

Particle spectrograph

Wave operator and propagator

Quadratic (free) action
<div>$\begin{aligned} S = & \iiint \iiint (\frac{1}{8} \, h^{\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}) + 2 \, a_0 \, \Gamma^{\alpha \beta} \, _{\alpha} \partial_{\beta} h^{\chi} \, _{\chi} - \\ & 2 \, a_0 \, h^{\chi} \, _{\chi} \partial_{\beta} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} + 2 \, a_0 \, h^{\chi} \, _{\chi} \partial_{\beta} \Gamma^{\alpha \beta} \, _{\alpha} - 4 \, a_0 \, h_{\alpha \chi} \partial_{\beta} \Gamma^{\alpha \beta \chi} + 44 \, a_1 \partial^{\alpha} \Gamma^{\chi \delta} \, _{\delta} \partial_{\beta} \Gamma^{\beta} \, _{\chi \alpha} + \\ & 4 \, a_1 \partial^{\alpha} \Gamma^{\beta} \, _{\chi \alpha} \partial_{\beta} \Gamma^{\chi \delta} \, _{\delta} - 152 \, a_1 \partial^{\alpha} \Gamma^{\chi \delta} \, _{\chi} \partial_{\beta} \Gamma^{\beta} \, _{\delta \alpha} + 2 \, a_0 \, h^{\alpha \beta} \partial_{\beta} \partial_{\alpha} h^{\chi} \, _{\chi} - \\ & a_0 \partial_{\beta} h^{\chi} \, _{\chi} \partial^{\beta} h^{\alpha} \, _{\alpha} + 2 \, a_0 \partial^{\beta} h^{\alpha} \, _{\alpha} \partial_{\chi} h^{\beta} \, _{\chi} + 2 \, a_0 \, \Gamma^{\alpha} \, ^{\beta} \, _{\alpha} (2 \, \Gamma^{\chi} \, _{\beta \chi} - \partial_{\beta} h^{\chi} \, _{\chi} + 2 \, \partial_{\chi} h^{\beta} \, _{\chi}) + \\ & 74 \, a_1 \partial_{\beta} \partial_{\alpha} h^{\delta} \, _{\delta} \partial_{\chi} \Gamma^{\alpha \beta \chi} + 6 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta \chi} \partial_{\chi} \partial_{\alpha} h^{\delta} \, _{\delta} - 4 \, a_0 \, h^{\alpha \beta} \partial_{\chi} \partial_{\beta} h^{\chi} \, _{\alpha} + \\ & 2 \, a_0 \, h^{\alpha} \, _{\alpha} \partial_{\chi} \partial_{\beta} h^{\beta \chi} + 2 \, a_0 \, h^{\alpha \beta} \partial_{\chi} \partial_{\chi} h^{\alpha \beta} - 2 \, a_0 \, h^{\alpha} \, _{\alpha} \partial_{\chi} \partial^{\chi} h^{\beta} \, _{\beta} - 2 \, a_0 \partial_{\beta} h_{\alpha \chi} \partial^{\chi} h^{\alpha \beta} + \\ & a_0 \partial_{\chi} h_{\alpha \beta} \partial^{\chi} h^{\alpha \beta} + 4 \, a_0 \, h_{\beta \chi} \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} - 4 \, a_1 \partial_{\beta} \Gamma^{\chi} \, _{\delta} \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} - 4 \, a_1 \partial_{\beta} \Gamma^{\delta} \, _{\delta \chi} \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} + \\ & 4 \, a_1 \partial_{\chi} \Gamma^{\delta} \, _{\beta} \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} - 4 \, a_1 \partial_{\chi} \Gamma^{\delta} \, _{\beta \delta} \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} - 4 \, a_1 \partial_{\chi} \Gamma^{\delta} \, _{\delta \beta} \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} - \\ & 6 \, a_1 \partial_{\chi} \partial_{\beta} h^{\delta} \, _{\delta} \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} - 44 \, a_1 \partial_{\beta} \Gamma^{\chi} \, _{\delta} \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} + 76 \, a_1 \partial_{\beta} \Gamma^{\delta} \, _{\chi \delta} \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} + \\ & 44 \, a_1 \partial_{\chi} \Gamma^{\beta} \, _{\delta} \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} - 4 \, a_1 \partial_{\chi} \Gamma^{\delta} \, _{\beta \delta} \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} - 74 \, a_1 \partial_{\chi} \partial_{\beta} h^{\delta} \, _{\delta} \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} + \\ & 8 \, a_1 \partial_{\alpha} \Gamma^{\chi} \, _{\delta} \partial^{\chi} \Gamma^{\alpha \beta} \, _{\beta} - 8 \, a_1 \partial_{\chi} \Gamma^{\alpha} \, _{\delta} \partial^{\chi} \Gamma^{\alpha \beta} \, _{\beta} - 36 \, a_1 \partial_{\chi} \partial_{\beta} h^{\delta} \, _{\delta} \partial^{\chi} \partial_{\alpha} h^{\alpha \beta} + \\ & 17 \, a_1 \partial_{\chi} \partial_{\beta} h^{\delta} \, _{\delta} \partial^{\chi} \partial^{\beta} h^{\alpha} \, _{\alpha} - 4 \, a_1 \partial_{\chi} \Gamma^{\alpha \beta \chi} \partial_{\delta} \Gamma^{\delta} \, _{\alpha \beta} - 4 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta \chi} \partial_{\delta} \Gamma^{\delta} \, _{\alpha \chi} - \\ & 4 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta \chi} \partial_{\delta} \Gamma^{\delta} \, _{\alpha} \, ^{\chi} + 76 \, a_1 \partial_{\chi} \Gamma^{\alpha \beta \chi} \partial_{\delta} \Gamma^{\delta} \, _{\beta \alpha} + 8 \, a_1 \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \Gamma^{\delta} \, _{\beta} \, ^{\chi} - \\ & 44 \, a_1 \partial^{\chi} \Gamma^{\alpha \beta} \, _{\beta} \partial_{\delta} \Gamma^{\chi \alpha} + 4 \, a_1 \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} \partial_{\delta} \Gamma^{\chi \beta} - 4 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta \chi} \partial_{\delta} \Gamma^{\delta} \, _{\chi} \, ^{\alpha} - \\ & 4 \, a_1 \partial^{\chi} \Gamma^{\alpha \beta} \, _{\beta} \partial_{\delta} \Gamma^{\chi} \, _{\alpha} \, ^{\delta} + 4 \, a_1 \partial^{\chi} \Gamma^{\beta} \, _{\alpha} \, ^{\delta} \partial_{\delta} \Gamma^{\chi} \, _{\chi} \, ^{\delta \alpha} + 8 \, a_1 \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \Gamma^{\delta} \, _{\chi} \, ^{\beta} - \\ & 4 \, a_1 \partial_{\beta} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \Gamma^{\chi} \, _{\chi} \, ^{\delta} + 8 \, a_1 \partial_{\beta} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \Gamma^{\chi \delta} \, _{\chi} - 4 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta} \, _{\alpha} \partial_{\delta} \Gamma^{\chi \delta} \, _{\chi} - \\ & 74 \, a_1 \partial_{\chi} \Gamma^{\alpha \beta \chi} \partial_{\delta} \partial_{\alpha} h^{\delta} \, _{\delta} - 6 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta \chi} \partial_{\delta} \partial_{\alpha} h^{\delta} \, _{\chi} - 74 \, a_1 \partial_{\chi} \Gamma^{\alpha \beta \chi} \partial_{\delta} \partial_{\beta} h^{\delta} \, _{\alpha} + \\ & 3 \, a_1 \partial_{\chi} h^{\alpha \beta} \partial_{\delta} \partial_{\beta} h^{\delta} \, _{\alpha} + 37 \, a_1 \partial_{\alpha} \partial_{\chi} h^{\alpha \beta} \partial_{\delta} \partial_{\beta} h^{\delta} \, _{\chi} + 6 \, a_1 \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \partial_{\beta} h^{\delta} \, _{\chi} + \\ & 74 \, a_1 \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} \partial_{\delta} \partial_{\beta} h^{\delta} \, _{\chi} - 3 \, a_1 \partial^{\chi} \partial_{\alpha} h^{\alpha \beta} \partial_{\delta} \partial_{\beta} h^{\delta} \, _{\chi} + 26 \, a_1 \partial^{\chi} \partial^{\beta} h^{\alpha} \, _{\alpha} \partial_{\delta} \partial_{\beta} h^{\delta} \, _{\chi} - \\ & 6 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta \chi} \partial_{\delta} \partial_{\chi} h^{\delta} \, _{\alpha} - 43 \, a_1 \partial_{\alpha} \partial^{\chi} h^{\alpha \beta} \partial_{\delta} \partial_{\chi} h^{\delta} \, _{\beta} + 6 \, a_1 \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \partial_{\beta} h^{\delta} \, _{\chi} + \\ & 74 \, a_1 \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} \partial_{\delta} \partial_{\chi} h^{\delta} \, _{\beta} + 77 \, a_1 \partial^{\chi} \partial_{\alpha} h^{\alpha \beta} \partial_{\delta} \partial_{\chi} h^{\delta} \, _{\beta} - 58 \, a_1 \partial^{\chi} \partial^{\beta} h^{\alpha} \, _{\alpha} \partial_{\delta} \partial_{\chi} h^{\delta} \, _{\beta} + \\ & 8 \, a_1 \partial_{\beta} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \partial_{\chi} h^{\chi \delta} - 8 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta} \, _{\alpha} \partial_{\delta} \partial_{\chi} h^{\chi \delta} - 4 \, a_1 \partial_{\beta} \partial_{\alpha} h^{\alpha \beta} \partial_{\delta} \partial_{\chi} h^{\chi \delta} + \\ & 8 \, a_1 \partial_{\beta} \partial^{\beta} h^{\alpha} \, _{\alpha} \partial_{\delta} \partial_{\chi} h^{\chi \delta} + 74 \, a_1 \partial_{\chi} \Gamma^{\alpha \beta \chi} \partial_{\delta} \partial^{\delta} h_{\alpha \beta} + 17 \, a_1 \partial_{\chi} \partial^{\chi} h^{\alpha \beta} \partial_{\delta} \partial^{\delta} h_{\alpha \beta} + \\ & 6 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta \chi} \partial_{\delta} \partial^{\delta} h_{\alpha \chi} + 2 \, a_1 \partial_{\alpha} \partial^{\chi} h^{\alpha \beta} \partial_{\delta} \partial^{\delta} h_{\beta \chi} - 6 \, a_1 \partial^{\chi} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \partial^{\delta} h_{\beta \chi} - \\ & 74 \, a_1 \partial^{\chi} \Gamma^{\alpha \beta} \, _{\alpha} \partial_{\delta} \partial^{\delta} h_{\beta \chi} - 73 \, a_1 \partial^{\chi} \partial_{\alpha} h^{\alpha \beta} \partial_{\delta} \partial^{\delta} h_{\beta \chi} + 34 \, a_1 \partial^{\chi} \partial^{\beta} h^{\alpha} \, _{\alpha} \partial_{\delta} \partial^{\delta} h_{\beta \chi} - \\ & 8 \, a_1 \partial_{\beta} \Gamma^{\alpha} \, _{\alpha} \, ^{\beta} \partial_{\delta} \partial^{\delta} h^{\chi} \, _{\chi} + 8 \, a_1 \partial_{\beta} \Gamma^{\alpha \beta} \, _{\alpha} \partial_{\delta} \partial^{\delta} h^{\chi} \, _{\chi} - 4 \, a_1 \partial_{\beta} \partial^{\beta} h^{\alpha} \, _{\alpha} \partial_{\delta} \partial^{\delta} h^{\chi} \, _{\chi} + \\ & 4 \, a_1 \partial_{\alpha} \Gamma^{\beta \chi \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 8 \, a_1 \partial_{\alpha} \Gamma^{\beta \chi} \partial_{\delta} \Gamma^{\alpha \beta \chi} + 8 \, a_1 \partial_{\alpha} \Gamma^{\chi \beta \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} + \\ & 4 \, a_1 \partial_{\alpha} \Gamma^{\chi \delta \beta} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 8 \, a_1 \partial_{\alpha} \Gamma^{\delta \beta \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 8 \, a_1 \partial_{\alpha} \Gamma^{\delta \chi \beta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - \\ & 4 \, a_1 \partial_{\beta} \Gamma^{\alpha \chi \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 \, a_1 \partial_{\beta} \Gamma^{\alpha \delta \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 \, a_1 \partial_{\beta} \Gamma^{\chi \delta \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} - \\ & 12 \, a_1 \partial_{\beta} \partial_{\alpha} h^{\chi \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 \, a_1 \partial_{\chi} \Gamma^{\alpha \beta \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 \, a_1 \partial_{\chi} \Gamma^{\beta \alpha \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} + \\ & 8 \, a_1 \partial_{\chi} \Gamma^{\beta \delta \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 12 \, a_1 \partial_{\chi} \partial_{\alpha} h^{\beta \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 8 \, a_1 \partial_{\delta} \Gamma^{\alpha \beta \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} - \\ & 8 \, a_1 \partial_{\delta} \Gamma^{\alpha \chi \beta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 \, a_1 \partial_{\delta} \Gamma^{\beta \alpha \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 \, a_1 \partial_{\delta} \Gamma^{\beta \chi \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} - \\ & 4 \, a_1 \partial_{\delta} \Gamma^{\chi \beta \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 12 \, a_1 \partial_{\delta} \partial_{\beta} h^{\alpha \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 12 \, a_1 \partial_{\delta} \partial_{\chi} h^{\alpha \beta} \partial^{\delta} \Gamma^{\alpha \beta \chi} + \\ & 4 \, a_1 \partial_{\beta} \Gamma^{\delta \alpha} \, ^{\beta} \partial^{\delta} \Gamma^{\chi \alpha} \, _{\chi} + 4 \, a_1 \partial_{\beta} \Gamma^{\delta \alpha} \, ^{\beta} \partial^{\delta} \Gamma^{\chi} \, _{\alpha} \, ^{\alpha} - 6 \, a_1 \partial_{\beta} \partial_{\alpha} h^{\chi \delta} \partial^{\delta} \partial^{\chi} h^{\alpha \beta} + \\ & 12 \, a_1 \partial_{\chi} \partial_{\beta} h^{\alpha \delta} \partial^{\delta} \partial^{\chi} h^{\alpha \beta} - 6 \, a_1 \partial_{\delta} \partial_{\chi} h^{\alpha \beta} \partial^{\delta} \partial^{\chi} h^{\alpha \beta})) [t, x, y, z] d z d y d x d t \end{aligned}$</div>

