Particle spectrograph

Wave operator and propagator

	$\Delta_{0^+}^{\#1}$	$\Delta_{0^+}^{\#2}$	$\Delta_{0^+}^{\#3}$	$\Delta_{0^+}^{\#4}$	$\mathcal{T}_{0^+}^{\#1}$	$\mathcal{T}_{0^+}^{\#2}$	$\Delta_{0^-}^{\#1}$
$\Delta_{0^+}^{\#1}\dagger$	$-\frac{2(a_0+25a_1k^2)}{a_0^2}$	$\frac{10\sqrt{6}a_1k^2}{a_0^2}$	$-\frac{10\sqrt{\frac{2}{3}}a_1k^2}{a_0^2}$	$-\frac{20a_1k^2}{\sqrt{3}a_0^2}$	$-\frac{50i\sqrt{2}a_1k}{a_0^2}$	0	0
$\Delta_{0^+}^{\#2}\dagger$	$\frac{10\sqrt{6}a_1k^2}{a_0^2}$	$-\frac{3(a_0+23a_1k^2)}{4a_0^2}$	$\frac{5a_0+23a_1k^2}{4a_0^2}$	$-\frac{a_0-23a_1k^2}{2\sqrt{2}a_0^2}$	$\frac{20i\sqrt{3}a_1k}{a_0^2}$	0	0
$\Delta_{0^+}^{\#3}\dagger$	$-\frac{10\sqrt{\frac{2}{3}}a_1k^2}{a_0^2}$	$\frac{5a_0+23a_1k^2}{4a_0^2}$	$-\frac{9a_0+23a_1k^2}{12a_0^2}$	$-\frac{3a_0+23a_1k^2}{6\sqrt{2}a_0^2}$	$-\frac{20ia_1k}{\sqrt{3}a_0^2}$	0	0
$\Delta_{0^+}^{\#4}\dagger$	$-\frac{20a_1k^2}{\sqrt{3}a_0^2}$	$-\frac{a_0-23a_1k^2}{2\sqrt{2}a_0^2}$	$-\frac{3a_0+23a_1k^2}{6\sqrt{2}a_0^2}$	$\frac{3a_0-23a_1k^2}{6a_0^2}$	$-\frac{20i\sqrt{\frac{2}{3}}a_1k}{a_0^2}$	0	0
$\mathcal{T}_{0^+}^{\#1}\dagger$	$\frac{50i\sqrt{2}a_1k}{a_0^2}$	$-\frac{20i\sqrt{3}a_1k}{a_0^2}$	$\frac{20ia_1k}{\sqrt{3}a_0^2}$	$\frac{20i\sqrt{\frac{2}{3}}a_1k}{a_0^2}$	$\frac{4(a_0-25a_1k^2)}{a_0^2k^2}$	0	0
$\mathcal{T}_{0^+}^{\#2}\dagger$	0	0	0	0	0	0	0
$\Delta_{0^-}^{\#1}\dagger$	0	0	0	0	0	0	$-\frac{2}{a_0-a_1k^2}$

	$\Delta_{2^+}^{\#1}{}_{\alpha\beta}$	$\Delta_{2^+}^{\#2}{}_{\alpha\beta}$	$\Delta_{2^+}^{\#3}{}_{\alpha\beta}$	$\mathcal{T}_{2^+}^{\#1}{}_{\alpha\beta}$	$\Delta_{2^-}^{\#1}{}_{\alpha\beta\chi}$	$\Delta_{2^-}^{\#2}{}_{\alpha\beta\chi}$
$\Delta_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{4(a_0-11a_1k^2)}{a_0^2}$	$-\frac{40\sqrt{\frac{2}{3}}a_1k^2}{a_0^2}$	$-\frac{80a_1k^2}{\sqrt{3}a_0^2}$	$-\frac{44i\sqrt{2}a_1k}{a_0^2}$	0	0
$\Delta_{2^+}^{\#2}\dagger^{\alpha\beta}$	$-\frac{40\sqrt{\frac{2}{3}}a_1k^2}{a_0^2}$	$-\frac{2(3a_0+a_1k^2)}{3a_0^2}$	$-\frac{2\sqrt{2}a_1k^2}{3a_0^2}$	$-\frac{80ia_1k}{\sqrt{3}a_0^2}$	0	0
$\Delta_{2^+}^{\#3}\dagger^{\alpha\beta}$	$-\frac{80a_1k^2}{\sqrt{3}a_0^2}$	$-\frac{2\sqrt{2}a_1k^2}{3a_0^2}$	$\frac{4(3a_0-a_1k^2)}{3a_0^2}$	$-\frac{80i\sqrt{\frac{2}{3}}a_1k}{a_0^2}$	0	0
$\mathcal{T}_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{44i\sqrt{2}a_1k}{a_0^2}$	$\frac{80ia_1k}{\sqrt{3}a_0^2}$	$\frac{80i\sqrt{\frac{2}{3}}a_1k}{a_0^2}$	$-\frac{8(a_0+11a_1k^2)}{a_0^2k^2}$	0	0
$\Delta_{2^-}^{\#1}\dagger^{\alpha\beta\chi}$	0	0	0	0	$\frac{4}{a_0-a_1k^2}$	0
$\Delta_{2^-}^{\#2}\dagger^{\alpha\beta\chi}$	0	0	0	0	0	$\frac{4}{a_0-5a_1k^2}$

