	$\Delta_{1}^{\#1}{}_{lphaeta}$	$\Delta_{1^{+}lphaeta}^{\#2}$	$\Delta^{\#3}_{1}^{+}{}_{lphaeta}$	$\Delta_{1}^{\#1}{}_{lpha}$	$\Delta_{1^{-}lpha}^{\#2}$	$\Delta_{1^{-}\alpha}^{\#3}$	$\Delta_{1^{-}lpha}^{\#4}$	$\Delta_{1^{-}}^{\#5}{}_{lpha}$	$\Delta_{1^{-}~lpha}^{\#6}$	${\mathcal T}_{1^{-}lpha}^{\#1}$
Λ #1 +αβ		$\frac{\Delta{1} + \alpha\beta}{2\sqrt{2}}$	$\Delta_{1}^{+} \alpha \beta$	$\Delta_1^{-}\alpha$	$\Delta_1^{-}\alpha$	Δ_1 α	Δ_1 α	Δ_1 α	Δ_1 α	γ 1 α
$\Delta_{1}^{\#1} \dagger^{\alpha\beta}$		a_0	0	U	U	U	0	U	0	U
$\Delta_{1}^{#2} \dagger^{\alpha\beta}$	$\begin{bmatrix} -\frac{2\sqrt{2}}{a_0} \end{bmatrix}.$	$\frac{2(a_0^2 - 14a_0c_1k^2 - 35c_1^2k^4)}{a_0^2(a_0 - 29c_1k^2)}$	$\frac{40\sqrt{2}c_1k^2}{a_0^2 - 29a_0c_1k^2}$	0	0	0	0	0	0	0
$\Delta_{1}^{#3}$ † $^{\alpha\beta}$	0	$\frac{40\sqrt{2}c_1k^2}{a_0^2 - 29a_0c_1k^2}$	$\frac{4}{a_0-29c_1k^2}$	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	$-\frac{2i\sqrt{2}k}{a_0(2+k^2)}$
$\Delta_1^{#2} \dagger^{\alpha}$	0	0	0	$\frac{\sqrt{2} (4+k^2)}{a_0 (2+k^2)}$	$\frac{a_0^2 (4+k^2)^2 - 30 a_0 c_1 k^2 (4+k^2) (4+3 k^2) + c_1^2 k^4 (6416 + 7928 k^2 + 1901 k^4)}{2 a_0^2 (2+k^2)^2 (a_0 - 33 c_1 k^2)}$	$\frac{k^2 \left(a_0^2 \left(-2+k^2\right)+a_0 c_1 \left(560+302 k^2+71 k^4\right)-2 c_1^2 k^2 \left(9440+1901 k^2 \left(4+k^2\right)\right)\right)}{2 \sqrt{6} \ a_0^2 \left(2+k^2\right)^2 \left(a_0-33 c_1 k^2\right)}$	$-\frac{\sqrt{\frac{5}{6}} k^2 (a_0+c_1 (40-31 k^2))}{2 a_0 (2+k^2) (a_0-33 c_1 k^2)}$	$\frac{k^2 \left(2 a_0^{ 2} \left(5+2 k^2\right)-a_0 c_1 \left(880+778 k^2+199 k^4\right)+c_1^{ 2} k^2 \left(9440+1901 k^2 \left(4+k^2\right)\right)\right)}{2 \sqrt{3} a_0^{ 2} \left(2+k^2\right)^2 \left(a_0\text{-}33 c_1 k^2\right)}$	$\frac{k^2 \left(-a_0 + c_1 \left(200 + 43 k^2\right)\right)}{\sqrt{6} a_0 \left(2 + k^2\right) \left(a_0 - 33 c_1 k^2\right)}$	$-\frac{i k (-30 a_0 c_1 k^4 + a_0^2 (4 + k^2) + 27 c_1^2 k^4 (-28 + 3 k^2))}{a_0^2 (2 + k^2)^2 (a_0 - 33 c_1 k^2)}$
$\Delta_1^{#3} \dagger^{\alpha}$	0	0	0	$-\frac{2k^2}{\sqrt{3}(2a_0+a_0k^2)}$	$\frac{k^2 \left(a_0^2 \left(-2+k^2\right)+a_0 c_1 \left(560+302 k^2+71 k^4\right)-2 c_1^2 k^2 \left(9440+1901 k^2 \left(4+k^2\right)\right)\right)}{2 \sqrt{6} \ a_0^2 \left(2+k^2\right)^2 \left(a_0-33 c_1 k^2\right)}$	$\frac{-{a_0}^2 \left(76+52 k^2+3 k^4\right)+4 a_0 c_1 k^2 \left(472+214 k^2+19 k^4\right)+4 c_1^2 k^4 \left(5120+7280 k^2+1901 k^4\right)}{12 a_0^2 \left(2+k^2\right)^2 \left(a_0-33 c_1 k^2\right)}$	$\frac{\sqrt{5} (10 a_0 + (3 a_0 - 328 c_1) k^2 - 62 c_1 k^4)}{12 a_0 (2 + k^2) (a_0 - 33 c_1 k^2)}$	$\frac{2 a_0^2 (-2+k^2) + a_0 c_1 k^2 (472 + 934 k^2 + 289 k^4) - 2 c_1^2 k^4 (5120 + 7280 k^2 + 1901 k^4)}{6 \sqrt{2} a_0^2 (2+k^2)^2 (a_0 - 33 c_1 k^2)}$	$-\frac{2 a_0 + (3 a_0 - 56 c_1) k^2 + 86 c_1 k^4}{6 a_0 (2 + k^2) (a_0 - 33 c_1 k^2)}$	$\frac{i k (54 c_1^2 k^4 (40 + 3 k^2) + a_0^2 (6 + 5 k^2) - 3 a_0 c_1 k^2 (86 + 23 k^2))}{\sqrt{6} a_0^2 (2 + k^2)^2 (a_0 - 33 c_1 k^2)}$
