Particle spectrograph

Wave operator and propagator

	$\Delta_{1^+\,\alpha\beta}^{\#1}$	$\Delta_{1^+\,\alpha\beta}^{\#2}$	$\Delta_{1^+\,\alpha\beta}^{\#3}$	$\Delta_{1^-\,\alpha}^{\#1}$	$\Delta_{1^-\,\alpha}^{\#2}$	$\Delta_{1^-\,\alpha}^{\#3}$	$\Delta_{1^-\,\alpha}^{\#4}$	$\Delta_{1^-\,\alpha}^{\#5}$	$\Delta_{1^-\,\alpha}^{\#6}$	$\mathcal{T}_{1^-\,\alpha}^{\#1}$
$\Delta_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{4}{3}\left(-\frac{1}{a_0+4 a_1-4 a_2}+\frac{2 a_1+a_2-2 a_5-6 a_7+2 a_9}{2 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}\right)$	$\frac{2}{3}\sqrt{2}\left(-\frac{1}{a_0+4 a_1-4 a_2}-\frac{2 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{2 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}\right)$	$-\frac{4 (2 a_1+a_2+a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0	0	0	0	0	0	0
$\Delta_{1^+}^{\#2}\dagger^{\alpha\beta}$	$\frac{2}{3}\sqrt{2}\left(-\frac{1}{a_0+4 a_1-4 a_2}-\frac{2 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{2 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}\right)$	$-\frac{2}{3 (a_0+4 a_1-4 a_2)}+\frac{8 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$\frac{4 \sqrt{2} (2 a_1+a_2+a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0	0	0	0	0	0	0
$\Delta_{1^+}^{\#3}\dagger^{\alpha\beta}$	$-\frac{4 (2 a_1+a_2+a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$\frac{4 \sqrt{2} (2 a_1+a_2+a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$-\frac{4 (a_0-2 a_1-a_2)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0	0	0	0	0	0	0
$\Delta_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	$\frac{4 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$\frac{4 \sqrt{2} (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0	0	$-\frac{4 \sqrt{\frac{2}{3}} (2 a_1+a_2+a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$\frac{4 (2 a_1+a_2+a_9)}{3 \sqrt{3} (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0
$\Delta_{1^-}^{\#2}\dagger^{\alpha}$	0	0	0	$\frac{4 \sqrt{2} (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$\frac{8 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0	0	$-\frac{8 (2 a_1+a_2+a_9)}{3 \sqrt{3} (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$\frac{4 \sqrt{\frac{2}{3}} (2 a_1+a_2+a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0
$\Delta_{1^-}^{\#3}\dagger^{\alpha}$	0	0	0	0	0	$-\frac{10}{9 (a_0+2 a_5-6 a_7)}-\frac{1}{6 (3 a_0-2 (a_5-8 a_6+5 a_7-4 a_{13} k^2))}$	$\frac{1}{18}\sqrt{5}\left(\frac{4}{a_0+2 a_5-6 a_7}-\frac{3}{3 a_0-2 a_5+16 a_6-10 a_7+8 a_{13} k^2}\right)$	$-\frac{1}{\sqrt{2} (9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2))}$	$-\frac{1}{9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}$	0
$\Delta_{1^-}^{\#4}\dagger^{\alpha}$	0	0	0	0	0	$\frac{1}{18}\sqrt{5}\left(\frac{4}{a_0+2 a_5-6 a_7}-\frac{3}{3 a_0-2 a_5+16 a_6-10 a_7+8 a_{13} k^2}\right)$	$-\frac{2}{9 (a_0+2 a_5-6 a_7)}-\frac{5}{6 (3 a_0-2 (a_5-8 a_6+5 a_7-4 a_{13} k^2))}$	$-\frac{\sqrt{\frac{5}{2}}}{9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}$	$-\frac{\sqrt{5}}{9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}$	0
$\Delta_{1^-}^{\#5}\dagger^{\alpha}$	0	0	0	$-\frac{4 \sqrt{\frac{2}{3}} (2 a_1+a_2+a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$-\frac{8 (2 a_1+a_2+a_9)}{3 \sqrt{3} (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$-\frac{1}{\sqrt{2} (9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2))}$	$-\frac{\sqrt{\frac{5}{2}}}{9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}$	$\frac{8 (-a_0+2 a_1+a_2)}{9 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}-\frac{1}{9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}$	$(\sqrt{2} (12 a_0^2-3 a_9^2- a_0 (30 a_1+15 a_2+2 a_5-64 a_6+22 a_7+6 a_9-32 a_{13} k^2)+ 2 (2 a_1+a_2) (a_5-32 a_6+11 a_7-16 a_{13} k^2)))/ (9 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)) (3 a_0-2 (a_5-8 a_6+5 a_7-4 a_{13} k^2)))$	0
$\Delta_{1^-}^{\#6}\dagger^{\alpha}$	0	0	0	$\frac{4 (2 a_1+a_2+a_9)}{3 \sqrt{3} (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$\frac{4 \sqrt{\frac{2}{3}} (2 a_1+a_2+a_9)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$-\frac{1}{9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}$	$-\frac{\sqrt{5}}{9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}$	$(\sqrt{2} (12 a_0^2-3 a_9^2- a_0 (30 a_1+15 a_2+2 a_5-64 a_6+22 a_7+6 a_9-32 a_{13} k^2)+ 2 (2 a_1+a_2) (a_5-32 a_6+11 a_7-16 a_{13} k^2)))/ (9 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)) (3 a_0-2 (a_5-8 a_6+5 a_7-4 a_{13} k^2)))$	$\frac{-4 a_0+8 a_1+4 a_2}{9 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}-\frac{2}{9 a_0-6 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}$	0
$\mathcal{T}_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	0	0	0	0	0	0	0

