Particle spectrograph

Wave operator and propagator

(Quadratic (free) action
	S ==
	$\iiint \int (\frac{1}{8} (8 h^{\alpha\beta} \mathcal{T}_{\alpha\beta} - 4 \Gamma^{\alpha\beta\chi} (a_0 \Gamma_{\beta\chi\alpha} - 2 \Delta_{\alpha\beta\chi} + a_0 \partial_{\beta}h_{\alpha\chi}) + 2 a_0 \Gamma^{\alpha\beta}_{\alpha} \partial_{\beta}h_{\chi}^{\chi} -$
	$2 a_0 h_{\chi}^{\chi} \partial_{\beta} \Gamma_{\alpha}^{\alpha\beta} + 2 a_0 h_{\chi}^{\chi} \partial_{\beta} \Gamma_{\alpha}^{\alpha\beta} - 4 a_0 h_{\alpha\chi} \partial_{\beta} \Gamma^{\alpha\beta\chi} + 44 a_1 \partial^{\alpha} \Gamma_{\delta}^{\chi\delta} \partial_{\beta} \Gamma_{\chi\alpha}^{\beta} +$
	$4 a_1 \partial^{\alpha} \Gamma_{\chi\alpha}^{\beta} \partial_{\beta} \Gamma^{\chi\delta}_{\delta} - 152 a_1 \partial^{\alpha} \Gamma^{\chi\delta}_{\chi} \partial_{\beta} \Gamma_{\delta\alpha}^{\beta} + 2 a_0 h^{\alpha\beta} \partial_{\beta} \partial_{\alpha} h^{\chi}_{\chi} -$
	$a_0 \partial_{\beta} h_{\chi}^{\chi} \partial^{\beta} h_{\alpha}^{\alpha} + 2 a_0 \partial^{\beta} h_{\alpha}^{\alpha} \partial_{\chi} h_{\beta}^{\chi} + 2 a_0 \Gamma_{\alpha}^{\alpha\beta} (2 \Gamma_{\beta\chi}^{\chi} - \partial_{\beta} h_{\chi}^{\chi} + 2 \partial_{\chi} h_{\beta}^{\chi}) +$
	$74 a_1 \partial_{\beta} \partial_{\alpha} h^{\delta}_{\ \delta} \partial_{\chi} \Gamma^{\alpha\beta\chi} + 6 a_1 \partial_{\beta} \Gamma^{\alpha\beta\chi} \partial_{\chi} \partial_{\alpha} h^{\delta}_{\ \delta} - 4 a_0 h^{\alpha\beta} \partial_{\chi} \partial_{\beta} h^{\chi}_{\alpha} +$
	$2 a_0 h^{\alpha}_{\alpha} \partial_{\chi} \partial_{\beta} h^{\beta \chi} + 2 a_0 h^{\alpha \beta} \partial_{\chi} \partial^{\chi} h_{\alpha \beta} - 2 a_0 h^{\alpha}_{\alpha} \partial_{\chi} \partial^{\chi} h^{\beta}_{\beta} - 2 a_0 \partial_{\beta} h_{\alpha \chi} \partial^{\chi} h^{\alpha \beta} +$
	$a_0 \partial_\chi h_{\alpha\beta} \partial^\chi h^{\alpha\beta} + 4 a_0 h_{\beta\chi} \partial^\chi \Gamma^{\alpha}_{\alpha}{}^{\beta} - 4 a_1 \partial_\beta \Gamma^{\delta}_{\chi \delta} \partial^\chi \Gamma^{\alpha}_{\alpha}{}^{\beta} - 4 a_1 \partial_\beta \Gamma^{\delta}_{\delta\chi} \partial^\chi \Gamma^{\alpha}_{\alpha}{}^{\beta} +$
	$4 a_1 \partial_{\chi} \Gamma_{\beta \delta}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha \beta} - 4 a_1 \partial_{\chi} \Gamma_{\beta \delta}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha \beta} - 4 a_1 \partial_{\chi} \Gamma_{\delta \beta}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha \beta} -$