$\Delta_1^{\#4} \uparrow^{\alpha}$	0	0	0	0	$-\frac{\sqrt{\frac{5}{6}} k^2 (a_0+c_1 (40-31 k^2))}{2 a_0 (2+k^2) (a_0-33 c_1 k^2)}$	$\frac{\sqrt{5} (10 a_0 + k^2 (3 a_0 - 2 c_1 (164 + 31 k^2)))}{12 a_0 (2 + k^2) (a_0 - 33 c_1 k^2)}$	$\frac{1}{12 a_0 - 396 c_1 k^2}$	$\frac{\sqrt{\frac{5}{2}} \left(-2 a_0 + c_1 k^2 \left(164 + 31 k^2\right)\right)}{6 a_0 \left(2 + k^2\right) \left(a_0 - 33 c_1 k^2\right)}$	$-\frac{\sqrt{5}}{6(a_0-33c_1k^2)}$	$-\frac{i\sqrt{\frac{5}{6}}k(a_0-51c_1k^2)}{a_0(2+k^2)(a_0-33c_1k^2)}$
$\Delta_1^{\#5} \uparrow^{\alpha}$	0	0	0	$\frac{\sqrt{\frac{2}{3}} k^2}{a_0 (2+k^2)}$	$\frac{k^2 \left(2 a_0^{ 2} (5 + 2 k^2) - a_0 c_1 (880 + 778 k^2 + 199 k^4) + c_1^{ 2} k^2 (9440 + 1901 k^2 (4 + k^2))\right)}{2 \sqrt{3} a_0^{ 2} (2 + k^2)^2 (a_0 - 33 c_1 k^2)}$	$\frac{2a_0{}^2(-2+k^2)+a_0c_1k^2(472+934k^2+289k^4)-2c_1{}^2k^4(5120+7280k^2+1901k^4)}{6\sqrt{2}a_0{}^2(2+k^2)^2(a_0-33c_1k^2)}$	$\frac{\sqrt{\frac{5}{2}} \left(-2 a_0 + c_1 k^2 \left(164 + 31 k^2\right)\right)}{6 a_0 \left(2 + k^2\right) \left(a_0 - 33 c_1 k^2\right)}$	$\frac{4 a_0^2 (17 + 14 k^2 + 3 k^4) - 4 a_0 c_1 k^2 (236 + 287 k^2 + 77 k^4) + c_1^2 k^4 (5120 + 7280 k^2 + 1901 k^4)}{6 a_0^2 (2 + k^2)^2 (a_0 - 33 c_1 k^2)}$	$-\frac{c_1k^2(28\text{-}43k^2) + 2a_0(7+3k^2)}{3\sqrt{2}a_0(2+k^2)(a_0\text{-}33c_1k^2)}$	$\frac{i k (2 a_0^2 (3+k^2)-27 c_1^2 k^4 (40+3 k^2)+3 a_0 c_1 k^2 (34+7 k^2))}{\sqrt{3} a_0^2 (2+k^2)^2 (a_0-33 c_1 k^2)}$
$\Delta_1^{\#6} \uparrow^{\alpha}$	0	0	0	0	$\frac{k^2 \left(-a_0 + c_1 \left(200 + 43 k^2\right)\right)}{\sqrt{6} \ a_0 \left(2 + k^2\right) \left(a_0 - 33 c_1 k^2\right)}$	$-\frac{2a_0 + (3a_0 - 56c_1)k^2 + 86c_1k^4}{6a_0(2+k^2)(a_0 - 33c_1k^2)}$	$-\frac{\sqrt{5}}{6(a_0-33c_1k^2)}$	$-\frac{c_1 k^2 (28-43 k^2)+2 a_0 (7+3 k^2)}{3 \sqrt{2} a_0 (2+k^2) (a_0-33 c_1 k^2)}$	$\frac{5}{3(a_0-33c_1k^2)}$	$-\frac{i\sqrt{\frac{2}{3}}k(a_0+57c_1k^2)}{a_0(2+k^2)(a_0-33c_1k^2)}$
$\mathcal{T}_1^{\sharp 1}$ † lpha	0	0	0	$\frac{2i\sqrt{2}k}{2a_0+a_0k^2}$	$\frac{i(-30 a_0 c_1 k^5 + a_0^2 k (4+k^2) + 27 c_1^2 k^5 (-28+3 k^2))}{a_0^2 (2+k^2)^2 (a_0-33 c_1 k^2)}$	$-\frac{i(54c_1^2k^5(40+3k^2)+a_0^2k(6+5k^2)-3a_0c_1k^3(86+23k^2))}{\sqrt{6}a_0^2(2+k^2)^2(a_0-33c_1k^2)}$	$\frac{i\sqrt{\frac{5}{6}}k(a_0-51c_1k^2)}{a_0(2+k^2)(a_0-33c_1k^2)}$	$-\frac{i(2a_0^2k(3+k^2)-27c_1^2k^5(40+3k^2)+3a_0c_1k^3(34+7k^2))}{\sqrt{3}a_0^2(2+k^2)^2(a_0-33c_1k^2)}$	$\frac{i\sqrt{\frac{2}{3}}k(a_0+57c_1k^2)}{a_0(2+k^2)(a_0-33c_1k^2)}$	$\frac{2k^{2}(a_{0}^{2}+30a_{0}c_{1}k^{2}-459c_{1}^{2}k^{4})}{a_{0}^{2}(2+k^{2})^{2}(a_{0}-33c_{1}k^{2})}$

