Particle spectrograph

Wave operator and propagator

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

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

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

Source constraints

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

Quadratic (free) action

$$\begin{aligned}
S==\iiiint\Big(\tfrac{1}{8}\big(8\,h^{\alpha\beta}\,\mathcal{T}_{\alpha\beta}-4\,\mathcal{A}^{\alpha\beta\chi}\,(a_0\,\mathcal{A}_{\beta\chi\alpha}-2\,\Delta_{\alpha\beta\chi}+a_0\,\partial_\beta h_{\alpha\chi})+{}\\
&2a_0\,\mathcal{A}^{\alpha\beta}{}_\alpha\,\partial_\beta h^\chi{}_\chi-2a_0\,h^\chi{}_\chi\,\partial_\beta\mathcal{A}^\alpha{}_\alpha{}^\beta+2a_0\,h^\chi{}_\chi\,\partial_\beta\mathcal{A}^{\alpha\beta}{}_\alpha-{}\\
&4a_0\,h_{\alpha\chi}\,\partial_\beta\mathcal{A}^{\alpha\beta\chi}+44a_1\,\partial^\alpha\mathcal{A}^{\chi\delta}{}_\delta\partial_\beta\mathcal{A}_{\chi\alpha}{}^\beta+{}\\
&4a_1\,\partial^\alpha\mathcal{A}_{\chi\alpha}{}^\beta\partial_\beta\mathcal{A}^{\chi\delta}{}_\delta-152a_1\,\partial^\alpha\mathcal{A}^{\chi\delta}{}_\chi\partial_\beta\mathcal{A}_{\delta\alpha}{}^\beta+{}\\
&2a_0\,h^{\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\,\mathcal{A}^\alpha{}_\alpha{}^\beta\,(2\,\mathcal{A}^\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\mathcal{A}^{\alpha\beta\chi}+6a_1\,\partial_\beta\mathcal{A}^{\alpha\beta\chi}\partial_\chi\partial_\alpha h^\delta{}_\delta-{}\\
&4a_0\,h^{\alpha\beta}\,\partial_\chi\partial_\beta h_\alpha{}^\chi+2a_0\,h^\alpha{}_\alpha\,\partial_\chi\partial_\beta h^{\beta\chi}+{}\\
&2a_0\,h^{\alpha\beta}\,\partial_\chi\partial^\chi h_{\alpha\beta}-2a_0\,h^\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_0\,h_{\beta\chi}\,\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta-{}\\
&4a_1\,\partial_\beta\mathcal{A}_\chi{}^\delta{}_\delta\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta-4a_1\,\partial_\beta\mathcal{A}^\delta{}_{\delta\chi}\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta+{}\\
&4a_1\,\partial_\chi\mathcal{A}_\beta{}^\delta{}_\delta\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta-4a_1\,\partial_\chi\mathcal{A}^\delta{}_{\beta\delta}\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta-{}\\
&4a_1\,\partial_\chi\mathcal{A}^\delta{}_{\delta\beta}\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta-6a_1\,\partial_\chi\partial_\beta h^\delta{}_\delta\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta-{}\\
&44a_1\,\partial_\beta\mathcal{A}_\chi{}^\delta{}_\delta\partial^\chi\mathcal{A}^{\alpha\beta}{}_\alpha+76a_1\,\partial_\beta\mathcal{A}^\delta{}_{\chi\delta}\partial^\chi\mathcal{A}^{\alpha\beta}{}_\alpha+{}\\
&44a_1\,\partial_\chi\mathcal{A}_\beta{}^\delta{}_\delta\partial^\chi\mathcal{A}^{\alpha\beta}{}_\alpha-4a_1\,\partial_\chi\mathcal{A}^\delta{}_{\beta\delta}\partial^\chi\mathcal{A}^{\alpha\beta}{}_\alpha-{}\\
&74a_1\,\partial_\chi\partial_\beta h^\delta{}_\delta\partial^\chi\mathcal{A}^{\alpha\beta}{}_\alpha+8a_1\,\partial_\alpha\mathcal{A}_\chi{}^\delta{}_\delta\partial^\chi\mathcal{A}^{\alpha\beta}{}_\beta-{}\\
&8a_1\,\partial_\chi\mathcal{A}_\alpha{}^\delta{}_\delta\partial^\chi\mathcal{A}^{\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\mathcal{A}^{\alpha\beta\chi}\partial_\delta\mathcal{A}_{\alpha\beta}{}^\delta-{}\\
&4a_1\,\partial_\beta\mathcal{A}^{\alpha\beta\chi}\partial_\delta\mathcal{A}_{\alpha\chi}{}^\delta-4a_1\,\partial_\beta\mathcal{A}^{\alpha\beta\chi}\partial_\delta\mathcal{A}_\alpha{}^\delta{}_\chi+{}\\
&76a_1\,\partial_\chi\mathcal{A}^{\alpha\beta\chi}\partial_\delta\mathcal{A}_{\beta\alpha}{}^\delta+8a_1\,\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\mathcal{A}_\beta{}^\delta{}_\chi-{}\\
&44a_1\,\partial^\chi\mathcal{A}^{\alpha\beta}{}_\beta\partial_\delta\mathcal{A}_{\chi\alpha}{}^\delta+4a_1\,\partial^\chi\mathcal{A}^{\alpha\beta}{}_\alpha\partial_\delta\mathcal{A}_{\chi\beta}{}^\delta-{}\\
&4a_1\,\partial_\beta\mathcal{A}^{\alpha\beta\chi}\partial_\delta\mathcal{A}_\chi{}^\delta{}_\alpha-4a_1\,\partial^\chi\mathcal{A}^{\alpha\beta}{}_\beta\partial_\delta\mathcal{A}_\chi{}^\delta{}_\alpha+{}\\
