Particle spectrograph

Wave operator and propagator

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

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

	$\Delta^{\#1}_{2^+\alpha\beta}$	$\Delta^{\#2}_{2^+\alpha\beta}$	$\Delta^{\#3}_{2^+\alpha\beta}$	$\mathcal{T}^{\#1}_{2^+\alpha\beta}$	$\Delta^{\#1}_{2^-\alpha\beta\chi}$	$\Delta^{\#2}_{2^-\alpha\beta\chi}$
$\Delta^{\#1}_{2^+}\dagger^{\alpha\beta}$	$\frac{4(2a_1+a_2-2a_5-6a_7+2a_9)}{2(2a_1+a_2)(a_5+3a_7)+a_9^2+a_0(2a_1+a_2-2a_5-6a_7+2a_9)}$	0	$-\frac{4(2a_1+a_2+a_9)}{\sqrt{3}(2(2a_1+a_2)(a_5+3a_7)+a_9^2+a_0(2a_1+a_2-2a_5-6a_7+2a_9))}$	0	0	0
$\Delta^{\#2}_{2^+}\dagger^{\alpha\beta}$	0	$-\frac{4}{3(a_0+2a_5-6a_7)}$	0	0	0	0
$\Delta^{\#3}_{2^+}\dagger^{\alpha\beta}$	$-\frac{4(2a_1+a_2+a_9)}{\sqrt{3}(2(2a_1+a_2)(a_5+3a_7)+a_9^2+a_0(2a_1+a_2-2a_5-6a_7+2a_9))}$	0	$-\frac{4(a_0-2a_1-a_2)}{3(2(2a_1+a_2)(a_5+3a_7)+a_9^2+a_0(2a_1+a_2-2a_5-6a_7+2a_9))}$	0	0	0
$\mathcal{T}^{\#1}_{2^+}\dagger^{\alpha\beta}$	0	0	0	$-\frac{8}{a_0k^2}$	0	0
$\Delta^{\#1}_{2^-}\dagger^{\alpha\beta\chi}$	0	0	0	0	$\frac{4(2a_1+a_2-2a_5-6a_7+2a_9)}{2(2a_1+a_2)(a_5+3a_7)+a_9^2+a_0(2a_1+a_2-2a_5-6a_7+2a_9)}$	$-\frac{4(2a_1+a_2+a_9)}{\sqrt{3}(2(2a_1+a_2)(a_5+3a_7)+a_9^2+a_0(2a_1+a_2-2a_5-6a_7+2a_9))}$
$\Delta^{\#2}_{2^-}\dagger^{\alpha\beta\chi}$	0	0	0	0	$-\frac{4(2a_1+a_2+a_9)}{\sqrt{3}(2(2a_1+a_2)(a_5+3a_7)+a_9^2+a_0(2a_1+a_2-2a_5-6a_7+2a_9))}$	$-\frac{4(a_0-2a_1-a_2)}{3(2(2a_1+a_2)(a_5+3a_7)+a_9^2+a_0(2a_1+a_2-2a_5-6a_7+2a_9))}$