	$\Gamma_{0^+}^{\#1}$	$\Gamma_{0^+}^{\#2}$	$\Gamma_{0^+}^{\#3}$	$\Gamma_{0^+}^{\#4}$	$h_{0^+}^{\#1}$	$h_{0^+}^{\#2}$	$\Gamma_{0^-}^{\#1}$
$\Gamma_{0^+}^{\#1}\dagger$	$\frac{1}{2}(-a_0+25a_1k^2)$	0	$10\sqrt{\frac{2}{3}}a_1k^2$	$-\frac{10a_1k^2}{\sqrt{3}}$	$-\frac{25ia_1k^3}{2\sqrt{2}}$	0	0
$\Gamma_{0^+}^{\#2}\dagger$	0	0	$\frac{a_0}{2}$	$-\frac{a_0}{2\sqrt{2}}$	0	0	0
$\Gamma_{0^+}^{\#3}\dagger$	$10\sqrt{\frac{2}{3}}a_1k^2$	$\frac{a_0}{2}$	$\frac{23a_1k^2}{3}$	$-\frac{3a_0+46a_1k^2}{6\sqrt{2}}$	$-\frac{10ia_1k^3}{\sqrt{3}}$	0	0
$\Gamma_{0^+}^{\#4}\dagger$	$-\frac{10a_1k^2}{\sqrt{3}}$	$-\frac{a_0}{2\sqrt{2}}$	$-\frac{3a_0+46a_1k^2}{6\sqrt{2}}$	$\frac{1}{6}(3a_0+23a_1k^2)$	$5i\sqrt{\frac{2}{3}}a_1k^3$	0	0
$h_{0^+}^{\#1}\dagger$	$\frac{25ia_1k^3}{2\sqrt{2}}$	0	$\frac{10ia_1k^3}{\sqrt{3}}$	$-5i\sqrt{\frac{2}{3}}a_1k^3$	$\frac{1}{4}k^2(a_0+25a_1k^2)$	0	0
$h_{0^+}^{\#2}\dagger$	0	0	0	0	0	0	0
$\Gamma_{0^-}^{\#1}\dagger$	0	0	0	0	0	0	$\frac{1}{2}(-a_0+a_1k^2)$