	$\Gamma_{1^+\,\alpha\beta}^{\#1}$	$\Gamma_{1^+\,\alpha\beta}^{\#2}$	$\Gamma_{1^+\,\alpha\beta}^{\#3}$	$\Gamma_{1^-\,\alpha}^{\#1}$	$\Gamma_{1^-\,\alpha}^{\#2}$	$\Gamma_{1^-\,\alpha}^{\#3}$	$\Gamma_{1^-\,\alpha}^{\#4}$	$\Gamma_{1^-\,\alpha}^{\#5}$	$\Gamma_{1^-\,\alpha}^{\#6}$	$h_{1^-\,\alpha}^{\#1}$
$\Gamma_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{1}{4}(-a_0-6 a_1+5 a_2)$	$-\frac{a_0+2 a_1-3 a_2}{2 \sqrt{2}}$	$\frac{1}{4}(-2 a_1-a_2-a_9)$	0	0	0	0	0	0	0
$\Gamma_{1^+}^{\#2}\dagger^{\alpha\beta}$	$-\frac{a_0+2 a_1-3 a_2}{2 \sqrt{2}}$	$\frac{1}{2}(-2 a_1+a_2)$	$\frac{2 a_1+a_2+a_9}{2 \sqrt{2}}$	0	0	0	0	0	0	0
$\Gamma_{1^+}^{\#3}\dagger^{\alpha\beta}$	$\frac{1}{4}(-2 a_1-a_2-a_9)$	$\frac{2 a_1+a_2+a_9}{2 \sqrt{2}}$	$-\frac{3}{4}(2 a_1+a_2-2 a_5-6 a_7+2 a_9)$	0	0	0	0	0	0	0
$\Gamma_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	$\frac{1}{12}(a_0-2 a_1-a_2)$	$\frac{a_0-2 a_1-a_2}{6 \sqrt{2}}$	0	0	$-\frac{2 a_1+a_2+a_9}{2 \sqrt{6}}$	$\frac{2 a_1+a_2+a_9}{4 \sqrt{3}}$	0
$\Gamma_{1^-}^{\#2}\dagger^{\alpha}$	0	0	0	$\frac{a_0-2 a_1-a_2}{6 \sqrt{2}}$	$\frac{1}{6}(a_0-2 a_1-a_2)$	0	0	$-\frac{2 a_1+a_2+a_9}{2 \sqrt{3}}$	$\frac{2 a_1+a_2+a_9}{2 \sqrt{6}}$	0
$\Gamma_{1^-}^{\#3}\dagger^{\alpha}$	0	0	0	0	0	$\frac{1}{12}(-9 a_0-14 a_5-8 a_6+50 a_7-4 a_{13} k^2)$	$\frac{1}{3}\sqrt{5}(a_5-2 a_6-a_7-a_{13} k^2)$	$\frac{-3 a_0+2 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}{12 \sqrt{2}}$	$-\frac{a_0}{4}+\frac{1}{6}(a_5-8 a_6+5 a_7-4 a_{13} k^2)$	0
$\Gamma_{1^-}^{\#4}\dagger^{\alpha}$	0	0	0	0	0	$\frac{1}{3}\sqrt{5}(a_5-2 a_6-a_7-a_{13} k^2)$	$\frac{1}{12}(-9 a_0+2 a_5-40 a_6+34 a_7-20 a_{13} k^2)$	$\frac{1}{12}\sqrt{\frac{5}{2}}(-3 a_0+2 (a_5-8 a_6+5 a_7-4 a_{13} k^2))$	$\frac{1}{12}\sqrt{5}(-3 a_0+2 (a_5-8 a_6+5 a_7-4 a_{13} k^2))$	0
$\Gamma_{1^-}^{\#5}\dagger^{\alpha}$	0	0	0	$-\frac{2 a_1+a_2+a_9}{2 \sqrt{6}}$	$-\frac{2 a_1+a_2+a_9}{2 \sqrt{3}}$	$\frac{-3 a_0+2 (a_5-8 a_6+5 a_7-4 a_{13} k^2)}{12 \sqrt{2}}$	$\frac{1}{12}\sqrt{\frac{5}{2}}(-3 a_0+2 (a_5-8 a_6+5 a_7-4 a_{13} k^2))$	$\frac{1}{12}(-3 a_0-2 (6 a_1+3 a_2-7 a_5+8 a_6-23 a_7+6 a_9+4 a_{13} k^2))$	$-\frac{3 a_0-6 a_1-3 a_2+4 a_5+16 a_6+8 a_7-6 a_9+8 a_{13} k^2}{6 \sqrt{2}}$	0
$\Gamma_{1^-}^{\#6}\dagger^{\alpha}$	0	0	0	$\frac{2 a_1+a_2+a_9}{4 \sqrt{3}}$	$\frac{2 a_1+a_2+a_9}{2 \sqrt{6}}$	$-\frac{a_0}{4}+\frac{1}{6}(a_5-8 a_6+5 a_7-4 a_{13} k^2)$	$\frac{1}{12}\sqrt{5}(-3 a_0+2 (a_5-8 a_6+5 a_7-4 a_{13} k^2))$	$-\frac{3 a_0-6 a_1-3 a_2+4 a_5+16 a_6+8 a_7-6 a_9+8 a_{13} k^2}{6 \sqrt{2}}$	$\frac{1}{12}(-6 a_0-6 a_1-3 a_2+10 a_5-32 a_6+38 a_7-6 a_9-16 a_{13} k^2)$	0
$h_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	0	0	0	0	0	0	0

