PSALTer results panel

Wave operator and propagator

Let $D_+ = 16(\beta_1-\beta_2)(2\beta_1+\beta_2)+4(\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)(2\beta_1-\beta_2)k^2-4\beta_1(\mathcal{M}_{Pl}^2)+10\beta_2(\mathcal{M}_{Pl}^2)-(\mathcal{M}_{Pl}^2)^2$ as printed in the denominators below, and $D_- = -16(\beta_1-\beta_2)(2\beta_1+\beta_2)-4(\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)(2\beta_1-\beta_2)k^2+4\beta_1(\mathcal{M}_{Pl}^2)-10\beta_2(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2$; $P = (4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2))(2\beta_1+\beta_2+3\beta_3+(\mathcal{M}_{Pl}^2))$.

	$1^+\sigma^\parallel{}_{\alpha\beta}$	$1^+\sigma^\perp{}_{\alpha\beta}$	$1^+\tau^\parallel{}_{\alpha\beta}$	$1^-\sigma^\parallel{}_\alpha$	$1^-\sigma^\perp{}_\alpha$	$1^-\tau^\parallel{}_\alpha$	$1^-\tau^\perp{}_\alpha$
$1^+\sigma^\parallel\dagger^{\alpha\beta}$	$\frac{8(2\beta_1-\beta_2)}{D_+}$	$-\frac{2\sqrt{2}(4\beta_1-6\beta_2+(\mathcal{M}_{Pl}^2))}{(1+k^2)D_+}$	$-\frac{2i\sqrt{2}k(4\beta_1-6\beta_2+(\mathcal{M}_{Pl}^2))}{(1+k^2)D_+}$	0	0 0		0
$1^+\sigma^\perp\dagger^{\alpha\beta}$	$\frac{2\sqrt{2}(4\beta_1-6\beta_2+(\mathcal{M}_{Pl}^2))}{(1+k^2)D_-}$	$\frac{2(12\beta_1-10\beta_2+2(\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)k^2+(\mathcal{M}_{Pl}^2))}{(1+k^2)^2D_+}$	$\frac{2ik(12\beta_1-10\beta_2+2(\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)k^2+(\mathcal{M}_{Pl}^2))}{(1+k^2)^2D_+}$	0	0 0		0
$1^+\tau^\parallel\dagger^{\alpha\beta}$	$-\frac{2i\sqrt{2}k(4\beta_1-6\beta_2+(\mathcal{M}_{Pl}^2))}{(1+k^2)D_-}$	$\frac{2ik(12\beta_1-10\beta_2+2(\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)k^2+(\mathcal{M}_{Pl}^2))}{(1+k^2)^2D_-}$	$\frac{2k^2(12\beta_1-10\beta_2+2(\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)k^2+(\mathcal{M}_{Pl}^2))}{(1+k^2)^2D_+}$	0	0 0		0
$1^-\sigma^\parallel\dagger^\alpha$	0	0	0	$\frac{4(2\beta_1+\beta_2+\beta_3)}{P}$	$\frac{2\sqrt{2}(2\beta_3+(\mathcal{M}_{Pl}^2))}{(1+2k^2)P}$	0	$\frac{4ik(2\beta_3+(\mathcal{M}_{Pl}^2))}{(1+2k^2)P}$
$1^-\sigma^\perp\dagger^\alpha$	0	0	0	$\frac{2\sqrt{2}(2\beta_3+(\mathcal{M}_{Pl}^2))}{(1+2k^2)P}$	$\frac{2(4\beta_1+2\beta_2+4\beta_3+(\mathcal{M}_{Pl}^2))}{(1+2k^2)^2P}$	0	$\frac{2i\sqrt{2}k(4\beta_1+2\beta_2+4\beta_3+(\mathcal{M}_{Pl}^2))}{(1+2k^2)^2P}$
$1^-\tau^\parallel\dagger^\alpha$	0	0	0	0	0 0		0
$1^-\tau^\perp\dagger^\alpha$	0	0	0	$-\frac{4ik(2\beta_3+(\mathcal{M}_{Pl}^2))}{(1+2k^2)P}$	$-\frac{2i\sqrt{2}k(4\beta_1+2\beta_2+4\beta_3+(\mathcal{M}_{Pl}^2))}{(1+2k^2)^2P}$	0	$\frac{4k^2(4\beta_1+2\beta_2+4\beta_3+(\mathcal{M}_{Pl}^2))}{(1+2k^2)^2P}$