	$\Delta_{1^+}^{\#1}{}_{\alpha\beta}$	$\Delta_{1^+}^{\#2}{}_{\alpha\beta}$	$\Delta_{1^+}^{\#3}{}_{\alpha\beta}$	$\Delta_{1^-}^{\#1}{}_{\alpha}$	$\Delta_{1^-}^{\#2}{}_{\alpha}$	$\Delta_{1^-}^{\#3}{}_{\alpha}$	$\Delta_{1^-}^{\#4}{}_{\alpha}$	$\Delta_{1^-}^{\#5}{}_{\alpha}$	$\Delta_{1^-}^{\#6}{}_{\alpha}$	$\mathcal{T}_{1^-}^{\#1}{}_{\alpha}$
$\Delta_{1^+}^{\#1}\dagger^{\alpha\beta}$	0	$-\frac{2\sqrt{2}}{a_0}$	0	0	0	0	0	0	0	0
$\Delta_{1^+}^{\#2}\dagger^{\alpha\beta}$	$-\frac{2\sqrt{2}}{a_0}$	$\frac{2(a_0^2-14a_0a_1k^2-35a_1^2k^4)}{a_0^2(a_0-29a_1k^2)}$	$\frac{40\sqrt{2}a_1k^2}{a_0^2-29a_0a_1k^2}$	0	0	0	0	0	0	0
$\Delta_{1^+}^{\#3}\dagger^{\alpha\beta}$	0	$\frac{40\sqrt{2}a_1k^2}{a_0^2-29a_0a_1k^2}$	$\frac{4}{a_0-29a_1k^2}$	0	0	0	0	0	0	0
$\Delta_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	0	$\frac{2\sqrt{2}}{a_0}$	0	0	0	0	0
$\Delta_{1^-}^{\#2}\dagger^{\alpha}$	0	0	0	$\frac{2\sqrt{2}}{a_0}$	$\frac{2(a_0^2-30a_0a_1k^2+401a_1^2k^4)}{a_0^2(a_0-33a_1k^2)}$	$\frac{5\sqrt{\frac{2}{3}}a_1k^2(7a_0-236a_1k^2)}{a_0^2(a_0-33a_1k^2)}$	$-\frac{5\sqrt{\frac{10}{3}}a_1k^2}{a_0^2-33a_0a_1k^2}$	$\frac{10a_1k^2(-11a_0+118a_1k^2)}{\sqrt{3}a_0^2(a_0-33a_1k^2)}$	$\frac{50\sqrt{\frac{2}{3}}a_1k^2}{a_0^2-33a_0a_1k^2}$	0
$\Delta_{1^-}^{\#3}\dagger^{\alpha}$	0	0	0	0	$\frac{5\sqrt{\frac{2}{3}}a_1k^2(7a_0-236a_1k^2)}{a_0^2(a_0-33a_1k^2)}$	$\frac{-19a_0^2+472a_0a_1k^2+5120a_1^2k^4}{12a_0^2(a_0-33a_1k^2)}$	$\frac{\sqrt{5}(5a_0-164a_1k^2)}{12a_0(a_0-33a_1k^2)}$	$-\frac{a_0^2-118a_0a_1k^2+2560a_1^2k^4}{6\sqrt{2}a_0^2(a_0-33a_1k^2)}$	$-\frac{a_0-28a_1k^2}{6a_0^2-198a_0a_1k^2}$	0
$\Delta_{1^-}^{\#4}\dagger^{\alpha}$	0	0	0	0	$-\frac{5\sqrt{\frac{10}{3}}a_1k^2}{a_0^2-33a_0a_1k^2}$	$\frac{\sqrt{5}(5a_0-164a_1k^2)}{12a_0(a_0-33a_1k^2)}$	$\frac{1}{12a_0-396a_1k^2}$	$-\frac{\sqrt{\frac{5}{2}}(a_0-82a_1k^2)}{6a_0(a_0-33a_1k^2)}$	$-\frac{\sqrt{5}}{6(a_0-33a_1k^2)}$	0
$\Delta_{1^-}^{\#5}\dagger^{\alpha}$	0	0	0	0	$\frac{10a_1k^2(-11a_0+118a_1k^2)}{\sqrt{3}a_0^2(a_0-33a_1k^2)}$	$-\frac{a_0^2-118a_0a_1k^2+2560a_1^2k^4}{6\sqrt{2}a_0^2(a_0-33a_1k^2)}$	$-\frac{\sqrt{\frac{5}{2}}(a_0-82a_1k^2)}{6a_0(a_0-33a_1k^2)}$	$\frac{17a_0^2-236a_0a_1k^2+1280a_1^2k^4}{6a_0^2(a_0-33a_1k^2)}$	$-\frac{7(a_0+2a_1k^2)}{3\sqrt{2}a_0(a_0-33a_1k^2)}$	0
$\Delta_{1^-}^{\#6}\dagger^{\alpha}$	0	0	0	0	$\frac{50\sqrt{\frac{2}{3}}a_1k^2}{a_0^2-33a_0a_1k^2}$	$-\frac{a_0-28a_1k^2}{6a_0^2-198a_0a_1k^2}$	$-\frac{\sqrt{5}}{6(a_0-33a_1k^2)}$	$-\frac{7(a_0+2a_1k^2)}{3\sqrt{2}a_0(a_0-33a_1k^2)}$	$\frac{5}{3(a_0-33a_1k^2)}$	0
$\mathcal{T}_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	0	0	0	0	0	0	0

	$\Delta_{3^-}^{\#1}{}_{\alpha\beta\chi}$
$\Delta_{3^-}^{\#1}\dagger^{\alpha\beta\chi}$	$-\frac{2}{a_0+7a_1k^2}$