	$6 a_1 \partial_{\chi} \partial_{\beta} h^{\delta}_{\delta} \partial^{\chi} \Gamma^{\alpha}_{\alpha}{}^{\beta} - 44 a_1 \partial_{\beta} \Gamma^{\delta}_{\chi}{}^{\delta} \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} + 76 a_1 \partial_{\beta} \Gamma^{\delta}_{\chi\delta} \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} +$
	$44 a_1 \partial_{\chi} \Gamma_{\beta \delta}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha\beta} - 4 a_1 \partial_{\chi} \Gamma_{\beta \delta}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha\beta} - 74 a_1 \partial_{\chi} \partial_{\beta} h_{\delta}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha\beta} +$
	$8 a_1 \partial_{\alpha} \Gamma_{\chi \delta}^{\delta} \partial^{\chi} \Gamma^{\alpha\beta}_{\beta} - 8 a_1 \partial_{\chi} \Gamma_{\alpha \delta}^{\delta} \partial^{\chi} \Gamma^{\alpha\beta}_{\beta} - 36 a_1 \partial_{\chi} \partial_{\beta} h^{\delta}_{\delta} \partial^{\chi} \partial_{\alpha} h^{\alpha\beta} +$
	$17 a_1 \partial_{\chi} \partial_{\beta} h^{\delta}_{\delta} \partial^{\chi} \partial^{\beta} h^{\alpha}_{\alpha} - 4 a_1 \partial_{\chi} \Gamma^{\alpha\beta\chi} \partial_{\delta} \Gamma_{\alpha\beta}^{\delta} - 4 a_1 \partial_{\beta} \Gamma^{\alpha\beta\chi} \partial_{\delta} \Gamma_{\alpha\chi}^{\delta} -$
	$4 a_1 \partial_{\beta} \Gamma^{\alpha\beta\chi} \partial_{\delta} \Gamma_{\alpha \ \chi}^{\ \delta} + 76 a_1 \partial_{\chi} \Gamma^{\alpha\beta\chi} \partial_{\delta} \Gamma_{\beta\alpha}^{\ \delta} + 8 a_1 \partial^{\chi} \Gamma_{\alpha \ \alpha}^{\alpha \ \beta} \partial_{\delta} \Gamma_{\beta \ \chi}^{\ \delta} -$
	$44 a_1 \partial^{\chi} \Gamma^{\alpha\beta}_{ \beta} \partial_{\delta} \Gamma_{\chi\alpha}^{ \delta} + 4 a_1 \partial^{\chi} \Gamma^{\alpha\beta}_{ \alpha} \partial_{\delta} \Gamma_{\chi\beta}^{ \delta} - 4 a_1 \partial_{\beta} \Gamma^{\alpha\beta\chi}_{ \alpha} \partial_{\delta} \Gamma_{\chi\alpha}^{ \delta} -$
	$4 a_1 \partial^{\chi} \Gamma^{\alpha\beta}_{\ \beta} \partial_{\delta} \Gamma^{\delta}_{\chi \alpha} + 4 a_1 \partial^{\chi} \Gamma^{\beta}_{\beta \alpha} \partial_{\delta} \Gamma^{\delta \alpha}_{\chi} + 8 a_1 \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} \partial_{\delta} \Gamma^{\delta}_{\chi \beta} -$
	$4 a_1 \partial_{\beta} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \Gamma^{\chi}_{\chi}{}^{\delta} + 8 a_1 \partial_{\beta} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \Gamma^{\chi\delta}_{\chi} - 4 a_1 \partial_{\beta} \Gamma^{\alpha\beta}_{\alpha} \partial_{\delta} \Gamma^{\chi\delta}_{\chi} -$
