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
$\Delta^{\#2}_{1^+}\dagger^{\alpha\beta}$	$-\frac{2\sqrt{2}}{a_0}$	$\frac{2}{a_0}$	0	0	0	0	0	0	0	0
$\Delta^{\#3}_{1^+}\dagger^{\alpha\beta}$	0	0	$\frac{4}{a_0}$	0	0	0	0	0	0	0
$\Delta^{\#1}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{64 a_1 k^2}{9 a_0^2+12 a_0 a_1 k^2}$	$\frac{(36+7 k^2)(9 a_0-4 a_1 k^2)}{3\sqrt{2}\, a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$-\frac{-20 a_1 k^4+a_0 (36+61 k^2)}{2\sqrt{3}\, a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$-\frac{\sqrt{\frac{5}{3}}\,(4 a_1 k^4+a_0 (36+7 k^2))}{2 a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$\frac{\sqrt{\frac{2}{3}}\,(-4 a_1 k^4+a_0 (-18+k^2))}{a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$\frac{4 a_1 k^4-a_0 (36+25 k^2)}{\sqrt{3}\, a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$\frac{3 i \sqrt{2}\, k (-9 a_0+4 a_1 k^2)}{a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$
$\Delta^{\#2}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{(36+7 k^2)(9 a_0-4 a_1 k^2)}{3\sqrt{2}\, a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$\frac{9 a_0 (9+k^2)(18+5 k^2)+2 a_1 k^2 (2268+882 k^2+79 k^4)}{3 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{-20 a_1 k^4 (36+k^2)+a_0 (324+207 k^2+118 k^4)}{2\sqrt{6}\, a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{\sqrt{\frac{5}{6}}\,(4 a_1 k^4 (36+k^2)+a_0 (324+207 k^2+10 k^4))}{2 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{a_0 (36+13 k^2)(9+16 k^2)+8 a_1 k^4 (117+37 k^2)}{2\sqrt{3}\, a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{\sqrt{\frac{2}{3}}\,(-162 a_0+18 a_0 k^2+(31 a_0+234 a_1) k^4+74 a_1 k^6)}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{3 i k (81 a_0+18 (a_0+14 a_1) k^2+52 a_1 k^4)}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$
$\Delta^{\#3}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{-20 a_1 k^4+a_0 (36+61 k^2)}{2\sqrt{3}\, a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$\frac{-20 a_1 k^4 (36+k^2)+a_0 (324+207 k^2+118 k^4)}{2\sqrt{6}\, a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{-20 a_1 k^2 (-324-198 k^2+k^4)+a_0 (4941+3312 k^2+346 k^4)}{12 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{\sqrt{5}\,(891 a_0+18 (23 a_0+72 a_1) k^2-22 (a_0-36 a_1) k^4-4 a_1 k^6)}{12 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{-40 a_1 k^4 (-9+k^2)+a_0 (-81-117 k^2+8 k^4)}{6\sqrt{2}\, a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{-20 a_1 k^4 (-9+k^2)+a_0 (81+369 k^2+118 k^4)}{6 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{3 i \sqrt{6}\, k (30 a_1 k^2 (1+k^2)+a_0 (18+13 k^2))}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$