	$\Gamma_{3^-}^{\#1}{}_{\alpha\beta\chi}$
$\Gamma_{3^-}^{\#1}\dagger^{\alpha\beta\chi}$	$\frac{1}{2}(-a_0-7a_1k^2)$

	$\Gamma_{1^+}^{\#1}{}_{\alpha\beta}$	$\Gamma_{1^+}^{\#2}{}_{\alpha\beta}$	$\Gamma_{1^+}^{\#3}{}_{\alpha\beta}$	$\Gamma_{1^-}^{\#1}{}_{\alpha}$	$\Gamma_{1^-}^{\#2}{}_{\alpha}$	$\Gamma_{1^-}^{\#3}{}_{\alpha}$	$\Gamma_{1^-}^{\#4}{}_{\alpha}$	$\Gamma_{1^-}^{\#5}{}_{\alpha}$	$\Gamma_{1^-}^{\#6}{}_{\alpha}$	$h_{1^-}^{\#1}{}_{\alpha}$
$\Gamma_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{1}{4}(-a_0-15a_1k^2)$	$-\frac{a_0}{2\sqrt{2}}$	$5a_1k^2$	0	0	0	0	0	0	0
$\Gamma_{1^+}^{\#2}\dagger^{\alpha\beta}$	$-\frac{a_0}{2\sqrt{2}}$	0	0	0	0	0	0	0	0	0
$\Gamma_{1^+}^{\#3}\dagger^{\alpha\beta}$	$5a_1k^2$	0	$\frac{1}{4}(a_0-29a_1k^2)$	0	0	0	0	0	0	0
$\Gamma_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	$\frac{1}{4}(-a_0-3a_1k^2)$	$\frac{a_0}{2\sqrt{2}}$	$\frac{5}{2}\sqrt{3}a_1k^2$	$-\frac{5}{2}\sqrt{\frac{5}{3}}a_1k^2$	$5\sqrt{\frac{3}{2}}a_1k^2$	$-\frac{5a_1k^2}{\sqrt{3}}$	0
$\Gamma_{1^-}^{\#2}\dagger^{\alpha}$	0	0	0	$\frac{a_0}{2\sqrt{2}}$	0	0	0	0	0	0
$\Gamma_{1^-}^{\#3}\dagger^{\alpha}$	0	0	0	$\frac{5}{2}\sqrt{3}a_1k^2$	0	$-\frac{a_0}{3}$	$\frac{1}{6}\sqrt{5}(a_0-8a_1k^2)$	$-\frac{a_0}{6\sqrt{2}}$	$\frac{1}{6}(-a_0+20a_1k^2)$	0
$\Gamma_{1^-}^{\#4}\dagger^{\alpha}$	0	0	0	$-\frac{5}{2}\sqrt{\frac{5}{3}}a_1k^2$	0	$\frac{1}{6}\sqrt{5}(a_0-8a_1k^2)$	$\frac{1}{3}(a_0+7a_1k^2)$	$-\frac{1}{6}\sqrt{\frac{5}{2}}(a_0+16a_1k^2)$	$-\frac{1}{6}\sqrt{5}(a_0-5a_1k^2)$	0
$\Gamma_{1^-}^{\#5}\dagger^{\alpha}$	0	0	0	$5\sqrt{\frac{3}{2}}a_1k^2$	0	$-\frac{a_0}{6\sqrt{2}}$	$-\frac{1}{6}\sqrt{\frac{5}{2}}(a_0+16a_1k^2)$	$\frac{a_0}{3}$	$\frac{a_0+40a_1k^2}{6\sqrt{2}}$	0
$\Gamma_{1^-}^{\#6}\dagger^{\alpha}$	0	0	0	$-\frac{5a_1k^2}{\sqrt{3}}$	0	$\frac{1}{6}(-a_0+20a_1k^2)$	$-\frac{1}{6}\sqrt{5}(a_0-5a_1k^2)$	$\frac{a_0+40a_1k^2}{6\sqrt{2}}$	$\frac{5}{12}(a_0-17a_1k^2)$	0
$h_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	0	0	0	0	0	0	0