&4a_1\,\partial^\chi\mathcal{A}_{\beta\alpha}{}^\beta\partial_\delta\mathcal{A}_\chi{}^{\delta\alpha}+8a_1\,\partial^\chi\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\mathcal{A}_\chi{}^\delta{}_\beta-{}\\
&4a_1\,\partial_\beta\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\mathcal{A}^\chi{}_\chi{}^\delta+8a_1\,\partial_\beta\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\mathcal{A}^{\chi\delta}{}_\chi-{}\\
&4a_1\,\partial_\beta\mathcal{A}^{\alpha\beta}{}_\alpha\partial_\delta\mathcal{A}^{\chi\delta}{}_\chi-74a_1\,\partial_\chi\mathcal{A}^{\alpha\beta\chi}\partial_\delta\partial_\alpha h_\beta{}^\delta-{}\\
&6a_1\,\partial_\beta\mathcal{A}^{\alpha\beta\chi}\partial_\delta\partial_\alpha h_\chi{}^\delta-74a_1\,\partial_\chi\mathcal{A}^{\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\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\partial_\beta h_\chi{}^\delta+74a_1\,\partial^\chi\mathcal{A}^{\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\mathcal{A}^{\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\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\partial_\chi h_\beta{}^\delta+74a_1\,\partial^\chi\mathcal{A}^{\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\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\partial_\chi h^{\chi\delta}-8a_1\,\partial_\beta\mathcal{A}^{\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\mathcal{A}^{\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\mathcal{A}^{\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\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\partial^\delta h_{\beta\chi}-74a_1\,\partial^\chi\mathcal{A}^{\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\mathcal{A}^\alpha{}_\alpha{}^\beta\partial_\delta\partial^\delta h^\chi{}_\chi+8a_1\,\partial_\beta\mathcal{A}^{\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\mathcal{A}_{\beta\chi\delta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+{}\\
&8a_1\,\partial_\alpha\mathcal{A}_{\beta\delta\chi}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+8a_1\,\partial_\alpha\mathcal{A}_{\chi\beta\delta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+{}\\
&4a_1\,\partial_\alpha\mathcal{A}_{\chi\delta\beta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+8a_1\,\partial_\alpha\mathcal{A}_{\delta\beta\chi}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+{}\\
&8a_1\,\partial_\alpha\mathcal{A}_{\delta\chi\beta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-4a_1\,\partial_\beta\mathcal{A}_{\alpha\chi\delta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-{}\\
&4a_1\,\partial_\beta\mathcal{A}_{\alpha\delta\chi}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-4a_1\,\partial_\beta\mathcal{A}_{\chi\delta\alpha}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-{}\\
&12a_1\,\partial_\beta\partial_\alpha h_{\chi\delta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-4a_1\,\partial_\chi\mathcal{A}_{\alpha\beta\delta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-{}\\
&4a_1\,\partial_\chi\mathcal{A}_{\beta\alpha\delta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+8a_1\,\partial_\chi\mathcal{A}_{\beta\delta\alpha}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+{}\\
&12a_1\,\partial_\chi\partial_\alpha h_{\beta\delta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-8a_1\,\partial_\delta\mathcal{A}_{\alpha\beta\chi}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-{}\\
&8a_1\,\partial_\delta\mathcal{A}_{\alpha\chi\beta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-4a_1\,\partial_\delta\mathcal{A}_{\beta\alpha\chi}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-{}\\
&4a_1\,\partial_\delta\mathcal{A}_{\beta\chi\alpha}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-4a_1\,\partial_\delta\mathcal{A}_{\chi\beta\alpha}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+{}\\
&12a_1\,\partial_\delta\partial_\beta h_{\alpha\chi}\partial^\delta\mathcal{A}^{\alpha\beta\chi}-12a_1\,\partial_\delta\partial_\chi h_{\alpha\beta}\partial^\delta\mathcal{A}^{\alpha\beta\chi}+{}\\
&4a_1\,\partial_\beta\mathcal{A}_{\delta\alpha}{}^\beta\partial^\delta\mathcal{A}^{\chi\alpha}{}_\chi+4a_1\,\partial_\beta\mathcal{A}_{\delta\alpha}{}^\beta\partial^\delta\mathcal{A}^\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}$$