	$\Gamma_{1}^{\#1}{}_{lphaeta}$	$\Gamma_{1}^{\#2}_{\alpha\beta}$	$\Gamma_{1}^{\#3}{}_{\alpha\beta}$	$\Gamma_{1}^{\#1}{}_{\alpha}$	Γ ₁ - α	Γ ₁ - α	Γ ₁ - α	Γ ₁ - α	Γ ₁ - α	$h_{1^{-}\alpha}^{\#1}$
$\Gamma_{1}^{#1} \dagger^{\alpha\beta}$	$\frac{1}{4} \left(-a_0 - 15 c_1 k^2 \right)$	$-\frac{a_0}{2\sqrt{2}}$	$5c_1k^2$	0	0	0	0	0	0	0
$\Gamma_{1}^{#2} \dagger^{\alpha\beta}$	$-\frac{a_0}{2\sqrt{2}}$	0	0	0	0	0	0	0	0	0
$\Gamma_{1}^{\#3} \dagger^{\alpha\beta}$	$5c_1k^2$	0	$\frac{1}{4} (a_0 - 29 c_1 k^2)$	0	0	0	0	0	0	0
Γ ₁ . † α	0	0	0	$\frac{1}{4} \left(-a_0 - 3 c_1 k^2 \right)$	$\frac{a_0}{2\sqrt{2}}$	$\frac{5}{2} \sqrt{3} c_1 k^2$	$-\frac{5}{2}\sqrt{\frac{5}{3}}c_1k^2$	$5\sqrt{\frac{3}{2}}c_1k^2$	$-\frac{5c_1k^2}{\sqrt{3}}$	$-\frac{i a_0 k}{4 \sqrt{2}}$
$\Gamma_1^{\#2} \uparrow^{\alpha}$	0	0	0	$\frac{a_0}{2\sqrt{2}}$	0	0	0	0	0	0
$\Gamma_1^{#3} \uparrow^{\alpha}$	0	0	0	$\frac{5}{2} \sqrt{3} c_1 k^2$	0	$-\frac{a_0}{3}$	$\frac{1}{6}\sqrt{5}(a_0-8c_1k^2)$	$-\frac{a_0}{6\sqrt{2}}$	$\frac{1}{6} \left(-a_0 + 20 c_1 k^2 \right)$	<u>i a₀ k</u> 4 √6
$\Gamma_{1}^{\#4} + ^{\alpha}$	0	0	0	$-\frac{5}{2} \sqrt{\frac{5}{3}} c_1 k^2$	0	$\frac{1}{6} \sqrt{5} (a_0 - 8c_1 k^2)$		'	$-\frac{1}{6}\sqrt{5}(a_0-5c_1k^2)$	$-\frac{1}{4}\bar{l}\sqrt{\frac{5}{6}}a_0k$
$\Gamma_{1}^{\#5} +^{\alpha}$	0	0	0	$5\sqrt{\frac{3}{2}}c_1k^2$	0	$-\frac{a_0}{6\sqrt{2}}$	$-\frac{1}{6} \sqrt{\frac{5}{2}} (a_0 + 16 c_1 k^2)$	<u>a₀</u> 3	$\frac{a_0 + 40 c_1 k^2}{6 \sqrt{2}}$	$\frac{i a_0 k}{4 \sqrt{3}}$
$\Gamma_1^{\#6} \dagger^{\alpha}$	0	0	0	$-\frac{5c_1k^2}{\sqrt{3}}$	0	$\frac{1}{6} \left(-a_0 + 20 c_1 k^2 \right)$	$-\frac{1}{6} \sqrt{5} (a_0 - 5 c_1 k^2)$	$\frac{a_0 + 40 c_1 k^2}{6 \sqrt{2}}$	$\frac{5}{12} (a_0 - 17 c_1 k^2)$	<u>i a₀ k</u> 4 √6
$h_1^{#1} +^{\alpha}$	0	0	0	$\frac{i a_0 k}{4 \sqrt{2}}$	0	$-\frac{i a_0 k}{4 \sqrt{6}}$	$\frac{1}{4}\bar{l}\sqrt{\frac{5}{6}}a_0k$	$-\frac{i a_0 k}{4 \sqrt{3}}$	$-\frac{ia_0k}{4\sqrt{6}}$	0