	$\Gamma_{2^+}^{\#1}{}_{\alpha\beta}$	$\Gamma_{2^+}^{\#2}{}_{\alpha\beta}$	$\Gamma_{2^+}^{\#3}{}_{\alpha\beta}$	$h_{2^+}^{\#1}{}_{\alpha\beta}$	$\Gamma_{2^-}^{\#1}{}_{\alpha\beta\chi}$	$\Gamma_{2^-}^{\#2}{}_{\alpha\beta\chi}$
$\Gamma_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{1}{4}(a_0+11a_1k^2)$	$-5\sqrt{\frac{2}{3}}a_1k^2$	$\frac{5a_1k^2}{\sqrt{3}}$	$-\frac{11ia_1k^3}{4\sqrt{2}}$	0	0
$\Gamma_{2^+}^{\#2}\dagger^{\alpha\beta}$	$-5\sqrt{\frac{2}{3}}a_1k^2$	$\frac{1}{6}(-3a_0+a_1k^2)$	$-\frac{a_1k^2}{6\sqrt{2}}$	$\frac{5ia_1k^3}{\sqrt{3}}$	0	0
$\Gamma_{2^+}^{\#3}\dagger^{\alpha\beta}$	$\frac{5a_1k^2}{\sqrt{3}}$	$-\frac{a_1k^2}{6\sqrt{2}}$	$\frac{1}{12}(3a_0+a_1k^2)$	$-\frac{5ia_1k^3}{\sqrt{6}}$	0	0
$h_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{11ia_1k^3}{4\sqrt{2}}$	$-\frac{5ia_1k^3}{\sqrt{3}}$	$\frac{5ia_1k^3}{\sqrt{6}}$	$-\frac{1}{8}k^2(a_0-11a_1k^2)$	0	0
$\Gamma_{2^-}^{\#1}\dagger^{\alpha\beta\chi}$	0	0	0	0	$\frac{1}{4}(a_0-a_1k^2)$	0
$\Gamma_{2^-}^{\#2}\dagger^{\alpha\beta\chi}$	0	0	0	0	0	$\frac{1}{4}(a_0-5a_1k^2)$

Source constraints

SO(3) irreps	Fundamental fields	Multiplicities
$\mathcal{T}_{0^+}^{\#2} == 0$	$\partial_\beta\partial_\alpha\mathcal{T}^{\alpha\beta} == 0$	1
$\Delta_{0^+}^{\#3}+2\Delta_{0^+}^{\#4}+3\Delta_{0^+}^{\#2} == 0$	$\partial_\alpha\Delta^{\alpha\beta}{}_\beta == 0$	1
$\mathcal{T}_{1^-}^{\#1\alpha} == 0$	$\partial_\chi\partial_\beta\partial^\alpha\mathcal{T}^{\beta\chi} == \partial_\chi\partial^\chi\partial_\beta\mathcal{T}^{\alpha\beta}$	3
$2\Delta_{1^-}^{\#6\alpha}+\Delta_{1^-}^{\#4\alpha}+2\Delta_{1^-}^{\#5\alpha}+\Delta_{1^-}^{\#3\alpha} == 0$	$\partial_\beta\partial^\alpha\Delta^{\beta\chi}{}_\chi == \partial_\chi\partial^\chi\Delta^{\alpha\beta}{}_\beta$	3
Total constraints/gauge generators:		8