$\Delta^{\#4}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{\sqrt{\frac{5}{3}}\,(4 a_1 k^4+a_0 (36+7 k^2))}{2 a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$\frac{\sqrt{\frac{5}{6}}\,(4 a_1 k^4 (36+k^2)+a_0 (324+207 k^2+10 k^4))}{2 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{\sqrt{5}\,(891 a_0+18 (23 a_0+72 a_1) k^2-22 (a_0-36 a_1) k^4-4 a_1 k^6)}{12 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{1377 a_0+36 (19 a_0+36 a_1) k^2+2 (a_0+396 a_1) k^4-4 a_1 k^6}{12 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{\sqrt{\frac{5}{2}}\,(8 a_1 k^4 (-9+k^2)+a_0 (-81-45 k^2+8 k^4))}{6 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{\sqrt{5}\,(4 a_1 k^4 (-9+k^2)+a_0 (81+45 k^2+10 k^4))}{6 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{3 i \sqrt{30}\, k (6 a_1 k^2 (1+k^2)+a_0 (9+5 k^2))}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$
$\Delta^{\#5}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{\sqrt{\frac{2}{3}}\,(-4 a_1 k^4+a_0 (-18+k^2))}{a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$\frac{a_0 (36+13 k^2)(9+16 k^2)+8 a_1 k^4 (117+37 k^2)}{2\sqrt{3}\, a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{-40 a_1 k^4 (-9+k^2)+a_0 (-81-117 k^2+8 k^4)}{6\sqrt{2}\, a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{\sqrt{\frac{5}{2}}\,(8 a_1 k^4 (-9+k^2)+a_0 (-81-45 k^2+8 k^4))}{6 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{3807 a_0+36 (85 a_0+144 a_1) k^2+8 (79 a_0+504 a_1) k^4+848 a_1 k^6}{6 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{8 a_1 k^2 (324+252 k^2+53 k^4)+a_0 (2025+1557 k^2+304 k^4)}{3\sqrt{2}\, a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{3 i \sqrt{3}\, k (27 a_0+8 (a_0+6 a_1) k^2+8 a_1 k^4)}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$
$\Delta^{\#6}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{4 a_1 k^4-a_0 (36+25 k^2)}{\sqrt{3}\, a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$-\frac{\sqrt{\frac{2}{3}}\,(-162 a_0+18 a_0 k^2+(31 a_0+234 a_1) k^4+74 a_1 k^6)}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{20 a_1 k^4 (-9+k^2)-a_0 (81+369 k^2+118 k^4)}{6 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{\sqrt{5}\,(4 a_1 k^4 (-9+k^2)+a_0 (81+45 k^2+10 k^4))}{6 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{-8 a_1 k^2 (324+252 k^2+53 k^4)-a_0 (2025+1557 k^2+304 k^4)}{3\sqrt{2}\, a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{4 a_1 k^2 (324+252 k^2+53 k^4)+a_0 (891+630 k^2+110 k^4)}{3 a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{3 i \sqrt{6}\, k (4 a_1 k^2 (6+k^2)+a_0 (27+10 k^2))}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$
$\mathcal{T}^{\#1}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{3 i \sqrt{2}\, k (9 a_0-4 a_1 k^2)}{a_0 (9+4 k^2)(3 a_0+4 a_1 k^2)}$	$\frac{3 i k (81 a_0+18 (a_0+14 a_1) k^2+52 a_1 k^4)}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{3 i \sqrt{6}\,(30 a_1 k^3 (1+k^2)+a_0 k (18+13 k^2))}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{3 i \sqrt{30}\,(6 a_1 k^3 (1+k^2)+a_0 k (9+5 k^2))}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$-\frac{3 i \sqrt{3}\, k (27 a_0+8 k^2 (a_0+a_1 (6+k^2)))}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{3 i \sqrt{6}\,(4 a_1 k^3 (6+k^2)+a_0 k (27+10 k^2))}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$	$\frac{36 k^2 (3 a_0+10 a_1 k^2)}{a_0 (9+4 k^2)^2 (3 a_0+4 a_1 k^2)}$