	$1^+\mathcal{A}^\parallel{}_{\alpha\beta}$	$1^+\mathcal{A}^\perp{}_{\alpha\beta}$	$1^+f^\parallel{}_{\alpha\beta}$	$1^-\mathcal{A}^\parallel{}_\alpha$	$1^-\mathcal{A}^\perp{}_\alpha$	$1^-f^\parallel{}_\alpha$	$1^-f^\perp{}_\alpha$
$1^+\mathcal{A}^\parallel\dagger^{\alpha\beta}$	$\frac{1}{4}(12\beta_1-10\beta_2+2(\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)k^2+(\mathcal{M}_{Pl}^2))$	$\frac{4\beta_1-6\beta_2+(\mathcal{M}_{Pl}^2)}{2\sqrt{2}}$	$\frac{ik(4\beta_1-6\beta_2+(\mathcal{M}_{Pl}^2))}{2\sqrt{2}}$	0	0	0	0
$1^+\mathcal{A}^\perp\dagger^{\alpha\beta}$	$\frac{4\beta_1-6\beta_2+(\mathcal{M}_{Pl}^2)}{2\sqrt{2}}$	$2\beta_1-\beta_2$	$i(2\beta_1-\beta_2)k$	0	0	0	0
$1^+f^\parallel\dagger^{\alpha\beta}$	$-\frac{ik(4\beta_1-6\beta_2+(\mathcal{M}_{Pl}^2))}{2\sqrt{2}}$	$-i(2\beta_1-\beta_2)k$	$(2\beta_1-\beta_2)k^2$	0	0	0	0
$1^-\mathcal{A}^\parallel\dagger^\alpha$	0	0	0	$\beta_1+\frac{\beta_2}{2}+\beta_3+\frac{(\mathcal{M}_{Pl}^2)}{4}$	$-\frac{2\beta_3+(\mathcal{M}_{Pl}^2)}{2\sqrt{2}}$	0	$-\frac{1}{2}ik(2\beta_3+(\mathcal{M}_{Pl}^2))$
$1^-\mathcal{A}^\perp\dagger^\alpha$	0	0	0	$-\frac{2\beta_3+(\mathcal{M}_{Pl}^2)}{2\sqrt{2}}$	$\frac{1}{2}(2\beta_1+\beta_2+\beta_3)$	0	$\frac{i(2\beta_1+\beta_2+\beta_3)k}{\sqrt{2}}$
$1^-f^\parallel\dagger^\alpha$	0	0	0	0	0 0		0
$1^-f^\perp\dagger^\alpha$	0	0	0	$\frac{1}{2}ik(2\beta_3+(\mathcal{M}_{Pl}^2))$	$-\frac{i(2\beta_1+\beta_2+\beta_3)k}{\sqrt{2}}$	0	$(2\beta_1+\beta_2+\beta_3)k^2$