$$\Delta_{3^{-}1^{-}}^{\#1} + ^{\alpha \beta \chi} \Delta_{3^{-}1^{-}}^{\#1} = \frac{\Delta_{3^{-}1^{-}}^{\#1} \, ^{\alpha \beta \chi}}{-\frac{2}{a_0 + 7 \, a_1 \, k^2}}$$
$$\Gamma_{3^{-}1^{-}}^{\#1} + ^{\alpha \beta \chi} \Gamma_{3^{-}1^{-}}^{\#1} = \frac{\Gamma_{3^{-}1^{-}}^{\#1} \, ^{\alpha \beta \chi}}{\frac{1}{2} \, (-a_0 - 7 \, a_1 \, k^2)}$$

$\Gamma_{1^{-}}^{\#1} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#6} \, ^{\alpha}$	$h_{1^{-}}^{\#1} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#5} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#4} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#3} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#2} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#1} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#3} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#2} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#1} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#3} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#2} \, ^{\alpha}$	$\Gamma_{1^{-}}^{\#1} \, ^{\alpha}$
$\Gamma_{1^{-}}^{\#1} + ^{\alpha \beta}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Gamma_{1^{-}}^{\#2} + ^{\alpha \beta}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Gamma_{1^{-}}^{\#3} + ^{\alpha \beta}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Gamma_{1^{-}}^{\#1} + ^{\alpha}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Gamma_{1^{-}}^{\#2} + ^{\alpha}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Gamma_{1^{-}}^{\#3} + ^{\alpha}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Gamma_{1^{-}}^{\#4} + ^{\alpha}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Gamma_{1^{-}}^{\#5} + ^{\alpha}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$\Gamma_{1^{-}}^{\#6} + ^{\alpha}$	0	0	0	0	0	0	0	0	0	0	0	0	0
$h_{1^{-}}^{\#1} + ^{\alpha}$	0	0	0	0	0	0	0	0	0	0	0	0	0