	$\mathcal{A}^{\#1}_{1^+\,\alpha\beta}$	$\mathcal{A}^{\#2}_{1^+\,\alpha\beta}$	$\mathcal{A}^{\#3}_{1^+\,\alpha\beta}$	$\mathcal{A}^{\#1}_{1^-\,\alpha}$	$\mathcal{A}^{\#2}_{1^-\,\alpha}$	$\mathcal{A}^{\#3}_{1^-\,\alpha}$	$\mathcal{A}^{\#4}_{1^-\,\alpha}$	$\mathcal{A}^{\#5}_{1^-\,\alpha}$	$\mathcal{A}^{\#6}_{1^-\,\alpha}$	$h^{\#1}_{1^-\,\alpha}$
$\mathcal{A}^{\#1}_{1^+}\dagger^{\alpha\beta}$	$-\frac{a_0}{4}$	$-\frac{a_0}{2\sqrt{2}}$	0	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
$\mathcal{A}^{\#3}_{1^+}\dagger^{\alpha\beta}$	0	0	$\frac{a_0}{4}$	0	0	0	0	0	0	0
$\mathcal{A}^{\#1}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{7 a_0}{36}$	$\frac{a_0}{18\sqrt{2}}$	$-\frac{a_0}{3\sqrt{3}}$	$-\frac{1}{3}\sqrt{\frac{5}{3}}\, a_0$	$-\frac{1}{3}\sqrt{\frac{2}{3}}\, a_0$	$-\frac{2 a_0}{3\sqrt{3}}$	$-\frac{i a_0 k}{36\sqrt{2}}$
$\mathcal{A}^{\#2}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{a_0}{18\sqrt{2}}$	$\frac{2 a_0}{9}$	$\frac{a_0}{3\sqrt{6}}$	$\frac{1}{3}\sqrt{\frac{5}{6}}\, a_0$	$\frac{a_0}{3\sqrt{3}}$	$\frac{1}{3}\sqrt{\frac{2}{3}}\, a_0$	$-\frac{1}{9} i a_0 k$
$\mathcal{A}^{\#3}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{a_0}{3\sqrt{3}}$	$\frac{a_0}{3\sqrt{6}}$	$\frac{1}{3}(-a_0-a_1 k^2)$	$\frac{1}{6}\sqrt{5}\,(a_0-2 a_1 k^2)$	$\frac{a_0-4 a_1 k^2}{6\sqrt{2}}$	$\frac{1}{6}(a_0-4 a_1 k^2)$	$\frac{i a_0 k}{4\sqrt{6}}$
$\mathcal{A}^{\#4}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{1}{3}\sqrt{\frac{5}{3}}\, a_0$	$\frac{1}{3}\sqrt{\frac{5}{6}}\, a_0$	$\frac{1}{6}\sqrt{5}\,(a_0-2 a_1 k^2)$	$\frac{1}{3}(a_0-5 a_1 k^2)$	$\frac{1}{6}\sqrt{\frac{5}{2}}\,(a_0-4 a_1 k^2)$	$\frac{1}{6}\sqrt{5}\,(a_0-4 a_1 k^2)$	$-\frac{1}{4} i \sqrt{\frac{5}{6}}\, a_0 k$
$\mathcal{A}^{\#5}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{1}{3}\sqrt{\frac{2}{3}}\, a_0$	$\frac{a_0}{3\sqrt{3}}$	$\frac{a_0-4 a_1 k^2}{6\sqrt{2}}$	$\frac{1}{6}\sqrt{\frac{5}{2}}\,(a_0-4 a_1 k^2)$	$\frac{1}{3}(a_0-2 a_1 k^2)$	$\frac{a_0-8 a_1 k^2}{6\sqrt{2}}$	$-\frac{i a_0 k}{12\sqrt{3}}$
$\mathcal{A}^{\#6}_{1^-}\dagger^{\alpha}$	0	0	0	$-\frac{2 a_0}{3\sqrt{3}}$	$\frac{1}{3}\sqrt{\frac{2}{3}}\, a_0$	$\frac{1}{6}(a_0-4 a_1 k^2)$	$\frac{1}{6}\sqrt{5}\,(a_0-4 a_1 k^2)$	$\frac{a_0-8 a_1 k^2}{6\sqrt{2}}$	$\frac{5 a_0}{12}-\frac{4 a_1 k^2}{3}$	$-\frac{5 i a_0 k}{12\sqrt{6}}$
$h^{\#1}_{1^-}\dagger^{\alpha}$	0	0	0	$\frac{i a_0 k}{36\sqrt{2}}$	$\frac{i a_0 k}{9}$	$-\frac{i a_0 k}{4\sqrt{6}}$	$\frac{1}{4} i \sqrt{\frac{5}{6}}\, a_0 k$	$\frac{i a_0 k}{12\sqrt{3}}$	$\frac{5 i a_0 k}{12\sqrt{6}}$	0