$$\mathcal{S} == \iiiint(\mathcal{A}^{\alpha\beta\chi}\ \sigma_{\alpha\beta\chi} + f^{\alpha\beta}\ \tau(\Delta+\mathcal{K})_{\alpha\beta} - \frac{1}{2}(\mathcal{M}_{Pl}^2)(\mathcal{A}_{\iota\kappa\theta}\ \mathcal{A}^{\iota\theta\kappa} + \mathcal{A}^{\iota\theta}{}_\iota\ \mathcal{A}_\theta{}^\kappa{}_\kappa + 2f^{\iota\theta}\ \partial_\theta\mathcal{A}_\iota{}^\kappa{}_\kappa - 2\partial_\theta\mathcal{A}^{\iota\theta}{}_\iota - 2f^{\iota\theta}\ \partial_\kappa\mathcal{A}_\iota{}^\kappa{}_\theta - 2f^\iota{}_\iota\ \partial_\kappa\mathcal{A}^{\theta\kappa}{}_\theta) + \beta_3(-\mathcal{A}^{\iota\theta}{}_\iota\ \mathcal{A}_\theta{}^\kappa{}_\kappa + 2\mathcal{A}_\iota{}^\kappa{}_\kappa\ \partial_\theta f^{\iota\theta} - 2\mathcal{A}_\theta{}^\kappa{}_\kappa\ \partial^\theta f^\iota{}_\iota + \partial_\theta f^\kappa{}_\kappa\ \partial^\theta f^\iota{}_\iota + \partial_\theta f^{\iota\theta}\ \partial_\kappa f_\iota{}^\kappa - 2\partial^\theta f^\iota{}_\iota\ \partial_\kappa f_\theta{}^\kappa) + 2\alpha_4(4\partial_\kappa\mathcal{A}_{\alpha\theta\kappa} - 2\partial_\kappa\mathcal{A}_{\alpha\kappa\theta} - \partial_\theta\mathcal{A}_{\alpha\iota\kappa} + \partial_\kappa\mathcal{A}_{\alpha\iota\theta} - 2\partial_\kappa\mathcal{A}_{\alpha\theta\iota})\ \partial^\kappa\mathcal{A}^{\alpha\iota\theta} - \alpha_2(\partial_\theta\mathcal{A}_\iota{}^\kappa{}_\kappa\ \partial^\theta\mathcal{A}^{\alpha\iota}{}_\alpha + \partial_\alpha\mathcal{A}^{\alpha\iota\theta}\ \partial_\kappa\mathcal{A}_\iota{}^\kappa{}_\theta - 2\partial^\theta\mathcal{A}^{\alpha\iota}{}_\alpha\ \partial_\kappa\mathcal{A}_\iota{}^\kappa{}_\theta - 4\partial_\theta\mathcal{A}_{\alpha\theta\kappa}\ \partial^\kappa\mathcal{A}^{\alpha\iota\theta} + 2\partial_\theta\mathcal{A}_{\alpha\kappa\theta}\ \partial^\kappa\mathcal{A}^{\alpha\iota\theta} + 2\partial_\kappa\mathcal{A}_{\alpha\theta\iota}\ \partial^\kappa\mathcal{A}^{\alpha\iota\theta}) + 2\beta_1(-\mathcal{A}_{\iota\kappa\theta}\ \mathcal{A}^{\iota\theta\kappa} + (2\mathcal{A}_{\theta\kappa\iota} - \partial_\iota f_{\kappa\theta} + \partial_\kappa f_{\iota\theta})\partial^\kappa f^{\iota\theta} + \mathcal{A}_{\iota\theta\kappa}(\mathcal{A}^{\iota\theta\kappa} + 2\partial^\kappa f^{\iota\theta})) + \beta_2((-2\mathcal{A}_{\theta\kappa\iota} - 2\partial_\iota f_{\theta\kappa} + \partial_\theta f_{\iota\kappa} + \partial_\kappa f_{\theta\iota})\partial^\kappa f^{\iota\theta} - \mathcal{A}_{\iota\theta\kappa}(\mathcal{A}^{\iota\theta\kappa} + 2\partial^\kappa f^{\iota\theta}) + \mathcal{A}_{\iota\kappa\theta}(3\mathcal{A}^{\iota\theta\kappa} + 4\partial^\kappa f^{\iota\theta})) + 4\alpha_1\partial_\theta\mathcal{A}^{\iota\theta}{}_\iota\ \partial_\kappa\mathcal{A}^{\kappa\lambda}{}_\lambda - \alpha_3(\partial_\kappa\mathcal{A}_\lambda{}^\zeta{}_\zeta\ \partial^\lambda\mathcal{A}^{\theta\kappa}{}_\theta + (\partial_\theta\mathcal{A}^{\theta\kappa\lambda} - 2\partial^\lambda\mathcal{A}^{\theta\kappa}{}_\theta)\partial_\zeta\mathcal{A}_\lambda{}^\zeta{}_\kappa) + 4\alpha_6\partial_\kappa\mathcal{A}_{\lambda\zeta\alpha}\partial^\zeta\mathcal{A}^{\alpha\iota\lambda})[t,x,y,z]\,dz\,dy\,dx\,dt$$

