0
${}^{1^-}f^{\perp}\dagger^{\alpha}$	0	0	0	0	$-i\sqrt{2}\beta_1 k$	0	$2\beta_1 k^2$

	${}^{2^+}\mathcal{A}^{\parallel}{}_{\alpha\beta}$	${}^{2^+}f^{\parallel}{}_{\alpha\beta}$	${}^{2^-}\mathcal{A}^{\parallel}{}_{\alpha\beta\chi}$
${}^{2^+}\mathcal{A}^{\parallel}\dagger^{\alpha\beta}$	$\beta_1 + 2\alpha_1 k^2$	$-i\sqrt{2}\beta_1 k$	0
${}^{2^+}f^{\parallel}\dagger^{\alpha\beta}$	$i\sqrt{2}\beta_1 k$	$2\beta_1 k^2$	0
${}^{2^-}\mathcal{A}^{\parallel}\dagger^{\alpha\beta\chi}$	0	0	$\beta_1 + 2\alpha_1 k^2$

Saturated propagator

	${}^{0^+}\sigma^{\parallel}$	${}^{0^+}\tau^{\parallel}$	${}^{0^+}\tau^{\perp}$	${}^{0^-}\sigma^{\parallel}$
${}^{0^+}\sigma^{\parallel}\dagger$	$\frac{1}{2\alpha_1 k^2}$	$\frac{i}{2\sqrt{2}\alpha_1 k^3}$	0	0
${}^{0^+}\tau^{\parallel}\dagger$	$-\frac{i}{2\sqrt{2}\alpha_1 k^3}$	$\frac{\beta_1+2\alpha_1 k^2}{4\alpha_1\beta_1 k^4}$	0	0
${}^{0^+}\tau^{\perp}\dagger$	0	0	0	0
${}^{0^-}\sigma^{\parallel}\dagger$	0	0	0	$\frac{1}{4\beta_1+2\alpha_1 k^2}$

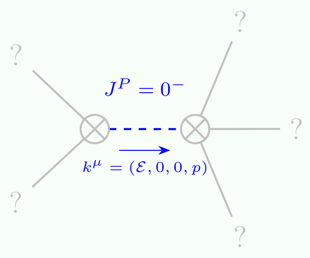
	${}^{1^+}\sigma^{\parallel}{}_{\alpha\beta}$	${}^{1^+}\sigma^{\perp}{}_{\alpha\beta}$	${}^{1^+}\tau^{\parallel}{}_{\alpha\beta}$	${}^{1^-}\sigma^{\parallel}{}_{\alpha}$	${}^{1^-}\sigma^{\perp}{}_{\alpha}$	${}^{1^-}\tau^{\parallel}{}_{\alpha}$	${}^{1^-}\tau^{\perp}{}_{\alpha}$
${}^{1^+}\sigma^{\parallel}\dagger^{\alpha\beta}$	$\frac{1}{2\beta_1+2\alpha_1 k^2}$	$-\frac{1}{2\sqrt{2}(1+k^2)(\beta_1+\alpha_1 k^2)}$	$-\frac{ik}{2\sqrt{2}(1+k^2)(\beta_1+\alpha_1 k^2)}$	0	0	0	0
${}^{1^+}\sigma^{\perp}\dagger^{\alpha\beta}$	$-\frac{1}{2\sqrt{2}(1+k^2)(\beta_1+\alpha_1 k^2)}$	$\frac{3\beta_1+2\alpha_1 k^2}{4\beta_1(1+k^2)^2(\beta_1+\alpha_1 k^2)}$	$\frac{ik(3\beta_1+2\alpha_1 k^2)}{4\beta_1(1+k^2)^2(\beta_1+\alpha_1 k^2)}$	0	0	0	0
${}^{1^+}\tau^{\parallel}\dagger^{\alpha\beta}$	$\frac{ik}{2\sqrt{2}(1+k^2)(\beta_1+\alpha_1 k^2)}$	$-\frac{ik(3\beta_1+2\alpha_1 k^2)}{4\beta_1(1+k^2)^2(\beta_1+\alpha_1 k^2)}$	$\frac{k^2(3\beta_1+2\alpha_1 k^2)}{4\beta_1(1+k^2)^2(\beta_1+\alpha_1 k^2)}$	0	0	0	0
${}^{1^-}\sigma^{\parallel}\dagger^{\alpha}$	0	0	0	$\frac{1}{\beta_1+2\alpha_1 k^2}$	0	0	0
${}^{1^-}\sigma^{\perp}\dagger^{\alpha}$	0	0	0	0	$\frac{1}{\beta_1(1+2k^2)^2}$	0	$\frac{i\sqrt{2}k}{\beta_1(1+2k^2)^2}$
${}^{1^-}\tau^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0
${}^{1^-}\tau^{\perp}\dagger^{\alpha}$	0	0	0	0	$-\frac{i\sqrt{2}k}{\beta_1(1+2k^2)^2}$	0	$\frac{2k^2}{\beta_1(1+2k^2)^2}$