	$74 a_1 \partial_{\chi} \Gamma^{\alpha\beta\chi} \partial_{\delta} \partial_{\alpha} h_{\beta}^{\delta} - 6 a_1 \partial_{\beta} \Gamma^{\alpha\beta\chi} \partial_{\delta} \partial_{\alpha} h_{\chi}^{\delta} - 74 a_1 \partial_{\chi} \Gamma^{\alpha\beta\chi} \partial_{\delta} \partial_{\beta} h_{\alpha}^{\delta} +$
	$3 a_1 \partial_{\chi} \partial^{\chi} h^{\alpha\beta} \partial_{\delta} \partial_{\beta} h_{\alpha}^{\delta} + 37 a_1 \partial_{\alpha} \partial^{\chi} h^{\alpha\beta} \partial_{\delta} \partial_{\beta} h_{\chi}^{\delta} + 6 a_1 \partial^{\chi} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \partial_{\beta} h_{\chi}^{\delta} +$
	$74 a_1 \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} \partial_{\delta} \partial_{\beta} h_{\chi}^{\delta} - 3 a_1 \partial^{\chi} \partial_{\alpha} h^{\alpha\beta} \partial_{\delta} \partial_{\beta} h_{\chi}^{\delta} + 26 a_1 \partial^{\chi} \partial^{\beta} h_{\alpha}^{\alpha} \partial_{\delta} \partial_{\beta} h_{\chi}^{\delta} -$
	$6 a_1 \partial_{\beta} \Gamma^{\alpha\beta\chi} \partial_{\delta} \partial_{\chi} h_{\alpha}^{\delta} - 43 a_1 \partial_{\alpha} \partial^{\chi} h^{\alpha\beta} \partial_{\delta} \partial_{\chi} h_{\beta}^{\delta} + 6 a_1 \partial^{\chi} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \partial_{\chi} h_{\beta}^{\delta} +$
	$74 a_1 \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} \partial_{\delta} \partial_{\chi} h_{\beta}^{\delta} + 77 a_1 \partial^{\chi} \partial_{\alpha} h^{\alpha\beta} \partial_{\delta} \partial_{\chi} h_{\beta}^{\delta} - 58 a_1 \partial^{\chi} \partial^{\beta} h^{\alpha}_{\alpha} \partial_{\delta} \partial_{\chi} h_{\beta}^{\delta} +$
	$8 a_1 \partial_{\beta} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \partial_{\chi} h^{\chi \delta} - 8 a_1 \partial_{\beta} \Gamma^{\alpha \beta}_{\alpha} \partial_{\delta} \partial_{\chi} h^{\chi \delta} - 4 a_1 \partial_{\beta} \partial_{\alpha} h^{\alpha \beta} \partial_{\delta} \partial_{\chi} h^{\chi \delta} +$
	$8 a_1 \partial_{\beta} \partial^{\beta} h^{\alpha}_{\ \alpha} \partial_{\delta} \partial_{\chi} h^{\chi \delta} + 74 a_1 \partial_{\chi} \Gamma^{\alpha \beta \chi} \partial_{\delta} \partial^{\delta} h_{\alpha \beta} + 17 a_1 \partial_{\chi} \partial^{\chi} h^{\alpha \beta} \partial_{\delta} \partial^{\delta} h_{\alpha \beta} +$
	$6 a_1 \partial_{\beta} \Gamma^{\alpha\beta\chi} \partial_{\delta} \partial^{\delta} h_{\alpha\chi} + 2 a_1 \partial_{\alpha} \partial^{\chi} h^{\alpha\beta} \partial_{\delta} \partial^{\delta} h_{\beta\chi} - 6 a_1 \partial^{\chi} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \partial^{\delta} h_{\beta\chi} -$