 $10 \sqrt{\frac{2}{3}} c_1 k^2$ $-\frac{10c_1 k^2}{\sqrt{3}}$ $\frac{i a_0 k}{2 \sqrt{2}}$ 0

 $h_{0+}^{\#1}$ $-\frac{ia_0k}{2\sqrt{2}}$ 0 $\frac{ia_0k}{4\sqrt{3}}$ $-\frac{ia_0k}{4\sqrt{6}}$

 $\Gamma_{0+}^{\#1}$ $\frac{1}{2} \left(-a_0 + 25 c_1 k^2 \right)$

Γ₀^{#2}

η₀₊#2

0 0 0 F₀...

 $\begin{array}{c|c}
5c_1 k^2 \\
\hline
\sqrt{3} \\
\hline
4 \sqrt{2} \\
0
\end{array}$

0 0 $\frac{1}{4}(a_0-5c_1k^2)$

Lagra	angia	n dens	sity			
$\frac{1}{2}a$	$-\alpha\beta\chi$	$\Gamma_{eta\chilpha}$ +	1 0	- α β	Γ Χ _	1
$\frac{-}{2}u_0$	ı	' βχα Τ	$\frac{-u_0}{2}$	' α	$\beta \chi$	4

 $\frac{1}{4} a_0 h_{\chi}^{\chi} \partial_{\beta} \Gamma_{\alpha}^{\alpha\beta} +$ $\frac{1}{4} a_0 h_{\chi}^{\chi} \partial_{\beta} \Gamma^{\alpha\beta}{}_{\alpha} - \frac{1}{2} a_0 h_{\alpha\chi} \partial_{\beta} \Gamma^{\alpha\beta\chi} + \frac{11}{2} c_1 \partial^{\alpha} \Gamma^{\chi\delta}{}_{\delta} \partial_{\beta} \Gamma_{\chi\alpha}{}^{\beta} +$ $\frac{1}{2} c_1 \partial^{\alpha} \Gamma_{\chi\alpha}^{\ \beta} \partial_{\beta} \Gamma^{\chi\delta}_{\ \delta} - 19 c_1 \partial^{\alpha} \Gamma^{\chi\delta}_{\ \chi} \partial_{\beta} \Gamma_{\delta\alpha}^{\ \beta} + \frac{1}{2} a_0 h_{\beta\chi} \partial^{\chi} \Gamma^{\alpha}_{\ \alpha}^{\ \beta} \frac{1}{2} c_1 \partial_{\beta} \Gamma_{\chi \delta}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha \beta} - \frac{1}{2} c_1 \partial_{\beta} \Gamma_{\delta \chi}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha \beta} + \frac{1}{2} c_1 \partial_{\chi} \Gamma_{\beta \delta}^{\delta} \partial^{\chi} \Gamma_{\alpha}^{\alpha \beta} \frac{1}{2} c_1 \partial_{\chi} \Gamma^{\delta}_{\beta\delta} \partial^{\chi} \Gamma^{\alpha}_{\alpha}^{\beta} - \frac{1}{2} c_1 \partial_{\chi} \Gamma^{\delta}_{\delta\beta} \partial^{\chi} \Gamma^{\alpha}_{\alpha}^{\beta} - \frac{11}{2} c_1 \partial_{\beta} \Gamma^{\delta}_{\chi \delta} \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} +$ $\frac{19}{2} c_1 \partial_{\beta} \Gamma^{\delta}_{\chi\delta} \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} + \frac{11}{2} c_1 \partial_{\chi} \Gamma^{\delta}_{\beta\delta} \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} \frac{1}{2} c_1 \partial_{\chi} \Gamma^{\delta}_{\beta \delta} \partial^{\chi} \Gamma^{\alpha \beta}_{\alpha} + c_1 \partial_{\alpha} \Gamma^{\delta}_{\chi \delta} \partial^{\chi} \Gamma^{\alpha \beta}_{\beta} - c_1 \partial_{\chi} \Gamma^{\delta}_{\alpha \delta} \partial^{\chi} \Gamma^{\alpha \beta}_{\beta} \frac{1}{2} c_1 \partial_\chi \Gamma^{\alpha\beta\chi} \partial_\delta \Gamma_{\alpha\beta}^{} - \frac{1}{2} c_1 \partial_\beta \Gamma^{\alpha\beta\chi} \partial_\delta \Gamma_{\alpha\chi}^{} - \frac{1}{2} c_1 \partial_\beta \Gamma^{\alpha\beta\chi} \partial_\delta \Gamma_{\alpha}^{} +$ $\frac{19}{2} c_1 \partial_{\chi} \Gamma^{\alpha\beta\chi} \partial_{\delta} \Gamma_{\beta\alpha}^{\quad \delta} + c_1 \partial^{\chi} \Gamma^{\alpha}_{\quad \alpha}^{\quad \beta} \partial_{\delta} \Gamma_{\beta \quad \chi}^{\quad \delta} + \frac{1}{2} c_1 \partial^{\chi} \Gamma^{\alpha}_{\quad \alpha}^{\quad \beta} \partial_{\delta} \Gamma_{\chi\beta}^{\quad \delta} +$ $\frac{1}{2} c_1 \partial^{\chi} \Gamma^{\alpha\beta}_{\alpha} \partial_{\delta} \Gamma_{\chi\beta}^{\delta} - \frac{1}{2} c_1 \partial_{\beta} \Gamma^{\alpha\beta\chi}_{\alpha} \partial_{\delta} \Gamma_{\chi\alpha}^{\delta} + \frac{1}{2} c_1 \partial^{\chi} \Gamma_{\beta\alpha}^{\beta} \partial_{\delta} \Gamma_{\chi}^{\delta\alpha} +$ $c_1 \partial^{\chi} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \Gamma^{\delta}_{\chi\beta} - \frac{1}{2} c_1 \partial_{\beta} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \Gamma^{\chi\delta}_{\chi} + c_1 \partial_{\beta} \Gamma^{\alpha}_{\alpha}{}^{\beta} \partial_{\delta} \Gamma^{\chi\delta}_{\chi} \frac{1}{2} c_1 \partial_{\beta} \Gamma^{\alpha\beta}_{\quad \alpha} \partial_{\delta} \Gamma^{\chi\delta}_{\quad \chi} + \frac{1}{2} c_1 \partial_{\alpha} \Gamma_{\beta\chi\delta} \partial^{\delta} \Gamma^{\alpha\beta\chi} + c_1 \partial_{\alpha} \Gamma_{\beta\delta\chi} \partial^{\delta} \Gamma^{\alpha\beta\chi} +$ $c_1 \, \partial_{\alpha} \Gamma_{\chi \beta \delta} \, \partial^{\delta} \Gamma^{\alpha \beta \chi} + \frac{1}{2} \, c_1 \, \partial_{\alpha} \Gamma_{\chi \delta \beta} \, \partial^{\delta} \Gamma^{\alpha \beta \chi} + c_1 \, \partial_{\alpha} \Gamma_{\delta \beta \chi} \, \partial^{\delta} \Gamma^{\alpha \beta \chi} +$ $c_1 \, \partial_\alpha \Gamma_{\delta \chi \beta} \, \partial^\delta \Gamma^{\alpha \beta \chi} - \tfrac{1}{2} \, c_1 \, \partial_\beta \Gamma_{\alpha \chi \delta} \, \partial^\delta \Gamma^{\alpha \beta \chi} - \tfrac{1}{2} \, c_1 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \beta \chi} - \tfrac{1}{2} \, c_2 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, c_3 \, \partial_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} - \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma_{\alpha \delta \chi} \, \partial^\delta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma^{\alpha \delta \chi} + \tfrac{1}{2} \, d_\beta \Gamma^$ $\frac{1}{2} c_1 \partial_{\beta} \Gamma_{\chi \delta \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} - \frac{1}{2} c_1 \partial_{\chi} \Gamma_{\alpha \beta \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} - \frac{1}{2} c_1 \partial_{\chi} \Gamma_{\beta \alpha \delta} \partial^{\delta} \Gamma^{\alpha \beta \chi} +$ $c_1 \, \partial_\chi \Gamma_{\beta\delta\alpha} \, \partial^\delta \Gamma^{\alpha\beta\chi} - c_1 \, \partial_\delta \Gamma_{\alpha\beta\chi} \, \partial^\delta \Gamma^{\alpha\beta\chi} - c_1 \, \partial_\delta \Gamma_{\alpha\chi\beta} \, \partial^\delta \Gamma^{\alpha\beta\chi} \frac{1}{2} c_1 \partial_{\delta} \Gamma_{\beta \alpha \chi} \partial^{\delta} \Gamma^{\alpha \beta \chi} - \frac{1}{2} c_1 \partial_{\delta} \Gamma_{\beta \chi \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} - \frac{1}{2} c_1 \partial_{\delta} \Gamma_{\chi \beta \alpha} \partial^{\delta} \Gamma^{\alpha \beta \chi} \frac{11}{2} c_1 \partial_{\beta} \Gamma_{\delta \alpha}^{\ \beta} \partial^{\delta} \Gamma^{\alpha \chi}_{\ \chi} - \frac{1}{2} c_1 \partial^{\alpha} \Gamma_{\delta \alpha}^{\ \beta} \partial^{\delta} \Gamma_{\beta \ \chi}^{\ \chi} + \frac{1}{2} c_1 \partial_{\beta} \Gamma_{\delta \alpha}^{\ \beta} \partial^{\delta} \Gamma^{\chi \alpha}_{\ \chi}$

