Particle spectrograph

Wave operator and propagator

	$\Delta^{\#1}_{1^+\alpha\beta}$	$\Delta^{\#2}_{1^+\alpha\beta}$	$\Delta^{\#3}_{1^+\alpha\beta}$	$\Delta^{\#1}_{1^-\alpha}$	$\Delta^{\#2}_{1^-\alpha}$	$\Delta^{\#3}_{1^-\alpha}$	$\Delta^{\#4}_{1^-\alpha}$	$\Delta^{\#5}_{1^-\alpha}$	$\Delta^{\#6}_{1^-\alpha}$	$\mathcal{T}^{\#1}_{1^-\alpha}$
$\Delta^{\#1}_{1^+}\dagger^{\alpha\beta}$	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	$\frac{\sqrt{2}(4+k^2)}{a_0(2+k^2)}$	$-\frac{2k^2}{\sqrt{3}a_0(2+k^2)}$	0	$\frac{\sqrt{\frac{2}{3}}k^2}{a_0(2+k^2)}$	0	$-\frac{2i\sqrt{2}k}{a_0(2+k^2)}$
$\Delta^{\#2}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{\sqrt{2}(4+k^2)}{a_0(2+k^2)}$	$\frac{a_0^2(4+k^2)^2-30a_0a_1k^2(4+k^2)(4+3k^2)+a_1^2k^4(6416+7928k^2+1901k^4)}{2a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$\frac{k^2(a_0^2(-2+k^2)+a_0a_1(560+302k^2+71k^4)-2a_1^2k^2(9440+1901k^2(4+k^2)))}{2\sqrt{6}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$-\frac{\sqrt{\frac{5}{6}}k^2(a_0+a_1(40-31k^2))}{2a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{k^2(2a_0^2(5+2k^2)-a_0a_1(880+778k^2+199k^4)+a_1^2k^2(9440+1901k^2(4+k^2)))}{2\sqrt{3}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$\frac{k^2(-a_0+a_1(200+43k^2))}{\sqrt{6}a_0(2+k^2)(a_0-33a_1k^2)}$	$-\frac{ik(-30a_0a_1k^4+a_0^2(4+k^2)+27a_1^2k^4(-28+3k^2))}{a_0^2(2+k^2)^2(a_0-33a_1k^2)}$
$\Delta^{\#3}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{2k^2}{\sqrt{3}(2a_0+a_0k^2)}$	$\frac{k^2(a_0^2(-2+k^2)+a_0a_1(560+302k^2+71k^4)-2a_1^2k^2(9440+1901k^2(4+k^2)))}{2\sqrt{6}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$\frac{-a_0^2(76+52k^2+3k^4)+4a_0a_1k^2(472+214k^2+19k^4)+4a_1^2k^4(5120+7280k^2+1901k^4)}{12a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$\frac{\sqrt{5}(10a_0+(3a_0-328a_1)k^2-62a_1k^4)}{12a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{2a_0^2(-2+k^2)+a_0a_1k^2(472+934k^2+289k^4)-2a_1^2k^4(5120+7280k^2+1901k^4)}{6\sqrt{2}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$-\frac{2a_0+(3a_0-56a_1)k^2+86a_1k^4}{6a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{ik(54a_1^2k^4(40+3k^2)+a_0^2(6+5k^2)-3a_0a_1k^2(86+23k^2))}{\sqrt{6}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$
$\Delta^{\#4}_{1^-}\dagger^{\alpha}$	0	0	0	0	$-\frac{\sqrt{\frac{5}{6}}k^2(a_0+a_1(40-31k^2))}{2a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{\sqrt{5}(10a_0+k^2(3a_0-2a_1(164+31k^2)))}{12a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{1}{12a_0-396a_1k^2}$	$\frac{\sqrt{\frac{5}{2}}(-2a_0+a_1k^2(164+31k^2))}{6a_0(2+k^2)(a_0-33a_1k^2)}$	$-\frac{\sqrt{5}}{6(a_0-33a_1k^2)}$	$-\frac{i\sqrt{\frac{5}{6}}k(a_0-51a_1k^2)}{a_0(2+k^2)(a_0-33a_1k^2)}$
$\Delta^{\#5}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{\sqrt{\frac{2}{3}}k^2}{2a_0+a_0k^2}$	$\frac{k^2(2a_0^2(5+2k^2)-a_0a_1(880+778k^2+199k^4)+a_1^2k^2(9440+1901k^2(4+k^2)))}{2\sqrt{3}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$\frac{2a_0^2(-2+k^2)+a_0a_1k^2(472+934k^2+289k^4)-2a_1^2k^4(5120+7280k^2+1901k^4)}{6\sqrt{2}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$\frac{\sqrt{\frac{5}{2}}(-2a_0+a_1k^2(164+31k^2))}{6a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{4a_0^2(17+14k^2+3k^4)-4a_0a_1k^2(236+287k^2+77k^4)+a_1^2k^4(5120+7280k^2+1901k^4)}{6a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$-\frac{a_1k^2(28-43k^2)+2a_0(7+3k^2)}{3\sqrt{2}a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{ik(2a_0^2(3+k^2)-27a_1^2k^4(40+3k^2)+3a_0a_1k^2(34+7k^2))}{\sqrt{3}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$
$\Delta^{\#6}_{1^-}\dagger^{\alpha}$	0	0	0	0	$\frac{k^2(-a_0+a_1(200+43k^2))}{\sqrt{6}a_0(2+k^2)(a_0-33a_1k^2)}$	$-\frac{2a_0+(3a_0-56a_1)k^2+86a_1k^4}{6a_0(2+k^2)(a_0-33a_1k^2)}$	$-\frac{\sqrt{5}}{6(a_0-33a_1k^2)}$	$-\frac{a_1k^2(28-43k^2)+2a_0(7+3k^2)}{3\sqrt{2}a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{5}{3(a_0-33a_1k^2)}$	$-\frac{i\sqrt{\frac{2}{3}}k(a_0+57a_1k^2)}{a_0(2+k^2)(a_0-33a_1k^2)}$
$\mathcal{T}^{\#1}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{2i\sqrt{2}k}{2a_0+a_0k^2}$	$\frac{i(-30a_0a_1k^5+a_0^2k(4+k^2)+27a_1^2k^5(-28+3k^2))}{a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$-\frac{i(54a_1^2k^5(40+3k^2)+a_0^2k(6+5k^2)-3a_0a_1k^3(86+23k^2))}{\sqrt{6}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$\frac{i\sqrt{\frac{5}{6}}k(a_0-51a_1k^2)}{a_0(2+k^2)(a_0-33a_1k^2)}$	$-\frac{i(2a_0^2k(3+k^2)-27a_1^2k^5(40+3k^2)+3a_0a_1k^3(34+7k^2))}{\sqrt{3}a_0^2(2+k^2)^2(a_0-33a_1k^2)}$	$\frac{i\sqrt{\frac{2}{3}}k(a_0+57a_1k^2)}{a_0(2+k^2)(a_0-33a_1k^2)}$	$\frac{2k^2(a_0^2+30a_0a_1k^2-459a_1^2k^4)}{a_0^2(2+k^2)^2(a_0-33a_1k^2)}$