	$\Delta^{\#1}_{1^+\alpha\beta}$	$\Delta^{\#2}_{1^+\alpha\beta}$	$\Delta^{\#3}_{1^+\alpha\beta}$	$\Delta^{\#1}_{1^-\alpha}$	$\Delta^{\#2}_{1^-\alpha}$	$\Delta^{\#3}_{1^-\alpha}$	$\Delta^{\#4}_{1^-\alpha}$	$\Delta^{\#5}_{1^-\alpha}$	$\Delta^{\#6}_{1^-\alpha}$	$\mathcal{T}^{\#1}_{1^-\alpha}$
$\Delta^{\#1}_{1^+}\dagger^{\alpha\beta}$	0	$-\frac{2\sqrt{2}}{a_0}$	0	0	0	0	0	0	0	0
$\Delta^{\#2}_{1^+}\dagger^{\alpha\beta}$	$-\frac{2\sqrt{2}}{a_0}$	$\frac{2(a_0^2-14a_0a_1k^2-35a_1^2k^4)}{a_0^2(a_0-29a_1k^2)}$	$\frac{40\sqrt{2}a_1k^2}{a_0^2-29a_0a_1k^2}$	0	0	0	0	0	0	0
$\Delta^{\#3}_{1^+}\dagger^{\alpha\beta}$	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
$\Delta^{\#2}_{1^-}\dagger^\alpha$	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
$\Delta^{\#3}_{1^-}\dagger^\alpha$	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
$\Delta^{\#4}_{1^-}\dagger^\alpha$	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
$\Delta^{\#5}_{1^-}\dagger^\alpha$	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
$\Delta^{\#6}_{1^-}\dagger^\alpha$	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

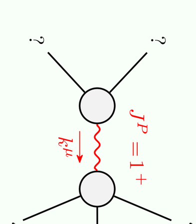
	$\mathcal{A}^{\#1}_{3^-\alpha\beta\chi}$
$\mathcal{A}^{\#1}_{3^-}\dagger^{\alpha\beta\chi}$	$\frac{1}{2}(-a_0-7a_1k^2)$