Quadratic (free) action

$$
\begin{aligned}
S == &\iiiint\Big(\tfrac{1}{8}\big(8h^{\alpha\beta}\mathcal{T}_{\alpha\beta}-4\Gamma^{\alpha\beta\chi}(a_0\Gamma_{\beta\chi\alpha}-2\Delta_{\alpha\beta\chi}+a_0\partial_\beta h_{\alpha\chi})+2a_0\Gamma^{\alpha\beta}{}_\alpha\partial_\beta h^\chi{}_\chi-\\
&2a_0h^\chi{}_\chi\partial_\beta\Gamma^\alpha{}_\alpha{}^\beta+2a_0h^\chi{}_\chi\partial_\beta\Gamma^{\alpha\beta}{}_\alpha-4a_0h_{\alpha\chi}\partial_\beta\Gamma^{\alpha\beta\chi}+\\
&44a_1\partial^\alpha\Gamma^{\chi\delta}{}_\delta\partial_\beta\Gamma_{\chi\alpha}{}^\beta+4a_1\partial^\alpha\Gamma_{\chi\alpha}{}^\beta\partial_\beta\Gamma^{\chi\delta}{}_\delta-\\
&152a_1\partial^\alpha\Gamma^{\chi\delta}{}_\chi\partial_\beta\Gamma_{\delta\alpha}{}^\beta+2a_0h^{\alpha\beta}\partial_\beta\partial_\alpha h^\chi{}_\chi-\\
&a_0\partial_\beta h^\chi{}_\chi\partial^\beta h^\alpha{}_\alpha+2a_0\partial^\beta h^\alpha{}_\alpha\partial_\chi h_\beta{}^\chi+2a_0\Gamma^\alpha{}_\alpha{}^\beta\\
&(2\Gamma^\chi{}_{\beta\chi}-\partial_\beta h^\chi{}_\chi+2\partial_\chi h_\beta{}^\chi)+74a_1\partial_\beta\partial_\alpha h^\delta{}_\delta\partial_\chi\Gamma^{\alpha\beta\chi}+\\
&6a_1\partial_\beta\Gamma^{\alpha\beta\chi}\partial_\chi\partial_\alpha h^\delta{}_\delta-4a_0h^{\alpha\beta}\partial_\chi\partial_\beta h_\alpha{}^\chi+\\
&2a_0h^\alpha{}_\alpha\partial_\chi\partial_\beta h^{\beta\chi}+2a_0h^{\alpha\beta}\partial_\chi\partial^\chi h_{\alpha\beta}-2a_0h^\alpha{}_\alpha\partial_\chi\partial^\chi h^\beta{}_\beta-\\
&2a_0\partial_\beta h_{\alpha\chi}\partial^\chi h^{\alpha\beta}+a_0\partial_\chi h_{\alpha\beta}\partial^\chi h^{\alpha\beta}+4a_0h_{\beta\chi}\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta-\\
&4a_1\partial_\beta\Gamma_\chi{}^\delta{}_\delta\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta-4a_1\partial_\beta\Gamma^\delta{}_{\delta\chi}\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta+\\
&4a_1\partial_\chi\Gamma_\beta{}^\delta{}_\delta\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta-4a_1\partial_\chi\Gamma_{\beta\delta}{}^\delta\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta-\\
&4a_1\partial_\chi\Gamma^\delta{}_{\delta\beta}\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta-6a_1\partial_\chi\partial_\beta h^\delta{}_\delta\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta-\\
&44a_1\partial_\beta\Gamma_\chi{}^\delta{}_\delta\partial^\chi\Gamma^{\alpha\beta}{}_\alpha+76a_1\partial_\beta\Gamma^\delta{}_{\chi\delta}\partial^\chi\Gamma^{\alpha\beta}{}_\alpha+\\
&44a_1\partial_\chi\Gamma_\beta{}^\delta{}_\delta\partial^\chi\Gamma^{\alpha\beta}{}_\alpha-4a_1\partial_\chi\Gamma^\delta{}_{\beta\delta}\partial^\chi\Gamma^{\alpha\beta}{}_\alpha-\\
&74a_1\partial_\chi\partial_\beta h^\delta{}_\delta\partial^\chi\Gamma^{\alpha\beta}{}_\alpha+8a_1\partial_\alpha\Gamma_\chi{}^\delta{}_\delta\partial^\chi\Gamma^{\alpha\beta}{}_\beta-\\
&8a_1\partial_\chi\Gamma_\alpha{}^\delta{}_\delta\partial^\chi\Gamma^{\alpha\beta}{}_\beta-36a_1\partial_\chi\partial_\beta h^\delta{}_\delta\partial^\chi\partial_\alpha h^{\alpha\beta}+\\
&17a_1\partial_\chi\partial_\beta h^\delta{}_\delta\partial^\chi\partial^\beta h^\alpha{}_\alpha-4a_1\partial_\chi\Gamma^{\alpha\beta\chi}\partial_\delta\Gamma_{\alpha\beta}{}^\delta-\\