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

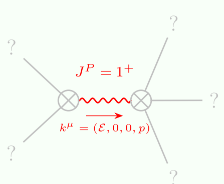
	$2^+\mathcal{A}^\parallel{}_{\alpha\beta}$	$2^+f^\parallel{}_{\alpha\beta}$	$2^-\mathcal{A}^\parallel{}_{\alpha\beta\chi}$
$2^+\mathcal{A}^\parallel\dagger^{\alpha\beta}$	$\frac{1}{4}(4\beta_1+2\beta_2+2(-3\alpha_2+\alpha_3-4\alpha_4+4\alpha_6)k^2-(\mathcal{M}_{Pl}^2))$	$-\frac{ik(4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2))}{2\sqrt{2}}$	0
$2^+f^\parallel\dagger^{\alpha\beta}$	$\frac{ik(4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2))}{2\sqrt{2}}$	$(2\beta_1+\beta_2)k^2$	0
$2^-\mathcal{A}^\parallel\dagger^{\alpha\beta\chi}$	0	0	$\beta_1+\frac{\beta_2}{2}-\alpha_2k^2-\frac{(\mathcal{M}_{Pl}^2)}{4}$

	$0^+\sigma^\parallel$	$0^+\tau^\parallel$	$0^+\tau^\perp$	$0^-\sigma^\parallel$
$0^+\sigma^\parallel\dagger$	$\frac{1}{2(3\alpha_1+\alpha_3-\alpha_4+\alpha_6)k^2+\frac{1}{2}(\mathcal{M}_{Pl}^2)(1-\frac{(\mathcal{M}_{Pl}^2)}{2\beta_1+\beta_2+3\beta_3})}$	$-\frac{i\sqrt{2}(2\beta_1+\beta_2+3\beta_3+(\mathcal{M}_{Pl}^2))}{k(-4(3\alpha_1+\alpha_3-\alpha_4+\alpha_6)(2\beta_1+\beta_2+3\beta_3)k^2+(2\beta_1+\beta_2+3\beta_3)(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2)}$	0	0
$0^+\tau^\parallel\dagger$	$\frac{i\sqrt{2}(2\beta_1+\beta_2+3\beta_3+(\mathcal{M}_{Pl}^2))}{k((\mathcal{M}_{Pl}^2)^2+(2\beta_1+\beta_2+3\beta_3)(-4(3\alpha_1+\alpha_3-\alpha_4+\alpha_6)k^2+(\mathcal{M}_{Pl}^2)))}$	$\frac{2\beta_1+\beta_2+3\beta_3+4(3\alpha_1+\alpha_3-\alpha_4+\alpha_6)k^2+(\mathcal{M}_{Pl}^2)}{k^2(-4(3\alpha_1+\alpha_3-\alpha_4+\alpha_6)(2\beta_1+\beta_2+3\beta_3)k^2+(2\beta_1+\beta_2+3\beta_3)(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2)}$	0	0
$0^+\tau^\perp\dagger$	0	0	0	0
$0^-\sigma^\parallel\dagger$	0	0	0	$\frac{2}{8\beta_1-8\beta_2+4(\alpha_2+3\alpha_4)k^2+(\mathcal{M}_{Pl}^2)}$