	$74 a_1 \partial^{\chi} \Gamma^{\alpha\beta}{}_{\alpha} \partial_{\delta} \partial^{\delta} h_{\beta\chi} - 73 a_1 \partial^{\chi} \partial_{\alpha} h^{\alpha\beta} \partial_{\delta} \partial^{\delta} h_{\beta\chi} + 34 a_1 \partial^{\chi} \partial^{\beta} h^{\alpha}{}_{\alpha} \partial_{\delta} \partial^{\delta} h_{\beta\chi} -$
	$8 a_1 \partial_{\beta} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \partial^{\delta} h^{\chi}_{\chi} + 8 a_1 \partial_{\beta} \Gamma^{\alpha\beta}_{\alpha} \partial_{\delta} \partial^{\delta} h^{\chi}_{\chi} - 4 a_1 \partial_{\beta} \partial^{\beta} h^{\alpha}_{\alpha} \partial_{\delta} \partial^{\delta} h^{\chi}_{\chi} +$
	$4 a_1 \partial_{\alpha} \Gamma_{\beta \chi \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 8 a_1 \partial_{\alpha} \Gamma_{\beta \delta \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 8 a_1 \partial_{\alpha} \Gamma_{\chi \beta \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} +$
	$4 a_1 \partial_{\alpha} \Gamma_{\chi \delta \beta} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 8 a_1 \partial_{\alpha} \Gamma_{\delta \beta \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 8 a_1 \partial_{\alpha} \Gamma_{\delta \chi \beta} \partial^{\delta} \Gamma^{\alpha \beta \chi} -$
	$4a_1\partial_\beta \Gamma_{\alpha\chi\delta}\partial^\delta \Gamma^{\alpha\beta\chi} - 4a_1\partial_\beta \Gamma_{\alpha\delta\chi}\partial^\delta \Gamma^{\alpha\beta\chi} - 4a_1\partial_\beta \Gamma_{\chi\delta\alpha}\partial^\delta \Gamma^{\alpha\beta\chi} -$
	$12 a_1 \partial_{\beta} \partial_{\alpha} h_{\chi \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 a_1 \partial_{\chi} \Gamma_{\alpha \beta \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 a_1 \partial_{\chi} \Gamma_{\beta \alpha \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} +$
	$8 a_1 \partial_{\chi} \Gamma_{\beta \delta \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 12 a_1 \partial_{\chi} \partial_{\alpha} h_{\beta \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 8 a_1 \partial_{\delta} \Gamma_{\alpha \beta \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} -$
	$8 a_1 \partial_{\delta} \Gamma_{\alpha \chi \beta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 a_1 \partial_{\delta} \Gamma_{\beta \alpha \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 4 a_1 \partial_{\delta} \Gamma_{\beta \chi \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} -$