	$\mathcal{A}^{\#1}_{1^+\alpha\beta}$	$\mathcal{A}^{\#2}_{1^+\alpha\beta}$	$\mathcal{A}^{\#3}_{1^+\alpha\beta}$	$\mathcal{A}^{\#1}_{1^-\alpha}$	$\mathcal{A}^{\#2}_{1^-\alpha}$	$\mathcal{A}^{\#3}_{1^-\alpha}$	$\mathcal{A}^{\#4}_{1^-\alpha}$	$\mathcal{A}^{\#5}_{1^-\alpha}$	$\mathcal{A}^{\#6}_{1^-\alpha}$	$h^{\#1}_{1^-\alpha}$
$\mathcal{A}^{\#1}_{1^+}\dagger^{\alpha\beta}$	$\frac{1}{4}(-a_0-15a_1k^2)$	$-\frac{a_0}{2\sqrt{2}}$	$5a_1k^2$	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	$\frac{1}{4}(-a_0-3a_1k^2)$	$\frac{a_0}{2\sqrt{2}}$	$\frac{5}{2}\sqrt{3}a_1k^2$	$-\frac{5}{2}\sqrt{\frac{5}{3}}a_1k^2$	$5\sqrt{\frac{3}{2}}a_1k^2$	$-\frac{5a_1k^2}{\sqrt{3}}$	$-\frac{ia_0k}{4\sqrt{2}}$
$\mathcal{A}^{\#2}_{1^-}\dagger^{\alpha}$	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	$-\frac{a_0}{3}$	$\frac{1}{6}\sqrt{5}(a_0-8a_1k^2)$	$-\frac{a_0}{6\sqrt{2}}$	$\frac{1}{6}(-a_0+20a_1k^2)$	$\frac{ia_0k}{4\sqrt{6}}$
$\mathcal{A}^{\#4}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{5}{2}\sqrt{\frac{5}{3}}a_1k^2$	0	$\frac{1}{6}\sqrt{5}(a_0-8a_1k^2)$	$\frac{1}{3}(a_0+7a_1k^2)$	$-\frac{1}{6}\sqrt{\frac{5}{2}}(a_0+16a_1k^2)$	$-\frac{1}{6}\sqrt{5}(a_0-5a_1k^2)$	$-\frac{1}{4}i\sqrt{\frac{5}{6}}a_0k$
$\mathcal{A}^{\#5}_{1^-}\dagger^{\alpha}$	0	0	0	$5\sqrt{\frac{3}{2}}a_1k^2$	0	$-\frac{a_0}{6\sqrt{2}}$	$-\frac{1}{6}\sqrt{\frac{5}{2}}(a_0+16a_1k^2)$	$\frac{a_0}{3}$	$\frac{a_0+40a_1k^2}{6\sqrt{2}}$	$\frac{ia_0k}{4\sqrt{3}}$
$\mathcal{A}^{\#6}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{5a_1k^2}{\sqrt{3}}$	0	$\frac{1}{6}(-a_0+20a_1k^2)$	$-\frac{1}{6}\sqrt{5}(a_0-5a_1k^2)$	$\frac{a_0+40a_1k^2}{6\sqrt{2}}$	$\frac{5}{12}(a_0-17a_1k^2)$	$\frac{ia_0k}{4\sqrt{6}}$
$h^{\#1}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{ia_0k}{4\sqrt{2}}$	0	$-\frac{ia_0k}{4\sqrt{6}}$	$\frac{1}{4}i\sqrt{\frac{5}{6}}a_0k$	$-\frac{ia_0k}{4\sqrt{3}}$	$-\frac{ia_0k}{4\sqrt{6}}$	0