	$0^+\mathcal{A}^\parallel$	$0^+f^\parallel$	$0^+f^\perp$	$0^-\mathcal{A}^\parallel$
$0^+\mathcal{A}^\parallel\dagger$	$\frac{1}{2}(2\beta_1+\beta_2+3\beta_3+4(3\alpha_1+\alpha_3-\alpha_4+\alpha_6)k^2+(\mathcal{M}_{Pl}^2))$	$-\frac{ik(2\beta_1+\beta_2+3\beta_3+(\mathcal{M}_{Pl}^2))}{\sqrt{2}}$	0	0
$0^+f^\parallel\dagger$	$\frac{ik(2\beta_1+\beta_2+3\beta_3+(\mathcal{M}_{Pl}^2))}{\sqrt{2}}$	$(2\beta_1+\beta_2+3\beta_3)k^2$	0	0
$0^+f^\perp\dagger$	0	0 0		0
$0^-\mathcal{A}^\parallel\dagger$	0	0 0		$4\beta_1-4\beta_2+2(\alpha_2+3\alpha_4)k^2+\frac{(\mathcal{M}_{Pl}^2)}{2}$

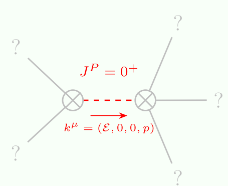
	$2^+\sigma^\parallel{}_{\alpha\beta}$	$2^+\tau^\parallel{}_{\alpha\beta}$	$2^-\sigma^\parallel{}_{\alpha\beta\chi}$
$2^+\sigma^\parallel\dagger^{\alpha\beta}$	$\frac{8}{4(-3\alpha_2+\alpha_3-4\alpha_4+4\alpha_6)k^2+(\mathcal{M}_{Pl}^2)(2-\frac{(\mathcal{M}_{Pl}^2)}{2\beta_1+\beta_2})}$	$-\frac{2i\sqrt{2}(4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2))}{k(4(3\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)(2\beta_1+\beta_2)k^2-2(2\beta_1+\beta_2)(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2)}$	0
$2^+\tau^\parallel\dagger^{\alpha\beta}$	$\frac{2i\sqrt{2}(4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2))}{k(2(2\beta_1+\beta_2)(2(3\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)k^2-(\mathcal{M}_{Pl}^2))+(\mathcal{M}_{Pl}^2)^2)}$	$-\frac{2(4\beta_1+2\beta_2+2(-3\alpha_2+\alpha_3-4\alpha_4+4\alpha_6)k^2-(\mathcal{M}_{Pl}^2))}{k^2(4(3\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)(2\beta_1+\beta_2)k^2-2(2\beta_1+\beta_2)(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2)}$	0
$2^-\sigma^\parallel\dagger^{\alpha\beta\chi}$	0	0	$-\frac{4}{-4\beta_1-2\beta_2+4\alpha_2k^2+(\mathcal{M}_{Pl}^2)}$

Massive and massless spectra



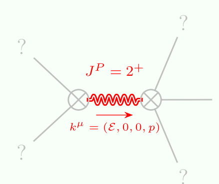
Massive particle

Pole residue:	$(\alpha_2(48\beta_1^2-80\beta_1\beta_2+44\beta_2^2+8\beta_1(\mathcal{M}_{Pl}^2)-12\beta_2(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2) - \alpha_3(48\beta_1^2-80\beta_1\beta_2+44\beta_2^2+8\beta_1(\mathcal{M}_{Pl}^2)-12\beta_2(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2) + 4\alpha_4(48\beta_1^2-80\beta_1\beta_2+44\beta_2^2+8\beta_1(\mathcal{M}_{Pl}^2)-12\beta_2(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2) - 4\alpha_6(48\beta_1^2-80\beta_1\beta_2+44\beta_2^2+8\beta_1(\mathcal{M}_{Pl}^2)-12\beta_2(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2) - 2(2\beta_1-\beta_2)(32\beta_1^2-16\beta_2^2+10\beta_2(\mathcal{M}_{Pl}^2)-(\mathcal{M}_{Pl}^2)^2-4\beta_1(4\beta_2+(\mathcal{M}_{Pl}^2))))/((\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)(2\beta_1-\beta_2)(8\alpha_2\beta_1-8\alpha_3\beta_1+32\alpha_4\beta_1-32\alpha_6\beta_1-32\beta_1^2-4\alpha_2\beta_2+4\alpha_3\beta_2-16\alpha_4\beta_2+16\alpha_6\beta_2+16\beta_1\beta_2+16\beta_2^2+4\beta_1(\mathcal{M}_{Pl}^2)-10\beta_2(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2)) > 0$
Square mass:	$\frac{-32\beta_1^2+16\beta_2^2-10\beta_2(\mathcal{M}_{Pl}^2)+(\mathcal{M}_{Pl}^2)^2+4\beta_1(4\beta_2+(\mathcal{M}_{Pl}^2))}{4(\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)(2\beta_1-\beta_2)} > 0$
Spin:	1
Parity:	Even