	$4 a_1 \partial_{\delta} \Gamma_{\chi \beta \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} + 12 a_1 \partial_{\delta} \partial_{\beta} h_{\alpha \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} - 12 a_1 \partial_{\delta} \partial_{\chi} h_{\alpha \beta} \partial^{\delta} \Gamma^{\alpha \beta \chi} +$
	$4 a_1 \partial_{\beta} \Gamma_{\delta \alpha}^{\ \beta} \partial^{\delta} \Gamma^{\chi \alpha}_{\ \chi} + 4 a_1 \partial_{\beta} \Gamma_{\delta \alpha}^{\ \beta} \partial^{\delta} \Gamma^{\chi}_{\ \chi}^{\ \alpha} - 6 a_1 \partial_{\beta} \partial_{\alpha} h_{\chi \delta} \partial^{\delta} \partial^{\chi} h^{\alpha \beta} +$
	$12 a_1 \partial_{\chi} \partial_{\beta} h_{\alpha \delta} \partial^{\delta} \partial^{\chi} h^{\alpha \beta} - 6 a_1 \partial_{\delta} \partial_{\chi} h_{\alpha \beta} \partial^{\delta} \partial^{\chi} h^{\alpha \beta}))[t, x, y, z] dz dy dx dt$

έ <u>1</u> - α	0	0	0	0	0	0	0	0	0	0	$\Delta_{3^{-}}^{\#1}$ †	αβχ	$\Delta_{3}^{\#1}$	$\alpha\beta\chi$							
σ_{α}^{-6}						$\frac{a_{0-28a_{1}k^{2}}}{6a_{0}^{2}-198a_{0}a_{1}k^{2}} \qquad C$	$\sqrt{5}$ 6 (a ₀ -33 a ₁ k ²)	$\frac{7(a_0 + 2a_1 k^2)}{\sqrt{2} a_0 (a_0 - 33a_1 k^2)} $ ($\frac{a_1 k^2}{a_1}$				$\Gamma_{3}^{\#}$ (- a_{0}	αβχ							
$\Delta_{1}^{\#6}$	0	0	0	0	$\frac{50\sqrt{\frac{2}{3}}a_1k^2}{a_0^2-33a_0a_1k^2}$	$\frac{a_0-28}{6a_0^2-19}$	6 (40-3	$-\frac{7(a_0+}{3\sqrt{2}a_0(a_0)}$	3 (40-33	0	$h_{1^{-}\alpha}^{\#1}$	0	0	0	0	0	0	0	0	0	0
$\Delta_{1}^{\#5}{}_{\alpha}$	0	0	0	0	$\frac{10a_1k^2(-11a_0+118a_1k^2)}{\sqrt{3}a_0^2(a_0-33a_1k^2)}$	$\frac{a_0^{2-118}a_0a_1k^2+2560a_1^2k^4}{6\sqrt{2}a_0^2(a_0-33a_1k^2)}$	$-\frac{\sqrt{\frac{5}{2}} (a_0-82 a_1 k^2)}{6 a_0 (a_0-33 a_1 k^2)}$	$\frac{2-236a_0a_1k^2+1280a_1^2k^4}{6a_0^2(a_0-33a_1k^2)}$	$-\frac{7(a_0+2a_1k^2)}{3\sqrt{2}a_0(a_0-33a_1k^2)}$	0	$\Gamma_{1^{-}\alpha}^{\#6}$	0	0	0	$-\frac{5a_1k^2}{\sqrt{3}}$	0	$\frac{1}{6} (-a_0 + 20 a_1 k^2)$	$\left -\frac{1}{6} \sqrt{5} (a_0 - 5 a_1 k^2) \right $	$\frac{a_0 + 40a_1 k^2}{6 \sqrt{2}}$	$\frac{5}{12} (a_0 - 17 a_1 k^2)$	0
$\Delta_{1}^{\#4}{}_{\alpha}$	0	0	0	0	$-\frac{5\sqrt{\frac{10}{3}}a_1k^2}{a_0^2-33a_0a_1k^2}$	· · ·	$\frac{1}{12a_0-396a_1k^2}$	$\frac{\sqrt{\frac{5}{2}} (a_0-82a_1k^2)}{6a_0 (a_0-33a_1k^2)} \frac{17a_0^2}{}$	$-\frac{\sqrt{5}}{6(a_0-33a_1k^2)}$	0	$\Gamma_{1}^{\#5}$	0	0	0	$5\sqrt{\frac{3}{2}}a_1k^2$	0	$-\frac{a_0}{6\sqrt{2}}$	$-\frac{1}{6}\sqrt{\frac{5}{2}}\left(a_0+16a_1k^2\right)$	3 8	$\frac{a_0 + 40a_1 k^2}{6 \sqrt{2}}$	0