Quadratic (free) action

$$
\begin{aligned}
\mathcal{S} == \iiiint\Big(\tfrac{1}{4}\big(&2a_0\,\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\mathcal{A}^{\chi}{}_{\beta\chi}+4\,h^{\alpha\beta}\,\mathcal{T}_{\alpha\beta}+\mathcal{A}^{\alpha\beta\chi}\,(-2a_0\,\mathcal{A}_{\beta\chi\alpha}+4\,\Delta_{\alpha\beta\chi})-\\
&a_0\,h^{\chi}{}_{\chi}\,\partial_{\beta}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}+a_0\,h^{\chi}{}_{\chi}\,\partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha}-2a_0\,h_{\alpha\chi}\,\partial_{\beta}\mathcal{A}^{\alpha\beta\chi}+\\
&22a_1\,\partial^{\alpha}\mathcal{A}^{\chi\delta}{}_{\delta}\,\partial_{\beta}\mathcal{A}_{\chi\alpha}{}^{\beta}+2a_1\,\partial^{\alpha}\mathcal{A}_{\chi\alpha}{}^{\beta}\,\partial_{\beta}\mathcal{A}^{\chi\delta}{}_{\delta}-\\
&76a_1\,\partial^{\alpha}\mathcal{A}^{\chi\delta}{}_{\chi}\,\partial_{\beta}\mathcal{A}_{\delta\alpha}{}^{\beta}+2a_0\,h_{\beta\chi}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}-2a_1\,\partial_{\beta}\mathcal{A}_{\chi}{}^{\delta}{}_{\delta}\\
&\quad\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}-2a_1\,\partial_{\beta}\mathcal{A}^{\delta}{}_{\delta\chi}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}+2a_1\,\partial_{\chi}\mathcal{A}_{\beta}{}^{\delta}{}_{\delta}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}-\\
&2a_1\,\partial_{\chi}\mathcal{A}^{\delta}{}_{\beta\delta}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}-2a_1\,\partial_{\chi}\mathcal{A}^{\delta}{}_{\delta\beta}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}-\\
&22a_1\,\partial_{\beta}\mathcal{A}_{\chi}{}^{\delta}{}_{\delta}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha}+38a_1\,\partial_{\beta}\mathcal{A}^{\delta}{}_{\chi\delta}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha}+\\
&22a_1\,\partial_{\chi}\mathcal{A}_{\beta}{}^{\delta}{}_{\delta}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha}-2a_1\,\partial_{\chi}\mathcal{A}^{\delta}{}_{\beta\delta}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha}+\\
&4a_1\,\partial_{\alpha}\mathcal{A}_{\chi}{}^{\delta}{}_{\delta}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\beta}-4a_1\,\partial_{\chi}\mathcal{A}_{\alpha}{}^{\delta}{}_{\delta}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\beta}-\\
&2a_1\,\partial_{\chi}\mathcal{A}^{\alpha\beta\chi}\,\partial_{\delta}\mathcal{A}_{\alpha\beta}{}^{\delta}-2a_1\,\partial_{\beta}\mathcal{A}^{\alpha\beta\chi}\,\partial_{\delta}\mathcal{A}_{\alpha\chi}{}^{\delta}-\\
&2a_1\,\partial_{\beta}\mathcal{A}^{\alpha\beta\chi}\,\partial_{\delta}\mathcal{A}_{\alpha}{}^{\delta}{}_{\chi}+38a_1\,\partial_{\chi}\mathcal{A}^{\alpha\beta\chi}\,\partial_{\delta}\mathcal{A}_{\beta\alpha}{}^{\delta}+\\
&4a_1\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_{\delta}\mathcal{A}_{\beta}{}^{\delta}{}_{\chi}-22a_1\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\beta}\,\partial_{\delta}\mathcal{A}_{\chi\alpha}{}^{\delta}+\\