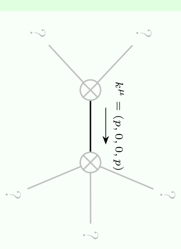
Massive particle

Pole residue:	$(-4\alpha_4\beta_1+4\alpha_6\beta_1-2\alpha_4\beta_2+2\alpha_6\beta_2-6\alpha_4\beta_3+6\alpha_6\beta_3 - 2\alpha_4(\mathcal{M}_{Pl}^2)+2\alpha_6(\mathcal{M}_{Pl}^2)+2\beta_1(\mathcal{M}_{Pl}^2)+\beta_2(\mathcal{M}_{Pl}^2)+3\beta_3(\mathcal{M}_{Pl}^2) + 6\alpha_1(2\beta_1+\beta_2+3\beta_3+(\mathcal{M}_{Pl}^2))+2\alpha_3(2\beta_1+\beta_2+3\beta_3+(\mathcal{M}_{Pl}^2)))/(2(3\alpha_1+\alpha_3-\alpha_4+\alpha_6)(2\beta_1+\beta_2+3\beta_3)(\mathcal{M}_{Pl}^2)) > 0$
Square mass:	$\frac{(\mathcal{M}_{Pl}^2)(2\beta_1+\beta_2+3\beta_3+(\mathcal{M}_{Pl}^2))}{4(3\alpha_1+\alpha_3-\alpha_4+\alpha_6)(2\beta_1+\beta_2+3\beta_3)} > 0$
Spin:	0
Parity:	Even



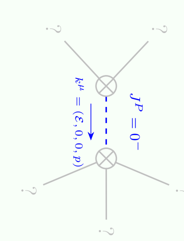
Massive particle

Pole residue:	$\frac{-3\alpha_2(4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2))+\alpha_3(4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2))-2(8\alpha_4\beta_1-8\alpha_6\beta_1+4\alpha_4\beta_2-4\alpha_6\beta_2-2\alpha_6(\mathcal{M}_{Pl}^2)+2\alpha_4(\mathcal{M}_{Pl}^2)+2\beta_1(\mathcal{M}_{Pl}^2)+\beta_2(\mathcal{M}_{Pl}^2))}{(3\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)(2\beta_1+\beta_2)(\mathcal{M}_{Pl}^2)} > 0$
Square mass:	$\frac{(4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2))(\mathcal{M}_{Pl}^2)}{4(3\alpha_2-\alpha_3+4\alpha_4-4\alpha_6)(2\beta_1+\beta_2)} > 0$
Spin:	2
Parity:	Even



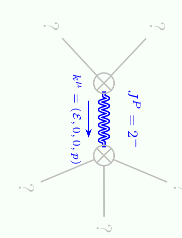
Massless particle

Pole residue:	$-\frac{1}{(\mathcal{M}_{Pl}^2)} > 0$
Polarisations:	2



Massive particle

Pole residue:	$-\frac{1}{2(\alpha_2+3\alpha_4)} > 0$
Square mass:	$-\frac{8\beta_1-8\beta_2+(\mathcal{M}_{Pl}^2)}{4(\alpha_2+3\alpha_4)} > 0$
Spin:	0
Parity:	Odd



Massive particle

Pole residue:	$-\frac{1}{\alpha_2} > 0$
Square mass:	$\frac{4\beta_1+2\beta_2-(\mathcal{M}_{Pl}^2)}{4\alpha_2} > 0$
Spin:	2
Parity:	Odd

Unitarity conditions

(Demonstrably impossible)