&4a_1\partial_\beta\Gamma^{\alpha\beta\chi}\partial_\delta\Gamma_{\alpha\chi}{}^\delta-4a_1\partial_\beta\Gamma^{\alpha\beta\chi}\partial_\delta\Gamma_\alpha{}^\delta{}_\chi+\\
&76a_1\partial_\chi\Gamma^{\alpha\beta\chi}\partial_\delta\Gamma_{\beta\alpha}{}^\delta+8a_1\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\Gamma_\beta{}^\delta{}_\chi-\\
&44a_1\partial^\chi\Gamma^{\alpha\beta}{}_\beta\partial_\delta\Gamma_{\chi\alpha}{}^\delta+4a_1\partial^\chi\Gamma^{\alpha\beta}{}_\alpha\partial_\delta\Gamma^\delta{}_{\chi\beta}-\\
&4a_1\partial_\beta\Gamma^{\alpha\beta\chi}\partial_\delta\Gamma_\chi{}^\delta{}_\alpha-4a_1\partial^\chi\Gamma^{\alpha\beta}{}_\beta\partial_\delta\Gamma_\chi{}^\delta{}_\alpha+\\
&4a_1\partial^\chi\Gamma_{\beta\alpha}{}^\beta\partial_\delta\Gamma^{\delta\alpha}{}_\chi+8a_1\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\Gamma_\chi{}^\delta{}_\beta-\\
&4a_1\partial_\beta\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\Gamma^\chi{}_\chi{}^\delta+8a_1\partial_\beta\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\Gamma^{\chi\delta}{}_\chi-\\
&4a_1\partial_\beta\Gamma^{\alpha\beta}{}_\alpha\partial_\delta\Gamma^{\chi\delta}{}_\chi-74a_1\partial_\chi\Gamma^{\alpha\beta\chi}\partial_\delta\partial_\alpha h_\beta{}^\delta-\\
&6a_1\partial_\beta\Gamma^{\alpha\beta\chi}\partial_\delta\partial_\alpha h_\chi{}^\delta-74a_1\partial_\chi\Gamma^{\alpha\beta\chi}\partial_\delta\partial_\beta h_\alpha{}^\delta+\\
&3a_1\partial_\chi\partial^\chi h^{\alpha\beta}\partial_\delta\partial_\beta h_\alpha{}^\delta+37a_1\partial_\alpha\partial^\chi h^{\alpha\beta}\partial_\delta\partial_\beta h_\chi{}^\delta+\\
&6a_1\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\partial_\beta h_\chi{}^\delta+74a_1\partial^\chi\Gamma^{\alpha\beta}{}_\alpha\partial_\delta\partial_\beta h_\chi{}^\delta-\\
&3a_1\partial^\chi\partial_\alpha h^{\alpha\beta}\partial_\delta\partial_\beta h_\chi{}^\delta+26a_1\partial^\chi\partial^\beta h^\alpha{}_\alpha\partial_\delta\partial_\beta h_\chi{}^\delta-\\
&6a_1\partial_\beta\Gamma^{\alpha\beta\chi}\partial_\delta\partial_\chi h_\alpha{}^\delta-43a_1\partial_\alpha\partial^\chi h^{\alpha\beta}\partial_\delta\partial_\chi h_\beta{}^\delta+\\
&6a_1\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\partial_\chi h_\beta{}^\delta+74a_1\partial^\chi\Gamma^{\alpha\beta}{}_\alpha\partial_\delta\partial_\chi h_\beta{}^\delta+\\
&77a_1\partial^\chi\partial_\alpha h^{\alpha\beta}\partial_\delta\partial_\chi h_\beta{}^\delta-58a_1\partial^\chi\partial^\beta h^\alpha{}_\alpha\partial_\delta\partial_\chi h_\beta{}^\delta+\\
&8a_1\partial_\beta\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\partial_\chi h^{\chi\delta}-8a_1\partial_\beta\Gamma^{\alpha\beta}{}_\alpha\partial_\delta\partial_\chi h^{\chi\delta}-\\
&4a_1\partial_\beta\partial_\alpha h^{\alpha\beta}\partial_\delta\partial_\chi h^{\chi\delta}+8a_1\partial_\beta\partial^\beta h^\alpha{}_\alpha\partial_\delta\partial_\chi h^{\chi\delta}+\\
&74a_1\partial_\chi\Gamma^{\alpha\beta\chi}\partial_\delta\partial^\delta h_{\alpha\beta}+17a_1\partial_\chi\partial^\chi h^{\alpha\beta}\partial_\delta\partial^\delta h_{\alpha\beta}+\\