&2a_1\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\partial_{\delta}\mathcal{A}_{\chi\beta}{}^{\delta}-2a_1\,\partial_{\beta}\mathcal{A}^{\alpha\beta\chi}\,\partial_{\delta}\mathcal{A}_{\chi}{}^{\delta}{}_{\alpha}-\\
&2a_1\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\beta}\,\partial_{\delta}\mathcal{A}_{\chi}{}^{\delta}{}_{\alpha}+2a_1\,\partial^{\chi}\mathcal{A}_{\beta\alpha}{}^{\beta}\,\partial_{\delta}\mathcal{A}_{\chi}{}^{\delta\alpha}+\\
&4a_1\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_{\delta}\mathcal{A}_{\chi}{}^{\delta}{}_{\beta}-2a_1\,\partial_{\beta}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_{\delta}\mathcal{A}^{\chi}{}_{\chi}{}^{\delta}+\\
&4a_1\,\partial_{\beta}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_{\delta}\mathcal{A}^{\chi\delta}{}_{\chi}-2a_1\,\partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\partial_{\delta}\mathcal{A}^{\chi\delta}{}_{\chi}+\\
&2a_1\,\partial_{\alpha}\mathcal{A}_{\beta\chi\delta}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}+4a_1\,\partial_{\alpha}\mathcal{A}_{\beta\delta\chi}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}+\\
&4a_1\,\partial_{\alpha}\mathcal{A}_{\chi\beta\delta}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}+2a_1\,\partial_{\alpha}\mathcal{A}_{\chi\delta\beta}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}+\\
&4a_1\,\partial_{\alpha}\mathcal{A}_{\delta\beta\chi}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}+4a_1\,\partial_{\alpha}\mathcal{A}_{\delta\chi\beta}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-\\
&2a_1\,\partial_{\beta}\mathcal{A}_{\alpha\chi\delta}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-2a_1\,\partial_{\beta}\mathcal{A}_{\alpha\delta\chi}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-\\
&2a_1\,\partial_{\beta}\mathcal{A}_{\chi\delta\alpha}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-2a_1\,\partial_{\chi}\mathcal{A}_{\alpha\beta\delta}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-\\
&2a_1\,\partial_{\chi}\mathcal{A}_{\beta\alpha\delta}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}+4a_1\,\partial_{\chi}\mathcal{A}_{\beta\delta\alpha}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-\\
&4a_1\,\partial_{\delta}\mathcal{A}_{\alpha\beta\chi}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-4a_1\,\partial_{\delta}\mathcal{A}_{\alpha\chi\beta}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-\\
&2a_1\,\partial_{\delta}\mathcal{A}_{\beta\alpha\chi}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-2a_1\,\partial_{\delta}\mathcal{A}_{\beta\chi\alpha}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}-\\
&2a_1\,\partial_{\delta}\mathcal{A}_{\chi\beta\alpha}\,\partial^{\delta}\mathcal{A}^{\alpha\beta\chi}+2a_1\,\partial_{\beta}\mathcal{A}_{\delta\alpha}{}^{\beta}\,\partial^{\delta}\mathcal{A}^{\chi\alpha}{}_{\chi}+\\
&2a_1\,\partial_{\beta}\mathcal{A}_{\delta\alpha}{}^{\beta}\,\partial^{\delta}\mathcal{A}^{\chi}{}_{\chi}{}^{\alpha}\big)\Big)[t,x,y,z]\,dz\,dy\,dx\,dt
\end{aligned}
$$