Source constraints

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

	$\mathcal{A}^{\#1}_{0^+}$	$\mathcal{A}^{\#2}_{0^+}$	$\mathcal{A}^{\#3}_{0^+}$	$\mathcal{A}^{\#4}_{0^+}$	$h^{\#1}_{0^+}$	$h^{\#2}_{0^+}$	$\mathcal{A}^{\#1}_{0^-}$
$\mathcal{A}^{\#1}_{0^+}\dagger$	$\frac{a_0}{6}$	$\frac{a_0}{\sqrt{6}}$	$\frac{a_0}{\sqrt{6}}$	$\frac{a_0}{\sqrt{3}}$	$-\frac{i a_0 k}{3\sqrt{2}}$	$-\frac{i a_0 k}{2\sqrt{6}}$	0
$\mathcal{A}^{\#2}_{0^+}\dagger$	$\frac{a_0}{\sqrt{6}}$	0	$\frac{a_0}{2}$	$\frac{a_0}{2\sqrt{2}}$	0	0	0
$\mathcal{A}^{\#3}_{0^+}\dagger$	$\frac{a_0}{\sqrt{6}}$	$\frac{a_0}{2}$	0	$\frac{a_0}{2\sqrt{2}}$	$\frac{i a_0 k}{4\sqrt{3}}$	$-\frac{1}{4} i a_0 k$	0
$\mathcal{A}^{\#4}_{0^+}\dagger$	$\frac{a_0}{\sqrt{3}}$	$\frac{a_0}{2\sqrt{2}}$	$\frac{a_0}{2\sqrt{2}}$	$\frac{a_0}{2}$	$\frac{i a_0 k}{4\sqrt{6}}$	$-\frac{i a_0 k}{4\sqrt{2}}$	0
$h^{\#1}_{0^+}\dagger$	$\frac{i a_0 k}{3\sqrt{2}}$	0	$-\frac{i a_0 k}{4\sqrt{3}}$	$-\frac{i a_0 k}{4\sqrt{6}}$	0	0	0
$h^{\#2}_{0^+}\dagger$	$\frac{i a_0 k}{2\sqrt{6}}$	0	$\frac{i a_0 k}{4}$	$\frac{i a_0 k}{4\sqrt{2}}$	0	0	0
$\mathcal{A}^{\#1}_{0^-}\dagger$	0	0	0	0	0	0	$-\frac{a_0}{2}-6 a_1 k^2$

	$\mathcal{A}^{\#1}_{2^+\,\alpha\beta}$	$\mathcal{A}^{\#2}_{2^+\,\alpha\beta}$	$\mathcal{A}^{\#3}_{2^+\,\alpha\beta}$	$h^{\#1}_{2^+\,\alpha\beta}$	$\mathcal{A}^{\#1}_{2^-\,\alpha\beta\chi}$	$\mathcal{A}^{\#2}_{2^-\,\alpha\beta\chi}$
$\mathcal{A}^{\#1}_{2^+}\dagger^{\alpha\beta}$	$\frac{a_0}{4}$	0	0	$\frac{i a_0 k}{4\sqrt{2}}$	0	0
$\mathcal{A}^{\#2}_{2^+}\dagger^{\alpha\beta}$	0	$-\frac{a_0}{2}$	0	$\frac{i a_0 k}{4\sqrt{3}}$	0	0
$\mathcal{A}^{\#3}_{2^+}\dagger^{\alpha\beta}$	0	0	$\frac{a_0}{4}$	$-\frac{i a_0 k}{4\sqrt{6}}$	0	0
$h^{\#1}_{2^+}\dagger^{\alpha\beta}$	$-\frac{i a_0 k}{4\sqrt{2}}$	$-\frac{i a_0 k}{4\sqrt{3}}$	$\frac{i a_0 k}{4\sqrt{6}}$	0	0	0
$\mathcal{A}^{\#1}_{2^-}\dagger^{\alpha\beta\chi}$	0	0	0	0	$\frac{a_0}{4}$	0
$\mathcal{A}^{\#2}_{2^-}\dagger^{\alpha\beta\chi}$	0	0	0	0	0	$\frac{a_0}{4}$