&6a_1\partial_\beta\Gamma^{\alpha\beta\chi}\partial_\delta\partial^\delta h_{\alpha\chi}+2a_1\partial_\alpha\partial^\chi h^{\alpha\beta}\partial_\delta\partial^\delta h_{\beta\chi}-\\
&6a_1\partial^\chi\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\partial^\delta h_{\beta\chi}-74a_1\partial^\chi\Gamma^{\alpha\beta}{}_\alpha\partial_\delta\partial^\delta h_{\beta\chi}-\\
&73a_1\partial^\chi\partial_\alpha h^{\alpha\beta}\partial_\delta\partial^\delta h_{\beta\chi}+34a_1\partial^\chi\partial^\beta h^\alpha{}_\alpha\partial_\delta\partial^\delta h_{\beta\chi}-\\
&8a_1\partial_\beta\Gamma^\alpha{}_\alpha{}^\beta\partial_\delta\partial^\delta h^\chi{}_\chi+8a_1\partial_\beta\Gamma^{\alpha\beta}{}_\alpha\partial_\delta\partial^\delta h^\chi{}_\chi-\\
&4a_1\partial_\beta\partial^\beta h^\alpha{}_\alpha\partial_\delta\partial^\delta h^\chi{}_\chi+4a_1\partial_\alpha\Gamma_{\beta\chi\delta}\partial^\delta\Gamma^{\alpha\beta\chi}+\\
&8a_1\partial_\alpha\Gamma_{\beta\delta\chi}\partial^\delta\Gamma^{\alpha\beta\chi}+8a_1\partial_\alpha\Gamma_{\chi\beta\delta}\partial^\delta\Gamma^{\alpha\beta\chi}+\\
&4a_1\partial_\alpha\Gamma_{\chi\delta\beta}\partial^\delta\Gamma^{\alpha\beta\chi}+8a_1\partial_\alpha\Gamma_{\delta\beta\chi}\partial^\delta\Gamma^{\alpha\beta\chi}+\\
&8a_1\partial_\alpha\Gamma_{\delta\chi\beta}\partial^\delta\Gamma^{\alpha\beta\chi}-4a_1\partial_\beta\Gamma_{\alpha\chi\delta}\partial^\delta\Gamma^{\alpha\beta\chi}-\\
&4a_1\partial_\beta\Gamma_{\alpha\delta\chi}\partial^\delta\Gamma^{\alpha\beta\chi}-4a_1\partial_\beta\Gamma_{\chi\delta\alpha}\partial^\delta\Gamma^{\alpha\beta\chi}-\\
&12a_1\partial_\beta\partial_\alpha h_{\chi\delta}\partial^\delta\Gamma^{\alpha\beta\chi}-4a_1\partial_\chi\Gamma_{\alpha\beta\delta}\partial^\delta\Gamma^{\alpha\beta\chi}+\\
&4a_1\partial_\chi\Gamma_{\beta\alpha\delta}\partial^\delta\Gamma^{\alpha\beta\chi}+8a_1\partial_\chi\Gamma_{\beta\delta\alpha}\partial^\delta\Gamma^{\alpha\beta\chi}-\\
&12a_1\partial_\chi\partial_\alpha h_{\beta\delta}\partial^\delta\Gamma^{\alpha\beta\chi}-8a_1\partial_\delta\Gamma_{\alpha\beta\chi}\partial^\delta\Gamma^{\alpha\beta\chi}-\\
&8a_1\partial_\delta\Gamma_{\alpha\chi\beta}\partial^\delta\Gamma^{\alpha\beta\chi}-4a_1\partial_\delta\Gamma_{\beta\alpha\chi}\partial^\delta\Gamma^{\alpha\beta\chi}-\\
&4a_1\partial_\delta\Gamma_{\beta\chi\alpha}\partial^\delta\Gamma^{\alpha\beta\chi}-4a_1\partial_\delta\Gamma_{\chi\beta\alpha}\partial^\delta\Gamma^{\alpha\beta\chi}+\\
&12a_1\partial_\delta\partial_\beta h_{\alpha\chi}\partial^\delta\Gamma^{\alpha\beta\chi}-12a_1\partial_\delta\partial_\chi h_{\alpha\beta}\partial^\delta\Gamma^{\alpha\beta\chi}+\\
&4a_1\partial_\beta\Gamma_{\delta\alpha}{}^\beta\partial^\delta\Gamma^{\chi\alpha}{}_\chi+4a_1\partial_\beta\Gamma_{\delta\alpha}{}^\beta\partial^\delta\Gamma^\chi{}_\chi{}^\alpha-\\
&6a_1\partial_\beta\partial_\alpha h_{\chi\delta}\partial^\delta\partial^\chi h^{\alpha\beta}+12a_1\partial_\chi\partial_\beta h_{\alpha\delta}\partial^\delta\partial^\chi h^{\alpha\beta}-\\
&6a_1\partial_\delta\partial_\chi h_{\alpha\beta}\partial^\delta\partial^\chi h^{\alpha\beta}\big)\Big)[t,x,y,z]\,dz\,dy\,dx\,dt
\end{aligned}
$$

Massive and massless spectra

** MassiveAnalysisOfSector... Null

Unitarity conditions