	$\Delta^{\#1}_{2^+\alpha\beta}$	$\Delta^{\#2}_{2^+\alpha\beta}$	$\Delta^{\#3}_{2^+\alpha\beta}$	$\mathcal{T}^{\#1}_{2^+\alpha\beta}$	$\Delta^{\#1}_{2^-\alpha\beta\chi}$	$\Delta^{\#2}_{2^-\alpha\beta\chi}$
$\Delta^{\#1}_{2^+}\dagger^{\alpha\beta}$	0	$\frac{2\sqrt{\frac{2}{3}}}{a_0}$	$\frac{4}{\sqrt{3}a_0}$	$\frac{4i\sqrt{2}}{a_0k}$	0	0
$\Delta^{\#2}_{2^+}\dagger^{\alpha\beta}$	$\frac{2\sqrt{\frac{2}{3}}}{a_0}$	$-\frac{8(a_0+13a_1k^2)}{3a_0^2}$	$-\frac{2\sqrt{2}(a_0+52a_1k^2)}{3a_0^2}$	$-\frac{4i(a_0+31a_1k^2)}{\sqrt{3}a_0^2k}$	0	0
$\Delta^{\#3}_{2^+}\dagger^{\alpha\beta}$	$\frac{4}{\sqrt{3}a_0}$	$-\frac{2\sqrt{2}(a_0+52a_1k^2)}{3a_0^2}$	$\frac{8(a_0-26a_1k^2)}{3a_0^2}$	$-\frac{4i\sqrt{\frac{2}{3}}(a_0+31a_1k^2)}{a_0^2k}$	0	0
$\mathcal{T}^{\#1}_{2^+}\dagger^{\alpha\beta}$	$-\frac{4i\sqrt{2}}{a_0k}$	$\frac{4i(a_0+31a_1k^2)}{\sqrt{3}a_0^2k}$	$\frac{4i\sqrt{\frac{2}{3}}(a_0+31a_1k^2)}{a_0^2k}$	$-\frac{8(a_0+11a_1k^2)}{a_0^2k^2}$	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	$\frac{4}{a_0-5a_1k^2}$