	$\Delta^{\#1}_{2^+\,\alpha\beta}$	$\Delta^{\#2}_{2^+\,\alpha\beta}$	$\Delta^{\#3}_{2^+\,\alpha\beta}$	$\mathcal{T}^{\#1}_{2^+\,\alpha\beta}$	$\Delta^{\#1}_{2^-\,\alpha\beta\chi}$	$\Delta^{\#2}_{2^-\,\alpha\beta\chi}$
$\Delta^{\#1}_{2^+}\dagger^{\alpha\beta}$	0	$\frac{2\sqrt{\frac{2}{3}}}{a_0}$	$\frac{4}{\sqrt{3}\, a_0}$	$-\frac{4 i \sqrt{2}}{a_0 k}$	0	0
$\Delta^{\#2}_{2^+}\dagger^{\alpha\beta}$	$\frac{2\sqrt{\frac{2}{3}}}{a_0}$	$-\frac{8}{3 a_0}$	$-\frac{2\sqrt{2}}{3 a_0}$	$\frac{4 i}{\sqrt{3}\, a_0 k}$	0	0
$\Delta^{\#3}_{2^+}\dagger^{\alpha\beta}$	$\frac{4}{\sqrt{3}\, a_0}$	$-\frac{2\sqrt{2}}{3 a_0}$	$\frac{8}{3 a_0}$	$\frac{4 i \sqrt{\frac{2}{3}}}{a_0 k}$	0	0
$\mathcal{T}^{\#1}_{2^+}\dagger^{\alpha\beta}$	$\frac{4 i \sqrt{2}}{a_0 k}$	$-\frac{4 i}{\sqrt{3}\, a_0 k}$	$-\frac{4 i \sqrt{\frac{2}{3}}}{a_0 k}$	$-\frac{8}{a_0 k^2}$	0	0
$\Delta^{\#1}_{2^-}\dagger^{\alpha\beta\chi}$	0	0	0	0	$\frac{4}{a_0}$	0
$\Delta^{\#2}_{2^-}\dagger^{\alpha\beta\chi}$	0	0	0	0	0	$\frac{4}{a_0}$

	$\Delta^{\#1}_{0^+}$	$\Delta^{\#2}_{0^+}$	$\Delta^{\#3}_{0^+}$	$\Delta^{\#4}_{0^+}$	$\mathcal{T}^{\#1}_{0^+}$	$\mathcal{T}^{\#2}_{0^+}$	$\Delta^{\#1}_{0^-}$
$\Delta^{\#1}_{0^+}\dagger$	0	$\frac{4\sqrt{6}}{16 a_0+3 a_0 k^2}$	$-\frac{4\sqrt{\frac{2}{3}}}{16 a_0+3 a_0 k^2}$	$\frac{8}{\sqrt{3}\,(16 a_0+3 a_0 k^2)}$	$-\frac{2 i \sqrt{2}}{a_0 k}$	$-\frac{2 i \sqrt{6}\, k}{16 a_0+3 a_0 k^2}$	0