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

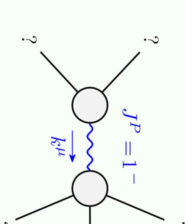
	$\mathcal{A}^{\#1}_{1^+\alpha\beta}$	$\mathcal{A}^{\#2}_{1^+\alpha\beta}$	$\mathcal{A}^{\#3}_{1^+\alpha\beta}$	$\mathcal{A}^{\#1}_{1^-\alpha}$	$\mathcal{A}^{\#2}_{1^-\alpha}$	$\mathcal{A}^{\#3}_{1^-\alpha}$	$\mathcal{A}^{\#4}_{1^-\alpha}$	$\mathcal{A}^{\#5}_{1^-\alpha}$	$\mathcal{A}^{\#6}_{1^-\alpha}$	$h^{\#1}_{1^-\alpha}$
$\mathcal{A}^{\#1}_{1^+}\dagger^{\alpha\beta}$	$\frac{1}{4}(-a_0-15a_1k^2)$	$-\frac{a_0}{2\sqrt{2}}$	$5a_1k^2$	0	0	0	0	0	0	0
$\mathcal{A}^{\#2}_{1^+}\dagger^{\alpha\beta}$	$-\frac{a_0}{2\sqrt{2}}$	0	0	0	0	0	0	0	0	0
$\mathcal{A}^{\#3}_{1^+}\dagger^{\alpha\beta}$	$5a_1k^2$	0	$\frac{1}{4}(a_0-29a_1k^2)$	0	0	0	0	0	0	0
$\mathcal{A}^{\#1}_{1^-}\dagger^\alpha$	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
$\mathcal{A}^{\#2}_{1^-}\dagger^\alpha$	0	0	0	$\frac{a_0}{2\sqrt{2}}$	0	0	0	0	0	0
$\mathcal{A}^{\#3}_{1^-}\dagger^\alpha$	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
$\mathcal{A}^{\#4}_{1^-}\dagger^\alpha$	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
$\mathcal{A}^{\#5}_{1^-}\dagger^\alpha$	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
$\mathcal{A}^{\#6}_{1^-}\dagger^\alpha$	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

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

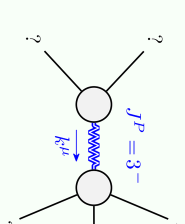
Massive and massless spectra



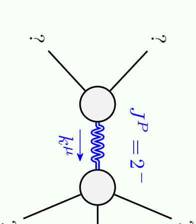
Massive particle	
Pole residue:	$-\frac{4164}{24389a_1}>0$
Polarisations:	3
Square mass:	$\frac{a_0}{29a_1}>0$
Spin:	1
Parity:	Even



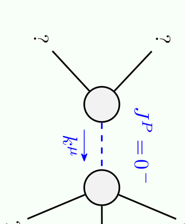
Massive particle	
Pole residue:	$\frac{4907}{35937a_1}>0$
Polarisations:	3
Square mass:	$\frac{a_0}{33a_1}>0$
Spin:	1
Parity:	Odd



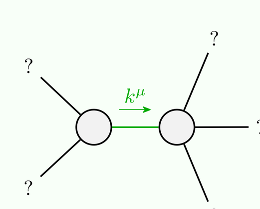
Massive particle	
Pole residue:	$\frac{2}{7a_1}>0$
Polarisations:	7
Square mass:	$-\frac{a_0}{7a_1}>0$
Spin:	3
Parity:	Odd



Massive particle	
Pole residue:	$\frac{4}{5a_1}>0$
Polarisations:	5
Square mass:	$\frac{a_0}{5a_1}>0$
Spin:	2
Parity:	Odd



Massive particle	
Pole residue:	$-\frac{2}{a_1}>0$
Polarisations:	1
Square mass:	$\frac{a_0}{a_1}>0$
Spin:	0
Parity:	Odd



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

Unitarity conditions

(Unitarity is demonstrably impossible)