$\Delta_{2^{-}}^{\#1} \, ^{\alpha \beta}$	$\Delta_{2^{-}}^{\#3} \, ^{\alpha \beta}$	$\mathcal{T}_{2^{-}}^{\#1} \, ^{\alpha \beta}$	$\Delta_{2^{-}}^{\#1} \, ^{\alpha \beta \chi}$	$\Delta_{2^{-}}^{\#2} \, ^{\alpha \beta \chi}$
$\Delta_{2^{-}}^{\#1} + ^{\alpha \beta}$	$-\frac{80 a_1 k^2}{\sqrt{3} a_0^2}$	$-\frac{44 i \sqrt{2} a_1 k}{a_0^2}$	0	0
$\Delta_{2^{-}}^{\#2} + ^{\alpha \beta}$	$-\frac{2 \sqrt{2} a_1 k^2}{3 a_0^2}$	$-\frac{80 i a_1 k}{\sqrt{3} a_0^2}$	0	0
$\Delta_{2^{-}}^{\#3} + ^{\alpha \beta}$	$-\frac{4 (3 a_0 a_1 k^2)}{3 a_0^2}$	$-\frac{80 i \sqrt{\frac{2}{3}} a_1 k}{a_0^2}$	0	0
$\mathcal{T}_{2^{-}}^{\#1} + ^{\alpha \beta}$	$-\frac{80 i \epsilon_1 k}{\sqrt{3} a_0^2}$	$-\frac{8 (a_0 + 11 a_1 k^2)}{a_0^2 k^2}$	0	0
$\Delta_{2^{-}}^{\#1} + ^{\alpha \beta \chi}$	0	0	$\frac{4}{a_0 a_1 k^2}$	0
$\Delta_{2^{-}}^{\#2} + ^{\alpha \beta \chi}$	0	0	0	$\frac{4}{a_0 \cdot 5 a_1 k^2}$

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

$\Delta_{0^{+}}^{\#1} +$	$\Delta_{0^{+}}^{\#2} +$	$\Delta_{0^{+}}^{\#3} +$	$\Delta_{0^{+}}^{\#4} +$	$\mathcal{T}_{0^{+}}^{\#1} +$	$\mathcal{T}_{0^{+}}^{\#2} +$	$\Delta_{0^{+}}^{\#1}$
$\Delta_{0^{+}}^{\#1} +$	$-\frac{2 (a_0 + 25 a_1 k^2)}{a_0^2}$	$\frac{10 \sqrt{6} a_1 k^2}{a_0^2}$	$-\frac{10 \sqrt{\frac{2}{3}} a_1 k^2}{a_0^2}$	$-\frac{20 a_1 k^2}{\sqrt{3} a_0^2}$	$-\frac{50 i \sqrt{2} a_1 k}{a_0^2}$	0
$\Delta_{0^{+}}^{\#2} +$	$\frac{10 \sqrt{6} a_1 k^2}{a_0^2}$	$-\frac{3 (a_0 + 23 a_1 k^2)}{4 a_0^2}$	$\frac{5 a_0 + 23 a_1 k^2}{4 a_0^2}$	$-\frac{a_0 \cdot 23 a_1 k^2}{2 \sqrt{2} a_0^2}$	$\frac{20 i \sqrt{3} a_1 k}{a_0^2}$	0
$\Delta_{0^{+}}^{\#3} +$	$-\frac{10 \sqrt{\frac{3}{2}} a_1 k^2}{a_0^2}$	$\frac{5 a_0 + 23 a_1 k^2}{4 a_0^2}$	$-\frac{9 a_0 + 23 a_1 k^2}{12 a_0^2}$	$-\frac{3 a_0 + 23 a_1 k^2}{6 \sqrt{2} a_0^2}$	$-\frac{20 i a_1 k}{\sqrt{3} a_0^2}$	0
$\Delta_{0^{+}}^{\#4} +$	$-\frac{20 a_1 k^2}{\sqrt{3} a_0^2}$	$-\frac{a_0 \cdot 23 a_1 k^2}{2 \sqrt{2} a_0^2}$	$-\frac{3 a_0 + 23 a_1 k^2}{6 \sqrt{2} a_0^2}$	$\frac{3 a_0 \cdot 23 a_1 k^2}{6 a_0^2}$	$-\frac{20 i \sqrt{\frac{2}{3}} a_1 k}{a_0^2}$	0
$\mathcal{T}_{0^{+}}^{\#1} +$	$\frac{50 i \sqrt{2} a_1 k}{a_0^2}$	$-\frac{20 i \sqrt{3} a_1 k}{a_0^2}$	$\frac{20 i a_1 k}{\sqrt{3} a_0^2}$	$\frac{20 i \sqrt{\frac{2}{3}} a_1 k}{a_0^2}$	$\frac{4 (a_0 - 25 a_1 k^2)}{a_0^2 k^2}$	0
$\mathcal{T}_{0^{+}}^{\#2} +$	0	0	0	0	0	0
$\Delta_{0^{+}}^{\#1} +$	0	0	0	0	0	$-\frac{2}{a_0 \cdot a_1 k^2}$