$\Delta^{\#2}_{0^+}\dagger$	$\frac{4\sqrt{6}}{16 a_0+3 a_0 k^2}$	$-\frac{272}{a_0 (16+3 k^2)^2}$	$\frac{16 (49+6 k^2)}{3 a_0 (16+3 k^2)^2}$	$\frac{16\sqrt{2}\,(-1+3 k^2)}{3 a_0 (16+3 k^2)^2}$	$\frac{8 i}{\sqrt{3}\,(16 a_0 k+3 a_0 k^3)}$	$\frac{136 i k}{a_0 (16+3 k^2)^2}$	0
$\Delta^{\#3}_{0^+}\dagger$	$-\frac{4\sqrt{\frac{2}{3}}}{16 a_0+3 a_0 k^2}$	$\frac{16 (49+6 k^2)}{3 a_0 (16+3 k^2)^2}$	$-\frac{16 (27+4 k^2)}{3 a_0 (16+3 k^2)^2}$	$\frac{16\sqrt{2}\,(11+k^2)}{3 a_0 (16+3 k^2)^2}$	$\frac{8 i (5+k^2)}{\sqrt{3}\, a_0 k (16+3 k^2)}$	$-\frac{8 i k (49+6 k^2)}{3 a_0 (16+3 k^2)^2}$	0
$\Delta^{\#4}_{0^+}\dagger$	$\frac{8}{\sqrt{3}\,(16 a_0+3 a_0 k^2)}$	$\frac{16\sqrt{2}\,(-1+3 k^2)}{3 a_0 (16+3 k^2)^2}$	$\frac{16\sqrt{2}\,(11+k^2)}{3 a_0 (16+3 k^2)^2}$	$\frac{32 (5+2 k^2)}{3 a_0 (16+3 k^2)^2}$	$\frac{4 i \sqrt{\frac{2}{3}}\,(6+k^2)}{a_0 k (16+3 k^2)}$	$\frac{8 i \sqrt{2}\, k (1-3 k^2)}{3 a_0 (16+3 k^2)^2}$	0
$\mathcal{T}^{\#1}_{0^+}\dagger$	$\frac{2 i \sqrt{2}}{a_0 k}$	$-\frac{8 i}{\sqrt{3}\,(16 a_0 k+3 a_0 k^3)}$	$-\frac{8 i (5+k^2)}{\sqrt{3}\, a_0 k (16+3 k^2)}$	$-\frac{4 i \sqrt{\frac{2}{3}}\,(6+k^2)}{a_0 k (16+3 k^2)}$	$\frac{4}{a_0 k^2}$	$-\frac{4}{\sqrt{3}\,(16 a_0+3 a_0 k^2)}$	0
$\mathcal{T}^{\#2}_{0^+}\dagger$	$\frac{2 i \sqrt{6}\, k}{16 a_0+3 a_0 k^2}$	$-\frac{136 i k}{a_0 (16+3 k^2)^2}$	$\frac{8 i k (49+6 k^2)}{3 a_0 (16+3 k^2)^2}$	$\frac{8 i \sqrt{2}\, k (-1+3 k^2)}{3 a_0 (16+3 k^2)^2}$	$-\frac{4}{\sqrt{3}\,(16 a_0+3 a_0 k^2)}$	$-\frac{68 k^2}{a_0 (16+3 k^2)^2}$	0
$\Delta^{\#1}_{0^-}\dagger$	0	0	0	0	0	0	$-\frac{2}{a_0+12 a_1 k^2}$