$\Delta_{1^-}^{\#3}_{\alpha}$	0	0	0	0	$\sqrt{\frac{2}{3}} a_1 k^2 (7 a_0 - 236 a_1 k^2)$ $a_0^2 (a_0 - 33 a_1 k^2)$	$\frac{2+472a_0a_1k^2+5120a_1^2k^4}{12a_0^2(a_0-33a_1k^2)}$	$\sqrt{5} (5a_0 - 164a_1 k^2)$ $12a_0 (a_0 - 33a_1 k^2)$	$\frac{a_0^2 - 118 a_0 a_1 k^2 + 2560 a_1^2 k^4}{6 \sqrt{2} a_0^2 (a_0 - 33 a_1 k^2)}$	$-\frac{a_0 - 28a_1k^2}{6a_0^2 - 198a_0a_1k^2}$	0	$\Gamma_{1}^{\#4}$	0	0	0	$-\frac{5}{2}\sqrt{\frac{5}{3}}a_1k^2$	0	$\frac{1}{6}\sqrt{5}(a_0-8a_1k^2)$	$\frac{1}{3}(a_0 + 7a_1k^2)$	$-\frac{1}{6} \sqrt{\frac{5}{2}} \left(a_0 + 16 a_1 k^2 \right)$	$-\frac{1}{6}\sqrt{5}(a_0-5a_1k^2)$	0
$\Delta_{1^{-}\alpha}^{\#2}$	0	0	0	$\frac{2\sqrt{2}}{a_0}$	$\frac{2(a_0^2 - 30a_0a_1k^2 + 401a_1^2k^4)}{a_0^2(a_0 - 33a_1k^2)} = \frac{5}{a_0^2}$	$\frac{\sqrt{\frac{2}{3}} a_1 k^2 (7 a_0 - 236 a_1 k^2)}{a_0^2 (a_0 - 33 a_1 k^2)} \qquad \frac{-19 a_0^2}{1}$	$5\sqrt{\frac{10}{3}}a_1k^2$ $a_0^2-33a_0a_1k^2$	$\frac{x_1 k^2 (-11 a_0 + 118 a_1 k^2)}{\sqrt{3} a_0^2 (a_0 - 33 a_1 k^2)} - \frac{a_0}{4}$	$50 \sqrt{\frac{2}{3}} a_1 k^2$ $a_0^2 - 33 a_0 a_1 k^2$	0	$\Gamma_{1}^{\#3}$	0	0	0	$\frac{5}{2}\sqrt{3}a_1k^2$	0	- <u>40</u> 3	$\frac{1}{6}\sqrt{5}(a_0-8a_1k^2)$	$-\frac{a_0}{6\sqrt{2}}$	$\frac{1}{6} (-a_0 + 20 a_1 k^2)$	0
Δ				12	$a_0^2 - 30 a_0 a$ $a_0^2 (a_0)$	$5\sqrt{\frac{2}{3}}a_1k^2(a_0)$	$-\frac{5\sqrt{-3}}{a_0^2-3}$	$\frac{10a_1k^2(-11)}{\sqrt{3}a_0^2(-11)}$	$\frac{50 \sqrt{a0^2-33}}{a0^2-33}$		$\Gamma_{1^{-}}^{\#2}$	0	0	0	$\left(\frac{a_0}{2\sqrt{2}}\right)$	0	0	0	0	0	0
$\Delta_{1^-}^{\#1}{}_{\alpha}$	0	0	0	0	$\frac{2\sqrt{2}}{a_0} \frac{2(}{}$	0	0	0	0	0	$\Gamma_{1^{-}\alpha}^{\#1}$	0	0	0	$(-a_0 - 3 a_1 k^2)$	$\frac{a_0}{2\sqrt{2}}$	$\frac{5}{2}\sqrt{3}a_1k^2$	$\frac{5}{2}\sqrt{\frac{5}{3}}a_1k^2$	$\sqrt{\frac{3}{2}} a_1 k^2$	$-\frac{5a_1k^2}{\sqrt{3}}$	0
$\Delta_{1}^{\#3}_{+\alpha\beta}$	0	$\frac{40 \sqrt{2} a_1 k^2}{a_0^2 - 29 a_0 a_1 k^2}$	$\frac{4}{a_0 - 29 a_1 k^2}$	0	0	0	0	0	0	0	aeta	<i>k</i> ²		$9a_1k^2$	1 4				2		
		2 k ⁴)	² ²								$\Gamma_{1}^{\#3}_{\alpha\beta}$	$5a_1k^2$	0	$\frac{1}{4}(a_0-29)$	0	0	0	0	0	0	0
$\Delta_1^{\#2}_+ _{\alpha\beta}$	$-\frac{2\sqrt{2}}{a_0}$	$\frac{2 \left(a_0^2 - 14 a_0 a_1 k^2 - 35 a_1\right)}{a_0^2 \left(a_0 - 29 a_1 k^2\right)}$	$\frac{40\sqrt{2}a_1k^2}{a_0^2-29a_0a_1},$	0	0	0	0	0	0	0	$\Gamma_{1}^{\#2}$	$\left -\frac{a_0}{2\sqrt{2}}\right $	0	0	0	0	0	0	0	0	0
αeta											$\Gamma_{1}^{\#1}{}_{\alpha\beta}$	$(-a_0 - 15 a_1 k^2)$	$-\frac{a_0}{2\sqrt{2}}$	$5a_1k^2$	0	0	0	0	0	0	0