Source constraints/gauge generators

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

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

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

Quadratic (free) action

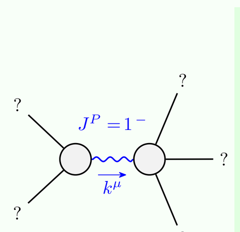
$$S == \iiiint\Big(\tfrac{1}{24}(4(-2a_0+2a_1+a_2-12a_6+2a_9)\Gamma_{\alpha\ \mu}^{\ \mu}\Gamma^{\alpha\beta}_{\ \ \beta}-3(a_0+8a_1-2a_5-18a_7+4a_9)\Gamma_{\alpha\beta\mu}\Gamma^{\alpha\beta\mu}-3a_0\Gamma_{\alpha\mu\beta}\Gamma^{\alpha\beta\mu}-12a_2\Gamma_{\alpha\mu\beta}\Gamma^{\alpha\beta\mu}+6a_5\Gamma_{\alpha\mu\beta}\Gamma^{\alpha\beta\mu}+54a_7\Gamma_{\alpha\mu\beta}\Gamma^{\alpha\beta\mu}-12a_9\Gamma_{\alpha\mu\beta}\Gamma^{\alpha\beta\mu}-12a_2\Gamma^{\alpha\beta\mu}\Gamma_{\beta\alpha\mu}-12a_5\Gamma^{\alpha\beta\mu}\Gamma_{\beta\alpha\mu}-12a_0\Gamma^{\alpha\beta\mu}\Gamma_{\beta\mu\alpha}+24a_2\Gamma^{\alpha\beta\mu}\Gamma_{\beta\mu\alpha}-24a_5\Gamma^{\alpha\beta\mu}\Gamma_{\beta\mu\alpha}+12a_9\Gamma^{\alpha\beta\mu}\Gamma_{\beta\mu\alpha}+2a_0\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}-16a_1\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}-8a_2\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}+12a_5\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}+12a_7\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}-12a_9\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}+2a_0\Gamma^{\alpha\beta}_{\ \ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}+12a_5\Gamma^{\alpha\beta}_{\ \ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}+12a_7\Gamma^{\alpha\beta}_{\ \ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}-4a_9\Gamma^{\alpha\beta}_{\ \ \alpha}\Gamma_{\beta\ \mu}^{\ \mu}+24a_1\Gamma^{\alpha\beta\mu}\Gamma_{\mu\beta\alpha}-12a_5\Gamma^{\alpha\beta\mu}\Gamma_{\mu\beta\alpha}+12a_9\Gamma^{\alpha\beta\mu}\Gamma_{\mu\beta\alpha}+4a_0\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma^{\mu}_{\ \beta\mu}-24a_7\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma^{\mu}_{\ \beta\mu}+4a_9\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma^{\mu}_{\ \beta\mu}-12a_7\Gamma^{\alpha\beta}_{\ \ \alpha}\Gamma^{\mu}_{\ \beta\mu}+8a_1\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma^{\mu}_{\ \mu\beta}+4a_2\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma^{\mu}_{\ \mu\beta}-12a_7\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma^{\mu}_{\ \mu\beta}+4a_9\Gamma^{\alpha\ \beta}_{\ \alpha}\Gamma^{\mu}_{\ \mu\beta}+24h^{\alpha\beta}\mathcal{T}_{\alpha\beta}+24\Gamma^{\alpha\beta\chi}\Delta_{\alpha\beta\chi}-12a_0\Gamma^{\alpha\beta\mu}\partial_\beta h_{\alpha\mu}-6a_0\Gamma^{\alpha\ \beta}_{\ \alpha}\partial_\beta h^{\mu}_{\ \mu}+6a_0\Gamma^{\alpha\beta}_{\ \ \alpha}\partial_\beta h^{\mu}_{\ \mu}-6a_0h^{\mu}_{\ \mu}\partial_\beta\Gamma^{\alpha\ \beta}_{\ \alpha}+6a_0h^{\mu}_{\ \mu}\partial_\beta\Gamma^{\alpha\beta}_{\ \ \alpha}-12a_0h_{\alpha\mu}\partial_\beta\Gamma^{\alpha\beta\mu}+6a_0h^{\alpha\beta}\partial_\beta\partial_\alpha h^{\mu}_{\ \mu}-3a_0\partial_\beta h^{\mu}_{\ \mu}\partial^\beta h^{\alpha}_{\ \alpha}+12a_0\Gamma^{\alpha\ \beta}_{\ \alpha}\partial_\mu h_\beta^{\ \mu}+6a_0\partial^\beta h^{\alpha}_{\ \alpha}\partial_\mu h_\beta^{\ \mu}-12a_0h^{\alpha\beta}\partial_\mu\partial_\beta h_\alpha^{\ \mu}+6a_0h^{\alpha}_{\ \alpha}\partial_\mu\partial_\beta h^{\beta\mu}+6a_0h^{\alpha\beta}\partial_\mu\partial^\mu h_{\alpha\beta}-6a_0h^{\alpha}_{\ \alpha}\partial_\mu\partial^\mu h^{\beta}_{\ \beta}-6a_0\partial_\beta h_{\alpha\mu}\partial^\mu h^{\alpha\beta}+3a_0\partial_\mu h_{\alpha\beta}\partial^\mu h^{\alpha\beta}+12a_0h_{\beta\mu}\partial^\mu\Gamma^{\alpha\ \beta}_{\ \alpha}+24a_{13}\partial_\alpha\Gamma_{\mu\ \nu}^{\ \nu}\partial^\mu\Gamma^{\alpha\beta}_{\ \ \beta}-24a_{13}\partial_\mu\Gamma_{\alpha\ \nu}^{\ \nu}\partial^\mu\Gamma^{\alpha\beta}_{\ \ \beta})\Big)[t,x,y,z]\,dz\,dy\,dx\,dt$$

	$\Gamma^{\#1}_{0^+}$	$\Gamma^{\#2}_{0^+}$	$\Gamma^{\#3}_{0^+}$	$\Gamma^{\#4}_{0^+}$	$h^{\#1}_{0^+}$	$h^{\#2}_{0^+}$	$\Gamma^{\#1}_{0^-}$
$\Gamma^{\#1}_{0^+}\dagger$	0	0	0	0	0	0	0
$\Gamma^{\#2}_{0^+}\dagger$	0	$\frac{1}{4}(-3a_0-2(a_5+4a_6-7a_7))$	$a_5-2a_6-a_7$	$\frac{-3a_0+2(a_5-8a_6+5a_7)}{4\sqrt{2}}$	0	0	0
$\Gamma^{\#3}_{0^+}\dagger$	0	$a_5-2a_6-a_7$	$\frac{1}{4}(-3a_0-2(a_5+4a_6-7a_7))$	$\frac{-3a_0+2(a_5-8a_6+5a_7)}{4\sqrt{2}}$	0	0	0
$\Gamma^{\#4}_{0^+}\dagger$	0	$\frac{-3a_0+2(a_5-8a_6+5a_7)}{4\sqrt{2}}$	$\frac{-3a_0+2(a_5-8a_6+5a_7)}{4\sqrt{2}}$	$\frac{1}{4}(-3a_0+2(a_5-8a_6+5a_7))$	0	0	0
$h^{\#1}_{0^+}\dagger$	0	0	0	0	$\frac{a_0k^2}{4}$	0	0
$h^{\#2}_{0^+}\dagger$	0	0	0	0	0	0	0
$\Gamma^{\#1}_{0^-}\dagger$	0	0	0	0	0	0	$-\frac{a_0}{2}-2a_1+2a_2$