	$\Delta_{2^+\,\alpha\beta}^{\#1}$	$\Delta_{2^+\,\alpha\beta}^{\#2}$	$\Delta_{2^+\,\alpha\beta}^{\#3}$	$\mathcal{T}_{2^+\,\alpha\beta}^{\#1}$	$\Delta_{2^-\,\alpha\beta\chi}^{\#1}$	$\Delta_{2^-\,\alpha\beta\chi}^{\#2}$
$\Delta_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{4 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}$	0	$-\frac{4 (2 a_1+a_2+a_9)}{\sqrt{3} (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0	0	0
$\Delta_{2^+}^{\#2}\dagger^{\alpha\beta}$	0	$-\frac{4}{3 (a_0+2 a_5-6 a_7)}$	0	0	0	0
$\Delta_{2^+}^{\#3}\dagger^{\alpha\beta}$	$-\frac{4 (2 a_1+a_2+a_9)}{\sqrt{3} (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0	$-\frac{4 (a_0-2 a_1-a_2)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	0	0	0
$\mathcal{T}_{2^+}^{\#1}\dagger^{\alpha\beta}$	0	0	0	$-\frac{8}{a_0 k^2}$	0	0
$\Delta_{2^-}^{\#1}\dagger^{\alpha\beta\chi}$	0	0	0	0	$\frac{4 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}{2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9)}$	$-\frac{4 (2 a_1+a_2+a_9)}{\sqrt{3} (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$
$\Delta_{2^-}^{\#2}\dagger^{\alpha\beta\chi}$	0	0	0	0	$-\frac{4 (2 a_1+a_2+a_9)}{\sqrt{3} (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$	$-\frac{4 (a_0-2 a_1-a_2)}{3 (2 (2 a_1+a_2) (a_5+3 a_7)+a_9^2+a_0 (2 a_1+a_2-2 a_5-6 a_7+2 a_9))}$