$\Delta_1^{\#1}_+ _{\alpha\beta}$	$\alpha\beta$ 0	$a\beta$ $\frac{2\sqrt{2}}{a_0}$	$\alpha\beta$ 0	t _α 0	l _α 0	0 μ	μ 0	ι ο	ι ο	t _α 0		1 4			ع	¤	α	æ	×	α	α
	$\Delta_1^{\#1} + ^{\alpha\beta}$	$\Delta_1^{\#_2} \dagger^{lphaeta}$	$\Delta_{1}^{\#3}$ † lphaeta	$\Delta_{1}^{\#1} \uparrow^{\alpha}$	$\Delta_{1}^{\#2} +^{\alpha}$	$\Delta_{1}^{\#3} +^{\alpha}$	$\Delta_{1^{-}}^{\#4} \dagger^{\alpha}$	$\Delta_{1}^{\#5} \dagger^{\alpha}$	$\Delta_{1}^{\#6} \dagger^{\alpha}$	${\mathcal T}_{1}^{\#1} +^{\alpha}$		$\Gamma_1^{#1} + \alpha \beta$	$\Gamma_1^{#2} + \alpha \beta$	$\Gamma_1^{#3} + \alpha \beta$	$\Gamma_1^{\#1} +^{\alpha}$	$\Gamma_{1}^{\#2} +^{\alpha}$	$\Gamma_{1}^{\#3} +^{\alpha}$	$\Gamma_1^{\#4} +^{lpha}$	$\lceil r_1^{\#5} +^{\alpha} \rceil$	$\Gamma_1^{\#6} +^{lpha}$	$h_1^{\#1} +^{\alpha}$

	44 i \(\sqrt{2} a_1 \kr/k \)	a_0^2	$\frac{80ia_1k}{\sqrt{3}a_0^2}$	$\frac{2}{3}a_1k$ 0	$\frac{a_0}{8(a_0+11a_1k^2)}$		$\frac{4}{a_0 - a_1 k^2}$													
$\int_{2}^{\pi} \alpha \beta$	-		'	80 [- 1	- a ₀	0	0		rs Multiplicities								$\Gamma_{2}^{\#2}_{\alpha\beta\chi}$	0	0
$\Delta_2 + \alpha \beta$	80 a 1 k ²	$\sqrt{3} a_0^2$	$-\frac{2\sqrt{2}a_1k^2}{3a_0^2}$	$\frac{4(3a_0-a_1k^2)}{3a_0^2}$	$80 i \sqrt{\frac{2}{3}} a_1 k$	a ₀ ²	0	0		ators Multip	1	п	3	= 0 3	8					
$\Delta_2 + \alpha \beta$	$40 \sqrt{\frac{2}{3}} a_1 k^2$	a ₀ ²	$\frac{2(3a_0+a_1k^2)}{3a_0^2}$	$\frac{2\sqrt{2}a_1k^2}{3a_0^2}$	80 i a 1 k	$\sqrt{3} a_0^2$	0	0		ıuge genera		0		$5^{\alpha} + \Delta_{1}^{\#3^{\alpha}} = $				$\Gamma_{2}^{\#1}$ lphaeta	0	0
$-2 + \alpha \beta$	$4(a_0-11a_1k^2)$	a ₀ ² -	$-\frac{40\sqrt{\frac{2}{3}}a_1k^2}{a_0^2} - \frac{1}{a_0^2}$	$\frac{80a_1k^2}{\sqrt{3}a_0^2}$	4	a ₀ ²	0	0		Source constraints/gauge generators SO(3) irreps	0	$2\Delta_{0^+}^{\#4} + 3\Delta_{0^+}^{\#2} ==$	0 ==	$+ \Delta_{1}^{\#4\alpha} + 2 \Delta_{1}^{\#5\alpha}$	Total constraints:			$h_{2}^{\#1}$	$-\frac{11 i a_1 k^3}{4 \sqrt{2}}$	$\frac{5ia_1k^3}{\sqrt{3}}$
	$\Lambda^{#1} + \alpha \beta$		$\Delta_{2+}^{\#5} + \alpha \beta$	$\Delta_{2}^{#3} + ^{\alpha \beta}$	$\Delta_{0+}^{\#1+\alpha\beta}$, 5+	$\Delta_{2}^{#1} + ^{\alpha \beta \chi}$	$\Delta_{+\infty}^{0}$ $\Delta_{2}^{+2} + \alpha \beta \chi$		Source cons Source cons So(3) irreps	$T_{0+}^{\#2} == 0$	$\Delta_{0+}^{#3} + 2$	$\mathcal{T}^{\sharp 1}_0$	$2 \Delta_{1}^{\#6\alpha} +$	Total o	Δ_0^{\sharp}	#1	$\Gamma^{#3}_{2}$	$\frac{5a_1k^2}{\sqrt{3}}$	$-\frac{a_1 k^2}{6 \sqrt{2}}$
$\Delta_0^{\#1}$	<u>+</u>		$\frac{-0^{+}}{a_{0}^{+25}a_{1}k^{2}}$	2) 10	$\frac{a_0^+}{a_0^2}$	k ²		$\sqrt{\frac{2}{3}} a_1$	k ²	$-\frac{20 a_1}{\sqrt{3} a}$		_ 5	0^{+} $0 i \sqrt{2}$ a_0^{2}		0	Δ ₀				5)