	$\Delta^{\#1}_{0^+}$	$\Delta^{\#2}_{0^+}$	$\Delta^{\#3}_{0^+}$	$\Delta^{\#4}_{0^+}$	$\mathcal{T}^{\#1}_{0^+}$	$\mathcal{T}^{\#2}_{0^+}$	$\Delta^{\#1}_{0^-}$
$\Delta^{\#1}_{0^+}\dagger$	0	0	0	0	0	0	0
$\Delta^{\#2}_{0^+}\dagger$	0	$-\frac{2}{3(a_0+2a_5-6a_7)}-\frac{1}{6a_0-4(a_5-8a_6+5a_7)}$	$\frac{2}{3(a_0+2a_5-6a_7)}-\frac{1}{6a_0-4(a_5-8a_6+5a_7)}$	$-\frac{1}{\sqrt{2}(3a_0-2(a_5-8a_6+5a_7))}$	0	0	0
$\Delta^{\#3}_{0^+}\dagger$	0	$\frac{2}{3(a_0+2a_5-6a_7)}-\frac{1}{6a_0-4(a_5-8a_6+5a_7)}$	$-\frac{2}{3(a_0+2a_5-6a_7)}-\frac{1}{6a_0-4(a_5-8a_6+5a_7)}$	$-\frac{1}{\sqrt{2}(3a_0-2(a_5-8a_6+5a_7))}$	0	0	0
$\Delta^{\#4}_{0^+}\dagger$	0	$-\frac{1}{\sqrt{2}(3a_0-2(a_5-8a_6+5a_7))}$	$-\frac{1}{\sqrt{2}(3a_0-2(a_5-8a_6+5a_7))}$	$\frac{1}{-3a_0+2(a_5-8a_6+5a_7)}$	0	0	0
$\mathcal{T}^{\#1}_{0^+}\dagger$	0	0	0	0	$\frac{4}{a_0k^2}$	0	0
$\mathcal{T}^{\#2}_{0^+}\dagger$	0	0	0	0	0	0	0
$\Delta^{\#1}_{0^-}\dagger$	0	0	0	0	0	0	$-\frac{2}{a_0+4a_1-4a_2}$

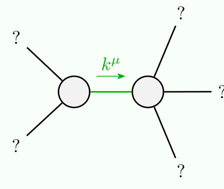
	$\Gamma^{\#1}_{2^+\alpha\beta}$	$\Gamma^{\#2}_{2^+\alpha\beta}$	$\Gamma^{\#3}_{2^+\alpha\beta}$	$h^{\#1}_{2^+\alpha\beta}$	$\Gamma^{\#1}_{2^-\alpha\beta\chi}$	$\Gamma^{\#2}_{2^-\alpha\beta\chi}$
$\Gamma^{\#1}_{2^+}\dagger^{\alpha\beta}$	$\frac{1}{4}(a_0-2a_1-a_2)$	0	$-\frac{1}{4}\sqrt{3}(2a_1+a_2+a_9)$	0	0	0
$\Gamma^{\#2}_{2^+}\dagger^{\alpha\beta}$	0	$-\frac{3}{4}(a_0+2a_5-6a_7)$	0	0	0	0
$\Gamma^{\#3}_{2^+}\dagger^{\alpha\beta}$	$-\frac{1}{4}\sqrt{3}(2a_1+a_2+a_9)$	0	$-\frac{3}{4}(2a_1+a_2-2a_5-6a_7+2a_9)$	0	0	0
$h^{\#1}_{2^+}\dagger^{\alpha\beta}$	0	0	0	$-\frac{a_0k^2}{8}$	0	0
$\Gamma^{\#1}_{2^-}\dagger^{\alpha\beta\chi}$	0	0	0	0	$\frac{1}{4}(a_0-2a_1-a_2)$	$-\frac{1}{4}\sqrt{3}(2a_1+a_2+a_9)$
$\Gamma^{\#2}_{2^-}\dagger^{\alpha\beta\chi}$	0	0	0	0	$-\frac{1}{4}\sqrt{3}(2a_1+a_2+a_9)$	$-\frac{3}{4}(2a_1+a_2-2a_5-6a_7+2a_9)$

Massive and massless spectra



Massive particle

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



Quadratic pole

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

Unitarity conditions

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