	$\Delta^{\#1}_{0^+}$	$\Delta^{\#2}_{0^+}$	$\Delta^{\#3}_{0^+}$	$\Delta^{\#4}_{0^+}$	$\mathcal{T}^{\#1}_{0^+}$	$\mathcal{T}^{\#2}_{0^+}$	$\Delta^{\#1}_{0^-}$
$\Delta^{\#1}_{0^+}\dagger$	0	$\frac{4\sqrt{6}}{16a_0+3a_0k^2}$	$-\frac{4\sqrt{\frac{2}{3}}}{16a_0+3a_0k^2}$	$-\frac{8}{\sqrt{3}(16a_0+3a_0k^2)}$	$-\frac{2i\sqrt{2}}{a_0k}$	$-\frac{2i\sqrt{6}k}{16a_0+3a_0k^2}$	0
$\Delta^{\#2}_{0^+}\dagger$	$\frac{4\sqrt{6}}{16a_0+3a_0k^2}$	$-\frac{48(3a_0+197a_1k^2)}{a_0^2(16+3k^2)^2}$	$\frac{16(19a_0+(3a_0+197a_1)k^2)}{a_0^2(16+3k^2)^2}$	$-\frac{8\sqrt{2}(10a_0+(3a_0-394a_1)k^2)}{a_0^2(16+3k^2)^2}$	$-\frac{8i\sqrt{3}(a_0-65a_1k^2)}{a_0^2k(16+3k^2)}$	$\frac{24ik(3a_0+197a_1k^2)}{a_0^2(16+3k^2)^2}$	0
$\Delta^{\#3}_{0^+}\dagger$	$-\frac{4\sqrt{\frac{2}{3}}}{16a_0+3a_0k^2}$	$\frac{16(19a_0+(3a_0+197a_1)k^2)}{a_0^2(16+3k^2)^2}$	$-\frac{16(35a_0+(6a_0+197a_1)k^2)}{3a_0^2(16+3k^2)^2}$	$-\frac{8\sqrt{2}(22a_0+(3a_0+394a_1)k^2)}{3a_0^2(16+3k^2)^2}$	$\frac{8i(a_0-65a_1k^2)}{\sqrt{3}a_0^2k(16+3k^2)}$	$-\frac{8ik(19a_0+(3a_0+197a_1)k^2)}{a_0^2(16+3k^2)^2}$	0
$\Delta^{\#4}_{0^+}\dagger$	$-\frac{8}{\sqrt{3}(16a_0+3a_0k^2)}$	$-\frac{8\sqrt{2}(10a_0+(3a_0-394a_1)k^2)}{a_0^2(16+3k^2)^2}$	$-\frac{8\sqrt{2}(22a_0+(3a_0+394a_1)k^2)}{3a_0^2(16+3k^2)^2}$	$\frac{32(13a_0+(3a_0-197a_1)k^2)}{3a_0^2(16+3k^2)^2}$	$\frac{8i\sqrt{\frac{2}{3}}(a_0-65a_1k^2)}{a_0^2k(16+3k^2)}$	$\frac{4i\sqrt{2}k(10a_0+(3a_0-394a_1)k^2)}{a_0^2(16+3k^2)^2}$	0
$\mathcal{T}^{\#1}_{0^+}\dagger$	$\frac{2i\sqrt{2}}{a_0k}$	$\frac{8i\sqrt{3}(a_0-65a_1k^2)}{a_0^2k(16+3k^2)}$	$-\frac{8i(a_0-65a_1k^2)}{\sqrt{3}a_0^2k(16+3k^2)}$	$-\frac{8i\sqrt{\frac{2}{3}}(a_0-65a_1k^2)}{a_0^2k(16+3k^2)}$	$\frac{4(a_0-25a_1k^2)}{a_0^2k^2}$	$\frac{4\sqrt{3}(a_0-65a_1k^2)}{a_0^2(16+3k^2)}$	0
$\mathcal{T}^{\#2}_{0^+}\dagger$	$\frac{2i\sqrt{6}k}{16a_0+3a_0k^2}$	$-\frac{24ik(3a_0+197a_1k^2)}{a_0^2(16+3k^2)^2}$	$\frac{8ik(19a_0+(3a_0+197a_1)k^2)}{a_0^2(16+3k^2)^2}$	$-\frac{4i\sqrt{2}k(10a_0+(3a_0-394a_1)k^2)}{a_0^2(16+3k^2)^2}$	$\frac{4\sqrt{3}(a_0-65a_1k^2)}{a_0^2(16+3k^2)}$	$-\frac{12k^2(3a_0+197a_1k^2)}{a_0^2(16+3k^2)^2}$	0
$\Delta^{\#1}_{0^-}\dagger$	0	0	0	0	0	0	$-\frac{2}{a_0-a_1k^2}$