Source constraints/gauge generators

SO(3) irreps	Multiplicities
$\mathcal{T}_{0^+}^{\#2} == 0$	1
$\Delta_{0^+}^{\#3}+3 \Delta_{0^+}^{\#2} == 2 \Delta_{0^+}^{\#4}$	1
$\Delta_{0^+}^{\#1} == 0$	1
$\mathcal{T}_{1^-}^{\#1\alpha} == 0$	3
$2 (\Delta_{1^-}^{\#6\alpha}+\Delta_{1^-}^{\#5\alpha}) == \Delta_{1^-}^{\#4\alpha}+\Delta_{1^-}^{\#3\alpha}$	3
$\Delta_{1^-}^{\#1\alpha} == \Delta_{1^-}^{\#2\alpha}$	3
Total constraints:	12

	$\Gamma_{3^-\,\alpha\beta\chi}^{\#1}$
$\Gamma_{3^-}^{\#1}\dagger^{\alpha\beta\chi}$	$-\frac{3}{4}(a_0+2 a_5-6 a_7)$

	$\Delta_{3^-\,\alpha\beta\chi}^{\#1}$
$\Delta_{3^-}^{\#1}\dagger^{\alpha\beta\chi}$	$-\frac{4}{3 (a_0+2 a_5-6 a_7)}$