Added source term:	$h^{\alpha\beta} \mathcal{T}_{\alpha\beta}$	+ Γ ^{αβχ} Δ
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		uρ	αρχ
	Mass	ive partic	le
?	Pole	residue:	$\frac{3287 a_0 + 323862 c_1}{}$ >
$\sqrt{J^P} = 1 /$			$35937c_1(a_0+66c_1)$
	_? Polar	isations:	3
$\overrightarrow{k^{\mu}}$	Squa	re mass:	$\frac{a_0}{33c_1} > 0$

Odd

Spin:

Parity:

		?
? 🗸 🦪	$I^{P} = 1$	+/
	\	\prec _
	$\supset_{\overrightarrow{k^{\mu}}}$	$ \langle $
?	70	\

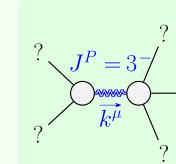
	Massive particle			
$J^{P} = 1 + /$	Pole residue:	$-\frac{4164}{24389c_1} >$		
2	Polarisations:	3		
$\overrightarrow{k^{\mu}}$	Square mass:	$\frac{a_0}{29c_1} > 0$		
?	Spin:	1		
•	Parity:	Even		

0 0 0

0

0

0



?		Massive partic	e
		Pole residue:	$\frac{2}{7c_1} > 0$
	- 2	Polarisations:	7
	•	Square mass:	$-\frac{a_0}{7c_1} > 0$
?		Spin:	3
•		Parity:	Odd

0

0

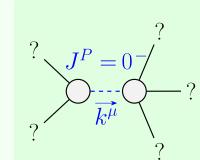
0

0

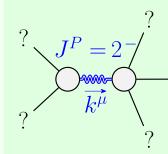
 $-5\sqrt{\frac{2}{3}}c_1k^2$ $[-3a_0+c_1k^2)$

-	?
-	? $J^P = 2^{-1}$
-	
-	\overrightarrow{k}^{μ}
-	?