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

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

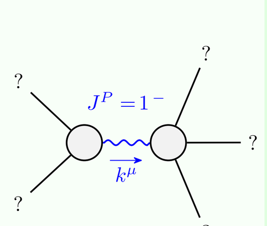
	$\mathcal{A}^{\#1}_{0^+}$	$\mathcal{A}^{\#2}_{0^+}$	$\mathcal{A}^{\#3}_{0^+}$	$\mathcal{A}^{\#4}_{0^+}$	$h^{\#1}_{0^+}$	$h^{\#2}_{0^+}$	$\mathcal{A}^{\#1}_{0^-}$
$\mathcal{A}^{\#1}_{0^+}\dagger$	$\frac{1}{2}(-a_0+25a_1k^2)$	0	$10\sqrt{\frac{2}{3}}a_1k^2$	$-\frac{10a_1k^2}{\sqrt{3}}$	$-\frac{ia_0k}{2\sqrt{2}}$	0	0
$\mathcal{A}^{\#2}_{0^+}\dagger$	0	0	$\frac{a_0}{2}$	$-\frac{a_0}{2\sqrt{2}}$	0	0	0
$\mathcal{A}^{\#3}_{0^+}\dagger$	$10\sqrt{\frac{2}{3}}a_1k^2$	$\frac{a_0}{2}$	$\frac{23a_1k^2}{3}$	$-\frac{3a_0+46a_1k^2}{6\sqrt{2}}$	$\frac{ia_0k}{4\sqrt{3}}$	$-\frac{1}{4}ia_0k$	0
$\mathcal{A}^{\#4}_{0^+}\dagger$	$-\frac{10a_1k^2}{\sqrt{3}}$	$-\frac{a_0}{2\sqrt{2}}$	$-\frac{3a_0+46a_1k^2}{6\sqrt{2}}$	$\frac{1}{6}(3a_0+23a_1k^2)$	$-\frac{ia_0k}{4\sqrt{6}}$	$\frac{ia_0k}{4\sqrt{2}}$	0
$h^{\#1}_{0^+}\dagger$	$\frac{ia_0k}{2\sqrt{2}}$	0	$-\frac{ia_0k}{4\sqrt{3}}$	$\frac{ia_0k}{4\sqrt{6}}$	0	0	0
$h^{\#2}_{0^+}\dagger$	0	0	$\frac{ia_0k}{4}$	$-\frac{ia_0k}{4\sqrt{2}}$	0	0	0
$\mathcal{A}^{\#1}_{0^-}\dagger$	0	0	0	0	0	0	$\frac{1}{2}(-a_0+a_1k^2)$