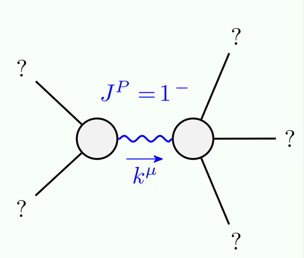
Quadratic (free) action

$$\begin{aligned}\mathcal{S} == \iiiint\big(& h^{\alpha\beta}\,\mathcal{T}_{\alpha\beta} + \mathcal{A}^{\alpha\beta\chi}\,\Delta_{\alpha\beta\chi} + \tfrac{1}{36} a_0 (8\,\mathcal{A}_{\alpha}{}^{\chi}{}_{\chi}\,\mathcal{A}^{\alpha\beta}{}_{\beta} - 18\,\mathcal{A}^{\alpha\beta\chi}\,\mathcal{A}_{\beta\chi\alpha} - \\ & 8\,\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\mathcal{A}_{\beta}{}^{\chi}{}_{\chi} + 16\,\mathcal{A}^{\alpha\beta}{}_{\alpha}\,\mathcal{A}_{\beta}{}^{\chi}{}_{\chi} + 2\,\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\mathcal{A}^{\chi}{}_{\beta\chi} + \\ & 4\,\mathcal{A}^{\alpha\beta}{}_{\beta}\,\partial_\alpha h^{\chi}{}_{\chi} - 4\,\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_\beta h^{\chi}{}_{\chi} - 9\,h^{\chi}{}_{\chi}\,\partial_\beta\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta} + \\ & 9\,h^{\chi}{}_{\chi}\,\partial_\beta\mathcal{A}^{\alpha\beta}{}_{\alpha} - 18\,h_{\alpha\chi}\,\partial_\beta\mathcal{A}^{\alpha\beta\chi} - 16\,\mathcal{A}^{\alpha\beta}{}_{\beta}\,\partial_\chi h_{\alpha}{}^{\chi} + \\ & 16\,\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}\,\partial_\chi h_{\beta}{}^{\chi} + 18\,h_{\beta\chi}\,\partial^{\chi}\mathcal{A}^{\alpha}{}_{\alpha}{}^{\beta}) + \\ & a_1 (\partial_\alpha\mathcal{A}_{\chi}{}^{\mu}{}_{\mu}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\beta} - \partial_\chi\mathcal{A}_{\alpha}{}^{\mu}{}_{\mu}\,\partial^{\chi}\mathcal{A}^{\alpha\beta}{}_{\beta} + \\ & (2\,\partial_\alpha\mathcal{A}_{\beta\chi\mu} - 2\,\partial_\alpha\mathcal{A}_{\beta\mu\chi} - 2\,\partial_\alpha\mathcal{A}_{\chi\beta\mu} + 2\,\partial_\alpha\mathcal{A}_{\chi\mu\beta} + \\ & \partial_\alpha\mathcal{A}_{\mu\beta\chi} - \partial_\alpha\mathcal{A}_{\mu\chi\beta} - 2\,\partial_\beta\mathcal{A}_{\alpha\chi\mu} + \partial_\beta\mathcal{A}_{\alpha\mu\chi} - \\ & \partial_\beta\mathcal{A}_{\chi\mu\alpha} + \partial_\chi\mathcal{A}_{\alpha\beta\mu} - \partial_\chi\mathcal{A}_{\beta\alpha\mu} + 2\,\partial_\chi\mathcal{A}_{\beta\mu\alpha} - \\ & \partial_\mu\mathcal{A}_{\alpha\beta\chi} + \partial_\mu\mathcal{A}_{\alpha\chi\beta} + \partial_\mu\mathcal{A}_{\beta\alpha\chi} - 2\,\partial_\mu\mathcal{A}_{\beta\chi\alpha} + \\ & \partial_\mu\mathcal{A}_{\chi\beta\alpha})\,\partial^{\mu}\mathcal{A}^{\alpha\beta\chi})\big)[t,x,y,z]\,dz\,dy\,dx\,dt\end{aligned}$$

	$\mathcal{A}^{\#1}_{3^-\,\alpha\beta\chi}$
$\mathcal{A}^{\#1}_{3^-}\dagger^{\alpha\beta\chi}$	$-\frac{a_0}{2}$

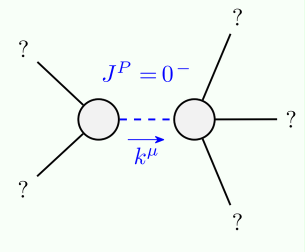
	$\Delta^{\#1}_{3^-\,\alpha\beta\chi}$
$\Delta^{\#1}_{3^-}\dagger^{\alpha\beta\chi}$	$-\frac{2}{a_0}$

Massive and massless spectra



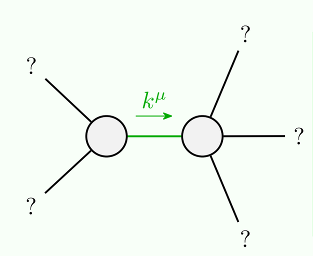
Massive particle

Pole residue:	$\frac{41 a_0-150 a_1}{8 a_0 a_1-24 a_1^2} > 0$
Polarisations:	3
Square mass:	$-\frac{3 a_0}{4 a_1} > 0$
Spin:	1
Parity:	Odd



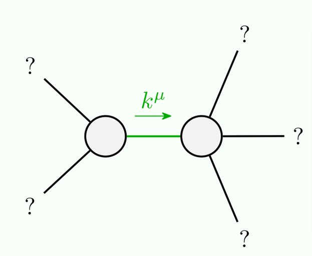
Massive particle

Pole residue:	$\frac{1}{6 a_1} > 0$
Polarisations:	1
Square mass:	$-\frac{a_0}{12 a_1} > 0$
Spin:	0
Parity:	Odd



Quadratic pole

Pole residue:	$-\frac{17}{a_0} > 0$
Polarisations:	1



Quadratic pole

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

Unitarity conditions

$a_0 < 0 \,\&\&\, a_1 > 0$