	Massive partic	e	
?	Pole residue:	$\frac{4}{5c_1} > 0$?、,,
	Polarisations:	5	3
?	Square mass:	$\frac{a_0}{5c_1} > 0$	2
?	Spin:	2	•
•	Parity:	Odd	



	Massive particle					
	Pole residue:	$-\frac{2}{c_1} > 0$				
-?	Polarisations:	1				
	Square mass:	$\frac{a_0}{c_1} > 0$				
	Spin:	0				
	Darity	044				



 $\Delta_{2}^{\#3}_{+\alpha\beta}$

 $-\frac{2\sqrt{2}(a_0+52c_1k^2)}{3a_0^2}$

 $\frac{8(a_0-26c_1k^2)}{3a_0^2}$

 $\frac{4i\sqrt{2}}{3}(a_0+31c_1k^2)$

0

0

 $-\frac{8(a_0+13c_1k^2)}{3a_0^2}$

 $2\sqrt{2}(a_0+52c_1k^2)$

 $\frac{4i(a_0+31c_1k^2)}{\sqrt{3}a_0^2k}$

 ${\cal T}_{2}^{\#1}{}_{lphaeta}$

 $\frac{4i\sqrt{2}}{a_0k}$

 $-\frac{4i(a_0+31c_1k^2)}{\sqrt{3}a_0^2k}$

 $4i\sqrt{\frac{2}{3}}(a_0+31c_1k^2)$

 $-\frac{8(a_0+11c_1k^2)}{{a_0}^2k^2}$

0

 $\Delta_{2^{-}\alpha\beta\chi}^{\#1}$ $\Delta_{2^{-}\alpha\beta\chi}^{\#2}$

 $\frac{4}{a_0 - c_1 k^2}$

0

0

	Massive par
?	Pole residue
=2	Polarisation
$\sqrt{\hat{\mu}}$	Square mas
\	Spin:
?	<u> </u>
	Parity:

CO(2) impons	Т "
SO(3) irreps	#
$2\mathcal{T}_{0^{+}}^{\#2} - i k \Delta_{0^{+}}^{\#2} == 0$	1
$\Delta_{0^{+}}^{\#3} + 2 \Delta_{0^{+}}^{\#4} + 3 \Delta_{0^{+}}^{\#2} == 0$	1
$6 \mathcal{T}_{1}^{\#1\alpha} - i k (3 \Delta_{1}^{\#2\alpha} - \Delta_{1}^{\#5\alpha} + \Delta_{1}^{\#3\alpha}) == 0$	3
$2 \Delta_{1}^{\#6\alpha} + \Delta_{1}^{\#4\alpha} + 2 \Delta_{1}^{\#5\alpha} + \Delta_{1}^{\#3\alpha} == 0$	3
Total #:	8
$\Gamma_{3}^{\#1}{}_{lphaeta\chi}$	Δ ₃ -

$\Delta_{0+}^{-+} + 3 \Delta_{0+}^{} == 0$			
$-ik(3 \Delta_{1}^{#2\alpha} - \Delta_{1}^{#5\alpha})$	$+ \Delta_{1}^{\#3\alpha}) == 0$	3	
$+ \Delta_{1}^{\#4\alpha} + 2 \Delta_{1}^{\#5\alpha} +$	$- \Delta_1^{\#_3 \alpha} == 0$	3	
:		8	
$\Gamma_{3}^{\#1}{}_{\alpha\beta\chi}$		$\Delta_{3}^{\#1}$	αβχ
$\frac{1}{2} \left(-a_0 - 7 c_1 k^2 \right)$	$\Delta_3^{\#1} + \alpha \beta \chi$	2 0+7	71 k ²