	$\mathcal{A}^{\#1}_{2^+\alpha\beta}$	$\mathcal{A}^{\#2}_{2^+\alpha\beta}$	$\mathcal{A}^{\#3}_{2^+\alpha\beta}$	$h^{\#1}_{2^+\alpha\beta}$	$\mathcal{A}^{\#1}_{2^-\alpha\beta\chi}$	$\mathcal{A}^{\#2}_{2^-\alpha\beta\chi}$
$\mathcal{A}^{\#1}_{2^+}\dagger^{\alpha\beta}$	$\frac{1}{4}(a_0+11a_1k^2)$	$-5\sqrt{\frac{2}{3}}a_1k^2$	$\frac{5a_1k^2}{\sqrt{3}}$	$\frac{ia_0k}{4\sqrt{2}}$	0	0
$\mathcal{A}^{\#2}_{2^+}\dagger^{\alpha\beta}$	$-5\sqrt{\frac{2}{3}}a_1k^2$	$\frac{1}{6}(-3a_0+a_1k^2)$	$-\frac{a_1k^2}{6\sqrt{2}}$	$\frac{ia_0k}{4\sqrt{3}}$	0	0
$\mathcal{A}^{\#3}_{2^+}\dagger^{\alpha\beta}$	$\frac{5a_1k^2}{\sqrt{3}}$	$-\frac{a_1k^2}{6\sqrt{2}}$	$\frac{1}{12}(3a_0+a_1k^2)$	$-\frac{ia_0k}{4\sqrt{6}}$	0	0
$h^{\#1}_{2^+}\dagger^{\alpha\beta}$	$-\frac{ia_0k}{4\sqrt{2}}$	$-\frac{ia_0k}{4\sqrt{3}}$	$\frac{ia_0k}{4\sqrt{6}}$	0	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	$\frac{1}{4}(a_0-5a_1k^2)$

Source constraints

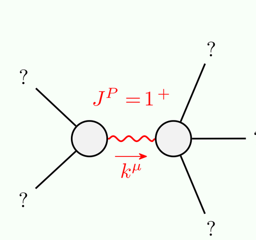
SO(3) irreps	Fundamental fields	Multiplicities
$2\mathcal{T}^{\#2}_{0^+}-ik\,\Delta^{\#2}_{0^+}==0$	$2\partial_{\beta}\partial_{\alpha}\mathcal{T}^{\alpha\beta}==\partial_{\chi}\partial_{\beta}\partial_{\alpha}\Delta^{\alpha\beta\chi}$	1
$\Delta^{\#3}_{0^+}+2\Delta^{\#4}_{0^+}+3\Delta^{\#2}_{0^+}==0$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

Massive and massless spectra



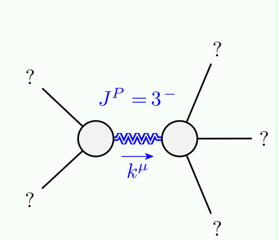
Massive particle

Pole residue:	$\frac{3287a_0+323862a_1}{35937a_1(a_0+66a_1)}>0$
Polarisations:	3
Square mass:	$\frac{a_0}{33a_1}>0$
Spin:	1
Parity:	Odd



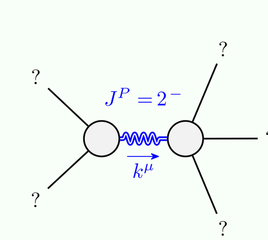
Massive particle

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



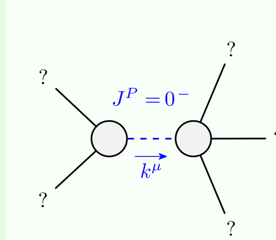
Massive particle

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



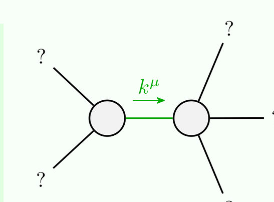
Massive particle

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)