Quadratic (free) action

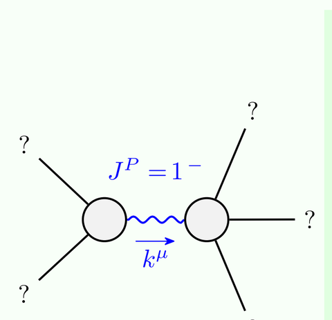
$$S == \iiiint\Big(\frac{1}{24}\big(4 (-2 a_0+2 a_1+a_2-12 a_6+2 a_9) \Gamma_{\alpha\ \mu}^{\ \mu} \Gamma^{\alpha\beta}{}_{\beta}-3 (a_0+8 a_1-2 a_5-18 a_7+4 a_9) \Gamma_{\alpha\beta\mu} \Gamma^{\alpha\beta\mu}-3 a_0 \Gamma_{\alpha\mu\beta} \Gamma^{\alpha\beta\mu}-12 a_2 \Gamma_{\alpha\mu\beta} \Gamma^{\alpha\beta\mu}+6 a_5 \Gamma_{\alpha\mu\beta} \Gamma^{\alpha\beta\mu}+ 54 a_7 \Gamma_{\alpha\mu\beta} \Gamma^{\alpha\beta\mu}-12 a_9 \Gamma_{\alpha\mu\beta} \Gamma^{\alpha\beta\mu}-12 a_2 \Gamma^{\alpha\beta\mu} \Gamma_{\beta\alpha\mu}-12 a_5 \Gamma^{\alpha\beta\mu} \Gamma_{\beta\alpha\mu}- 12 a_0 \Gamma^{\alpha\beta\mu} \Gamma_{\beta\mu\alpha}+24 a_2 \Gamma^{\alpha\beta\mu} \Gamma_{\beta\mu\alpha}-24 a_5 \Gamma^{\alpha\beta\mu} \Gamma_{\beta\mu\alpha}+12 a_9 \Gamma^{\alpha\beta\mu} \Gamma_{\beta\mu\alpha}+ 2 a_0 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma_{\beta\ \mu}^{\ \mu}-16 a_1 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma_{\beta\ \mu}^{\ \mu}-8 a_2 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma_{\beta\ \mu}^{\ \mu}+12 a_5 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma_{\beta\ \mu}^{\ \mu}+ 12 a_7 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma_{\beta\ \mu}^{\ \mu}-12 a_9 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma_{\beta\ \mu}^{\ \mu}+2 a_0 \Gamma^{\alpha\beta}{}_{\alpha} \Gamma_{\beta\ \mu}^{\ \mu}+12 a_5 \Gamma^{\alpha\beta}{}_{\alpha} \Gamma_{\beta\ \mu}^{\ \mu}+ 12 a_7 \Gamma^{\alpha\beta}{}_{\alpha} \Gamma_{\beta\ \mu}^{\ \mu}-4 a_9 \Gamma^{\alpha\beta}{}_{\alpha} \Gamma_{\beta\ \mu}^{\ \mu}+24 a_1 \Gamma^{\alpha\beta\mu} \Gamma_{\mu\beta\alpha}-12 a_5 \Gamma^{\alpha\beta\mu} \Gamma_{\mu\beta\alpha}+ 12 a_9 \Gamma^{\alpha\beta\mu} \Gamma_{\mu\beta\alpha}+4 a_0 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma^{\mu}{}_{\beta\mu}-24 a_7 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma^{\mu}{}_{\beta\mu}+4 a_9 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma^{\mu}{}_{\beta\mu}- 12 a_7 \Gamma^{\alpha\beta}{}_{\alpha} \Gamma^{\mu}{}_{\beta\mu}+8 a_1 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma^{\mu}{}_{\mu\beta}+4 a_2 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma^{\mu}{}_{\mu\beta}-12 a_7 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma^{\mu}{}_{\mu\beta}+ 4 a_9 \Gamma^{\alpha\ \beta}_{\ \alpha} \Gamma^{\mu}{}_{\mu\beta}+24 h^{\alpha\beta} \mathcal{T}_{\alpha\beta}+24 \Gamma^{\alpha\beta\chi} \Delta_{\alpha\beta\chi}-12 a_0 \Gamma^{\alpha\beta\mu} \partial_\beta h_{\alpha\mu}- 6 a_0 \Gamma^{\alpha\ \beta}_{\ \alpha} \partial_\beta h^{\mu}{}_{\mu}+6 a_0 \Gamma^{\alpha\beta}{}_{\alpha} \partial_\beta h^{\mu}{}_{\mu}-6 a_0 h^{\mu}{}_{\mu} \partial_\beta \Gamma^{\alpha\ \beta}_{\ \alpha}+6 a_0 h^{\mu}{}_{\mu} \partial_\beta \Gamma^{\alpha\beta}{}_{\alpha}- 12 a_0 h_{\alpha\mu} \partial_\beta \Gamma^{\alpha\beta\mu}+6 a_0 h^{\alpha\beta} \partial_\beta \partial_\alpha h^{\mu}{}_{\mu}-3 a_0 \partial_\beta h^{\mu}{}_{\mu} \partial^\beta h^{\alpha}{}_{\alpha}+12 a_0 \Gamma^{\alpha\ \beta}_{\ \alpha} \partial_\mu h_{\beta}{}^{\mu}+ 6 a_0 \partial^\beta h^{\alpha}{}_{\alpha} \partial_\mu h_{\beta}{}^{\mu}-12 a_0 h^{\alpha\beta} \partial_\mu \partial_\beta h_{\alpha}{}^{\mu}+6 a_0 h^{\alpha}{}_{\alpha} \partial_\mu \partial_\beta h^{\beta\mu}+6 a_0 h^{\alpha\beta} \partial_\mu \partial^\mu h_{\alpha\beta}- 6 a_0 h^{\alpha}{}_{\alpha} \partial_\mu \partial^\mu h^{\beta}{}_{\beta}-6 a_0 \partial_\beta h_{\alpha\mu} \partial^\mu h^{\alpha\beta}+3 a_0 \partial_\mu h_{\alpha\beta} \partial^\mu h^{\alpha\beta}+12 a_0 h_{\beta\mu} \partial^\mu \Gamma^{\alpha\ \beta}_{\ \alpha}+ 24 a_{13} \partial_\alpha \Gamma_{\mu\ \nu}^{\ \nu} \partial^\mu \Gamma^{\alpha\beta}{}_{\beta}-24 a_{13} \partial_\mu \Gamma_{\alpha\ \nu}^{\ \nu} \partial^\mu \Gamma^{\alpha\beta}{}_{\beta}\big)\Big)[t, x, y, z]\, dz\, dy\, dx\, dt$$