$0 \qquad -\frac{2}{a_0 - c_1 k^2}$	$\frac{12k^2(3a_0+197c_1k^2)}{a_0^2(16+3k^2)^2} \qquad 0$	$\frac{4\sqrt{3}(a_0-65c_1k^2)}{a_0^2(16+3k^2)}$	$\frac{4i\sqrt{2}k(10a_0+(3a_0-394c_1)k^2)}{a_0^2(16+3k^2)^2}$	$\frac{8ik(19a_0+(3a_0+197c_1)k^2)}{a_0^2(16+3k^2)^2}$	$\frac{24ik(3a_0+197c_1k^2)}{a_0^2(16+3k^2)^2}$	$\frac{2i\sqrt{6}k}{16a_0+3a_0k^2}$	$\mathcal{T}_{0^{+}}^{#2}$ $\Delta_{0^{-}}^{#1}$
	1	$\frac{4\sqrt{3}}{a_0^2}$		1		- 	
0	$\frac{4\sqrt{3}(a_0-65c_1k^2)}{a_0^2(16+3k^2)}$	$\frac{4(a_0-25c_1 k^2)}{a_0^2 k^2}$	$\frac{8i\sqrt{\frac{2}{3}}(a_0-65c_1k^2)}{a_0^2k(16+3k^2)}$	$\frac{8i(a_0-65c_1 k^2)}{\sqrt{3} a_0^2 k(16+3k^2)}$	$-\frac{8i\sqrt{3}(a_0-65c_1k^2)}{a_0^2k(16+3k^2)}$	$\frac{2i\sqrt{2}}{a_0k}$	${\cal T}_{0^+}^{*1}$
0	$-\frac{4i\sqrt{2}k(10a_0+(3a_0-394c_1)k^2)}{a_0^2(16+3k^2)^2}$	$ \begin{array}{c c} 8 i \sqrt{\frac{2}{3}} & (a_0 - 65 c_1 k^2) \\ \hline & a_0^2 k (16 + 3 k^2) \end{array} $	$\frac{32(13a_0+(3a_0-197c_1)k^2)}{3a_0^2(16+3k^2)^2}$	$-\frac{8\sqrt{2}(22a_0+(3a_0+394c_1)k^2)}{3a_0^2(16+3k^2)^2}$	$-\frac{8\sqrt{2}(10a_0+(3a_0-394c_1)k^2)}{a_0^2(16+3k^2)^2}$	$-\frac{8}{\sqrt{3} (16a_0 + 3a_0 k^2)}$	$\Delta_0^{\#4}$
0	$\frac{8ik(19a_0 + (3a_0 + 197c_1)k^2)}{a_0^2(16 + 3k^2)^2}$	$-\frac{8i(a_0-65c_1 k^2)}{\sqrt{3} a_0^2 k(16+3 k^2)}$	$-\frac{8\sqrt{2}(22a_0+(3a_0+394c_1)k^2)}{3a_0^2(16+3k^2)^2}$	$-\frac{16(35a_0+(6a_0+197c_1)k^2)}{3a_0^2(16+3k^2)^2}$	$\frac{16(19a_0 + (3a_0 + 197c_1)k^2)}{a_0^2(16 + 3k^2)^2}$	$-\frac{4\sqrt{\frac{2}{3}}}{16a_0+3a_0k^2}$	$\Delta_0^{#3}$
0	$-\frac{24ik(3a_0+197c_1k^2)}{a_0^2(16+3k^2)^2}$	$\frac{8i\sqrt{3}(a_0-65c_1k^2)}{a_0^2k(16+3k^2)}$	$-\frac{8\sqrt{2}(10a_0+(3a_0-394c_1)k^2)}{a_0^2(16+3k^2)^2}$	$\frac{16(19a_0 + (3a_0 + 197c_1)k^2)}{{a_0}^2(16 + 3k^2)^2}$	$\frac{48(3a_0+197c_1k^2)}{{a_0}^2(16+3k^2)^2}$	$\frac{4\sqrt{6}}{16a_0+3a_0k^2}$	$\Delta_{0}^{\#2}$
	$\sqrt{6} k$ $3 a_0 k^2$	$\frac{\sqrt{2}}{0^{k}}$	$\frac{8}{0+3a_0k^2}$	$\sqrt{\frac{2}{3}}$ +3 $a_0 k^2$	√6 3 a ₀ k ²		#1)+

	Massive partic	le
$J^P = 2^{-/}$	Pole residue:	$\frac{4}{c_1} > 0$
0 = 2	Polarisations:	5
\overrightarrow{k}^{μ}	Square mass:	$\frac{a_0}{c_1} > 0$
?	Spin:	2
•	Parity:	Odd

|--|

Unitarity conditions (Unitarity is demonstrably impossible)