$\Gamma_{0^{+}}^{\#1} +$	$\Gamma_{0^{+}}^{\#2} +$	$\Gamma_{0^{+}}^{\#3} +$	$\Gamma_{0^{+}}^{\#4} +$	$h_{0^{+}}^{\#1} +$	$h_{0^{+}}^{\#2} +$	$\Gamma_{0^{+}}^{\#1}$
$\Gamma_{0^{+}}^{\#1} +$	$\frac{1}{2} \, (-a_0 + 25 \, a_1 \, k^2)$	0	$10 \sqrt{\frac{2}{3}} \, a_1 \, k^2$	$-\frac{10 \, a_1 \, k^2}{\sqrt{3}}$	$-\frac{25 \, i \, a_1 \, k^3}{2 \sqrt{2}}$	0
$\Gamma_{0^{+}}^{\#2} +$	0	0	$\frac{a_0}{2}$	$-\frac{a_0}{2 \sqrt{2}}$	0	0
$\Gamma_{0^{+}}^{\#3} +$	$10 \sqrt{\frac{2}{3}} \, a_1 \, k^2$	$\frac{a_0}{2}$	$\frac{23 \, a_1 \, k^2}{3}$	$-\frac{3 \, a_0 + 46 \, a_1 \, k^2}{6 \sqrt{2}}$	$-\frac{10 \, i \, a_1 \, k^3}{\sqrt{3}}$	0
$\Gamma_{0^{+}}^{\#4} +$	$-\frac{10 \, a_1 \, k^2}{\sqrt{3}}$	$-\frac{a_0}{2 \sqrt{2}}$	$-\frac{3 \, a_0 + 46 \, a_1 \, k^2}{6 \sqrt{2}}$	$\frac{1}{6} \, (3 \, a_0 + 23 \, a_1 \, k^2)$	$5 \, i \sqrt{\frac{2}{3}} \, a_1 \, k^3$	0
$h_{0^{+}}^{\#1} +$	$\frac{25 \, i \, a_1 \, k^3}{2 \sqrt{2}}$	0	$\frac{10 \, i \, a_1 \, k^3}{\sqrt{3}}$	$-5 \, i \sqrt{\frac{2}{3}} \, a_1 \, k^3$	$\frac{1}{4} \, k^2 \, (a_0 + 25 \, a_1 \, k^2)$	0
$h_{0^{+}}^{\#2} +$	0	0	0	0	0	0
$\Gamma_{0^{+}}^{\#1} +$	0	0	0	0	0	$\frac{1}{2} \, (-a_0 + a_1 \, k^2)$

$\Gamma_{2^{+}}^{\#1} + ^{\alpha \beta}$	$\Gamma_{2^{+}}^{\#2} \, ^{\alpha \beta}$	$h_{2^{+}}^{\#1} \, ^{\alpha \beta}$	$\Gamma_{2^{+}}^{\#1} \, ^{\alpha \beta \chi}$	$\Gamma_{2^{+}}^{\#2} \, ^{\alpha \beta \chi}$
$\Gamma_{2^{+}}^{\#1} + ^{\alpha \beta}$	$-\frac{5 a_1 k^2}{\sqrt{3}}$	$-\frac{11 i a_1 k^3}{4 \sqrt{2}}$	0	0
$\Gamma_{2^{+}}^{\#2} + ^{\alpha \beta}$	$-\frac{a_1 k^2}{6 \sqrt{2}}$	$\frac{5 i a_1 k^3}{\sqrt{3}}$	0	0
$\Gamma_{2^{+}}^{\#3} + ^{\alpha \beta}$	$-\frac{a_1 k^2}{6 \sqrt{2}}$	$-\frac{5 i a_1 k^3}{\sqrt{6}}$	0	0
$h_{2^{+}}^{\#1} + ^{\alpha \beta}$	$-\frac{1}{6} \, (-3 a_0 + a_1 \, k^2)$	$-\frac{1}{8} \, k^2 \, (a_0 - 11 a_1 \, k^2)$	0	0
$\Gamma_{2^{+}}^{\#1} + ^{\alpha \beta \chi}$	0	0	$\frac{1}{4} \, (a_0 - a_1 \, k^2)$	0
$\Gamma_{2^{+}}^{\#2} + ^{\alpha \beta \chi}$	0	0	0	$\frac{1}{4} \, (a_0 - 5 a_1 \, k^2)$

Massive and massless spectra

** MassiveAnalysisOfSector... Null

Unitarity conditions