	${}^{2^+}\sigma^{\parallel}{}_{\alpha\beta}$	${}^{2^+}\tau^{\parallel}{}_{\alpha\beta}$	${}^{2^-}\sigma^{\parallel}{}_{\alpha\beta\chi}$
${}^{2^+}\sigma^{\parallel}\dagger^{\alpha\beta}$	$\frac{1}{2\alpha_1 k^2}$	$\frac{i}{2\sqrt{2}\alpha_1 k^3}$	0
${}^{2^+}\tau^{\parallel}\dagger^{\alpha\beta}$	$-\frac{i}{2\sqrt{2}\alpha_1 k^3}$	$\frac{\beta_1+2\alpha_1 k^2}{4\alpha_1\beta_1 k^4}$	0
${}^{2^-}\sigma^{\parallel}\dagger^{\alpha\beta\chi}$	0	0	$\frac{1}{\beta_1+2\alpha_1 k^2}$

Source constraints

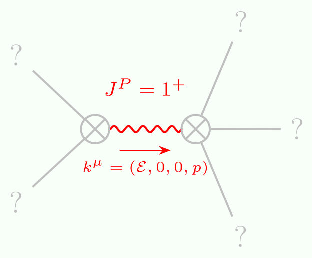
Spin-parity form	Covariant form	Multiplicities
${}^{0^+}\tau^{\perp} == 0$	$\partial_\beta\partial_\alpha\tau(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
${}^{1^-}\tau^{\parallel\alpha} == 0$	$\partial_\chi\partial_\beta\partial^\alpha\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_\chi\partial^\chi\partial_\beta\tau(\Delta+\mathcal{K})^{\beta\alpha}$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

Massive spectrum



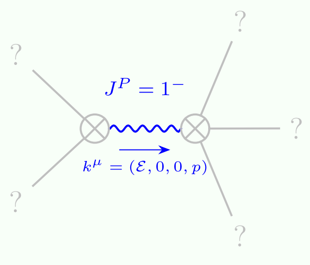
Massive particle

Pole residue:	$-\frac{1}{2\alpha_1} > 0$
Square mass:	$-\frac{2\beta_1}{\alpha_1} > 0$
Spin:	0
Parity:	Odd



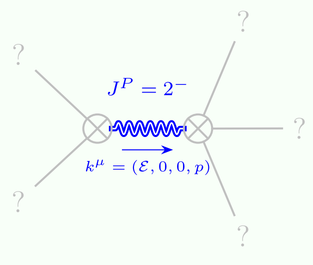
Massive particle

Pole residue:	$\frac{3\alpha_1 - 2\beta_1}{4\alpha_1^2 - 4\alpha_1\beta_1} > 0$
Square mass:	$-\frac{\beta_1}{\alpha_1} > 0$
Spin:	1
Parity:	Even



Massive particle

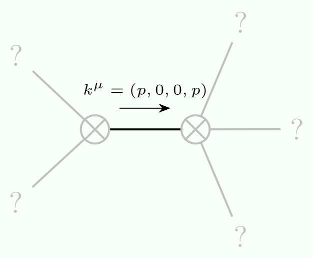
Pole residue:	$-\frac{1}{2\alpha_1} > 0$
Square mass:	$-\frac{\beta_1}{2\alpha_1} > 0$
Spin:	1
Parity:	Odd



Massive particle

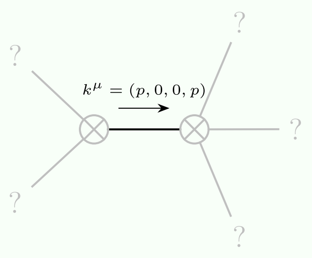
Pole residue:	$-\frac{1}{2\alpha_1} > 0$
Square mass:	$-\frac{\beta_1}{2\alpha_1} > 0$
Spin:	2
Parity:	Odd

Massless spectrum



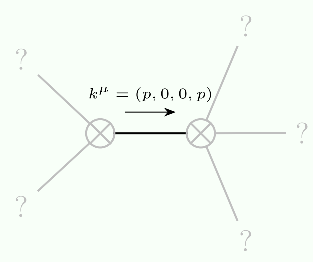
Massless particle

Pole residue:	$\frac{7}{\alpha_1} + \frac{2p^2}{\beta_1} + \frac{4\alpha_1 p^4}{\beta_1^2} > 0$
Polarisations:	2



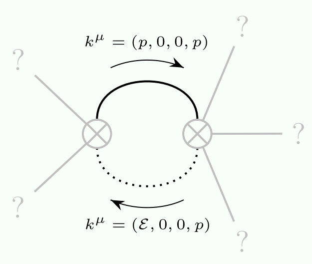
Massless particle

Pole residue:	$-\frac{1}{\alpha_1\beta_1^2}(\beta_1^2 + 28\alpha_1\beta_1 p^2 + 3\sqrt{(\beta_1^2(9\beta_1^2 - 8\alpha_1\beta_1 p^2 + 144\alpha_1^2 p^4))}) > 0$
Polarisations:	3



Massless particle

Pole residue:	$\frac{1}{\alpha_1\beta_1^2}(-\beta_1(\beta_1 + 28\alpha_1 p^2) + 3\sqrt{(\beta_1^2(9\beta_1^2 - 8\alpha_1\beta_1 p^2 + 144\alpha_1^2 p^4))}) > 0$
Polarisations:	3



Quartic pole

Pole residue:	$0 < \frac{p^2}{\alpha_1}$ && $\frac{p^2}{\alpha_1} > 0$
Polarisations:	3

Unitarity conditions

(Demonstrably impossible)