$\Delta_{0}^{#2}$	ŀ	$\frac{10\sqrt{6}a_1k^2}{a_0^2}$			$-\frac{3(a_0+23a_1)}{4a_0^2}$		<u>5 a₀ +</u>	a_0^2 $-23a_1$ a_0^2	k ²	$-\frac{a_0 - 23 a_1 k^2}{2 \sqrt{2} a_0^2}$			$\frac{20 i \sqrt{3} a_1 k}{a_0^2}$		0	0		$\Gamma_{2}^{\#2}$	$\frac{2}{3} a_1 k^2$	$(-3 a_0 + a_1 k^2)$
$\Delta_0^{#3}$	$-\frac{10\sqrt{\frac{2}{3}}a_1k^2}{a_0^2}$		<u>5 a</u>	$\frac{5 a_0 + 23 a_1 k^2}{4 a_0^2}$		$\frac{k^2}{12a_0^2} - \frac{9a_0 + 23a_2}{12a_0^2}$. k ²	$-\frac{3a_0+23}{6\sqrt{2}}$	3 a 1 k ²				0	C)	*	$-5\sqrt{\frac{2}{3}}$	$\frac{1}{6}$ (-3 <i>a</i>	
$\Delta_0^{\#4}$	<u>+</u>	$-\frac{20 a_1 k^2}{\sqrt{3} a_0^2}$		_ <u>a</u>	0-23 <i>a</i> 1 2 √2 <i>a</i> 0	k ²	$-\frac{3a_0}{6}$	+23 a ₁ √2 a ₀ ²	k ²	$\frac{3a_0-23a_0}{6a_0}$	² 1 k ²	20	$0 i \sqrt{\frac{2}{3}}$ a_0^2	a ₁ k	0	C)	$\Gamma_{2}^{\#1}$	$\frac{1}{4} \left(a_0 + 11 a_1 k^2 \right)$	$a_1 k^2$
$T_{0}^{#1} + \frac{50 i \sqrt{2} a}{a_0^2}$		$\frac{i\sqrt{2}a_1k}{a_0^2}$	$-\frac{20i\sqrt{3}}{a_0}$			<u>20</u> √	$\frac{0 i a_1 k}{3 a_0^2}$		$\frac{20i\sqrt{\frac{2}{3}}}{a_0^2}$	a _{1 k}	4 (a	a ₀ -25 a	1 k ²)	0	C)	Γ#1 2+	$\frac{1}{4}(a_0+1)$	$-5\sqrt{\frac{2}{3}}$	
Γ#2 0 ⁺	# ² † 0			0		0			0			0		0	C)		$\Gamma_{2}^{#1} + \alpha \beta$	$\Gamma_2^{#2} + \alpha \beta$	
$\Delta_0^{\#1}$	1 +	0			0					0		0			0	$-\frac{1}{a_0-a_0}$	$\frac{2}{1} k^2$		Γ#1 2+	Γ#2 2+
		$\Gamma_0^{\#1}$			Γ ₀ ^{#2}		Γ ₀ ^{#3}	Γ ₀ ^{#3}		Γ ₀ ^{#4}			h ₀		#1)+		h ₀ ^{#2}	Γ,	#1) ⁻	_
Γ ₀ ^{#1}	Γ ₀ [#] †		$\frac{1}{2} \left(-a_0 + 25 a_1 k \right)$		k^2) 0		$10 \sqrt{\frac{2}{3}} a_1 k$			$-\frac{10 a_1}{\sqrt{3}}$	$\frac{10 a_1 k^2}{\sqrt{3}}$			_ <u>25 ii</u> 2	$\frac{a_1 k^3}{\sqrt{2}}$		0	O)	
Γ#2 +			0		0		<u>a₀</u> 2		$-\frac{a_0}{2\sqrt{2}}$				0				0	0		
Γ ₀ ^{#3} † 10 ₁		$\sqrt{\frac{2}{3}} a_1$	$\sqrt{\frac{2}{3}} a_1 k^2$				$\frac{23 a_1 k^2}{3}$		$-\frac{3 a_0 + 46 a_1 k^2}{6 \sqrt{2}}$			$-\frac{10 i a_1 k^3}{\sqrt{3}}$				0	()		
Γ ₀ ^{#4} †		$-\frac{10 a_1 k^2}{\sqrt{3}}$			$-\frac{a_0}{2\sqrt{2}} - \frac{3a}{2\sqrt{2}}$		$\frac{a_0 + 46 a_1 k^2}{6 \sqrt{2}}$		$\frac{1}{6} (3 a_0 + 23 a_1 k^2)$			k ²)				k ³ 0		0		
h ₀ #1	+	$\frac{25 i a_1 k^3}{2 \sqrt{2}}$					$\frac{10 i a_1 k^3}{\sqrt{3}}$		-	$-5i\sqrt{\tfrac{2}{3}}a_1k^3$			$\frac{1}{4} k^2 (a_0 + 25 a_1)$			1 k ²)	0	0		
$h_0^{\#2}$	+				0					0			0				0	()	
Γ ₀ -1 † 0			0					0			0				0	$\frac{1}{2}(-a_0+a_1)$)		

 $\frac{5a_1k^2}{\sqrt{3}}$ $\frac{11ia_1k^3}{4\sqrt{2}}$ 0

 $0 \\ 0 \\ \frac{4}{1.5a_1k^2}$

0

0

Massive and massless spectra

** MassiveAnalysisOfSector...Null

Unitarity conditions