	$\Gamma_{0^+}^{\#1}$	$\Gamma_{0^+}^{\#2}$	$\Gamma_{0^+}^{\#3}$	$\Gamma_{0^+}^{\#4}$	$h_{0^+}^{\#1}$	$h_{0^+}^{\#2}$	$\Gamma_{0^-}^{\#1}$
$\Gamma_{0^+}^{\#1}\dagger$	0	0	0	0	0	0	0
$\Gamma_{0^+}^{\#2}\dagger$	0	$\frac{1}{4}(-3 a_0-2 (a_5+4 a_6-7 a_7))$	$a_5-2 a_6-a_7$	$\frac{-3 a_0+2 (a_5-8 a_6+5 a_7)}{4 \sqrt{2}}$	0	0	0
$\Gamma_{0^+}^{\#3}\dagger$	0	$a_5-2 a_6-a_7$	$\frac{1}{4}(-3 a_0-2 (a_5+4 a_6-7 a_7))$	$\frac{-3 a_0+2 (a_5-8 a_6+5 a_7)}{4 \sqrt{2}}$	0	0	0
$\Gamma_{0^+}^{\#4}\dagger$	0	$\frac{-3 a_0+2 (a_5-8 a_6+5 a_7)}{4 \sqrt{2}}$	$\frac{-3 a_0+2 (a_5-8 a_6+5 a_7)}{4 \sqrt{2}}$	$\frac{1}{4}(-3 a_0+2 (a_5-8 a_6+5 a_7))$	0	0	0
$h_{0^+}^{\#1}\dagger$	0	0	0	0	$\frac{a_0 k^2}{4}$	0	0
$h_{0^+}^{\#2}\dagger$	0	0	0	0	0	0	0
$\Gamma_{0^-}^{\#1}\dagger$	0	0	0	0	0	0	$-\frac{a_0}{2}-2 a_1+2 a_2$

	$\Delta_{0^+}^{\#1}$	$\Delta_{0^+}^{\#2}$	$\Delta_{0^+}^{\#3}$	$\Delta_{0^+}^{\#4}$	$\mathcal{T}_{0^+}^{\#1}$	$\mathcal{T}_{0^+}^{\#2}$	$\Delta_{0^-}^{\#1}$
$\Delta_{0^+}^{\#1}\dagger$	0	0	0	0	0	0	0
$\Delta_{0^+}^{\#2}\dagger$	0	$-\frac{2}{3 (a_0+2 a_5-6 a_7)}-\frac{1}{6 a_0-4 (a_5-8 a_6+5 a_7)}$	$\frac{2}{3 (a_0+2 a_5-6 a_7)}-\frac{1}{6 a_0-4 (a_5-8 a_6+5 a_7)}$	$-\frac{1}{\sqrt{2} (3 a_0-2 (a_5-8 a_6+5 a_7))}$	0	0	0
$\Delta_{0^+}^{\#3}\dagger$	0	$\frac{2}{3 (a_0+2 a_5-6 a_7)}-\frac{1}{6 a_0-4 (a_5-8 a_6+5 a_7)}$	$-\frac{2}{3 (a_0+2 a_5-6 a_7)}-\frac{1}{6 a_0-4 (a_5-8 a_6+5 a_7)}$	$-\frac{1}{\sqrt{2} (3 a_0-2 (a_5-8 a_6+5 a_7))}$	0	0	0
$\Delta_{0^+}^{\#4}\dagger$	0	$-\frac{1}{\sqrt{2} (3 a_0-2 (a_5-8 a_6+5 a_7))}$	$-\frac{1}{\sqrt{2} (3 a_0-2 (a_5-8 a_6+5 a_7))}$	$\frac{1}{-3 a_0+2 (a_5-8 a_6+5 a_7)}$	0	0	0
$\mathcal{T}_{0^+}^{\#1}\dagger$	0	0	0	0	$\frac{4}{a_0 k^2}$	0	0
$\mathcal{T}_{0^+}^{\#2}\dagger$	0	0	0	0	0	0	0
$\Delta_{0^-}^{\#1}\dagger$	0	0	0	0	0	0	$-\frac{2}{a_0+4 a_1-4 a_2}$

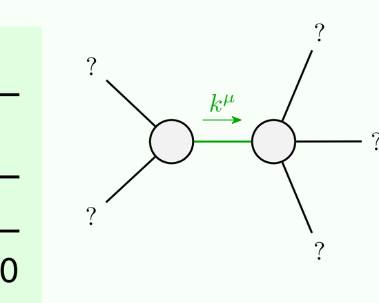
	$\Gamma_{2^+\,\alpha\beta}^{\#1}$	$\Gamma_{2^+\,\alpha\beta}^{\#2}$	$\Gamma_{2^+\,\alpha\beta}^{\#3}$	$h_{2^+\,\alpha\beta}^{\#1}$	$\Gamma_{2^-\,\alpha\beta\chi}^{\#1}$	$\Gamma_{2^-\,\alpha\beta\chi}^{\#2}$
$\Gamma_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{1}{4}(a_0-2 a_1-a_2)$	0	$-\frac{1}{4}\sqrt{3}(2 a_1+a_2+a_9)$	0	0	0
$\Gamma_{2^+}^{\#2}\dagger^{\alpha\beta}$	0	$-\frac{3}{4}(a_0+2 a_5-6 a_7)$	0	0	0	0
$\Gamma_{2^+}^{\#3}\dagger^{\alpha\beta}$	$-\frac{1}{4}\sqrt{3}(2 a_1+a_2+a_9)$	0	$-\frac{3}{4}(2 a_1+a_2-2 a_5-6 a_7+2 a_9)$	0	0	0
$h_{2^+}^{\#1}\dagger^{\alpha\beta}$	0	0	0	$-\frac{a_0 k^2}{8}$	0	0
$\Gamma_{2^-}^{\#1}\dagger^{\alpha\beta\chi}$	0	0	0	0	$\frac{1}{4}(a_0-2 a_1-a_2)$	$-\frac{1}{4}\sqrt{3}(2 a_1+a_2+a_9)$
$\Gamma_{2^-}^{\#2}\dagger^{\alpha\beta\chi}$	0	0	0	0	$-\frac{1}{4}\sqrt{3}(2 a_1+a_2+a_9)$	$-\frac{3}{4}(2 a_1+a_2-2 a_5-6 a_7+2 a_9)$

Massive and massless spectra



Massive particle

Pole residue:	$\frac{1}{4 a_{13}} > 0$
Polarisations:	3
Square mass:	$\frac{-3 a_0+2 (a_5-8 a_6+5 a_7)}{8 a_{13}} > 0$
Spin:	1
Parity:	Odd



Quadratic pole

Pole residue:	$-\frac{1}{a_0} > 0$
Polarisations:	2

Unitarity conditions

$a_0 < 0$ && $a_7 > \frac{1}{10}(3 a_0-2 a_5+16 a_6)$ && $a_{13} > 0$