

[illegible][illegible][illegible]

	$\Gamma_0^{\#1}$	$\Gamma_0^{\#2}$	$\Gamma_0^{\#3}$	$\Gamma_0^{\#4}$	$\Gamma_0^{\#1}$	$\Gamma_0^{\#2}$	$\Gamma_0^{\#3}$
$\Gamma_0^{\#1} +$	$\frac{1}{2}(-a_0 + 25\,c_1\,k^2)$	0	$10\sqrt{\frac{2}{3}}\,c_1\,k^2$	$-\frac{10\,c_1\,k^2}{\sqrt{3}}$	$-\frac{25\,c_1^3\,k^3}{2\sqrt{2}}$	0	0
$\Gamma_0^{\#2} +$	0	0	$\frac{a_0}{2}$	$-\frac{-a_0}{2\sqrt{2}}$	0	0	0
$\Gamma_0^{\#3} +$	$10\sqrt{\frac{2}{3}}\,c_1\,k^2$	$\frac{a_0}{2}$	$\frac{23\,c_1\,k^2}{3}$	$-\frac{3\,a_0 + 46\,c_1\,k^2}{6\sqrt{2}}$	$-\frac{10\,c_1^3\,k^3}{\sqrt{3}}$	0	0
$\Gamma_0^{\#4} +$	$-\frac{10\,c_1\,k^2}{\sqrt{3}}$	$-\frac{-a_0}{2\sqrt{2}}$	$-\frac{3\,a_0 + 46\,c_1\,k^2}{6\sqrt{2}}$	$\frac{1}{6}(3\,a_0 + 23\,c_1\,k^2)$	$5i\sqrt{\frac{2}{3}}\,c_1\,k^3$	0	0
$\Gamma_0^{\#1} +$	$\frac{25\,c_1\,k^3}{2\sqrt{2}}$	0	$\frac{10\,c_1\,k^3}{\sqrt{3}}$	$-5i\sqrt{\frac{2}{3}}\,c_1\,k^3$	$\frac{1}{4}(a_0 + 25\,c_1\,k^2)$	0	0
$\Gamma_0^{\#2} +$	0	0	0	0	0	0	0
$\Gamma_0^{\#3} +$	0	0	0	0	0	0	$\frac{1}{2}(-a_0 + c_1\,k^2)$

Source constraints	
SO(3) irreps	#
$\tau_{0^+}^{\#2} = 0$	1
$\Delta_{0^+}^{\#3} + 2\Delta_{0^+}^{\#4} + 3\Delta_{0^+}^{\#2} = 0$	1
$\tau_1^{\#1\alpha} = 0$	3
$2\Delta_1^{\#6\alpha} + \Delta_1^{\#4\alpha} + 2\Delta_1^{\#5\alpha} + \Delta_1^{\#3\alpha} = 0$	3
Total #:	8

$\Delta_0^{\#1}$	$\Delta_0^{\#2}$	$\Delta_0^{\#3}$	$\Delta_0^{\#4}$	$\mathcal{T}_0^{\#1}$	$\mathcal{T}_0^{\#2}$	$\Delta_0^{\#1}$
$\Delta_0^{\#1} +$	$\Delta_0^{\#2} +$	$\Delta_0^{\#3} +$	$\Delta_0^{\#4} +$	$\mathcal{T}_0^{\#1} +$	$\mathcal{T}_0^{\#2} +$	$\Delta_0^{\#1}$
$-\frac{2(a_0+25c_1k^2)}{a_0^2}$	$-\frac{10\sqrt{6}c_1k^2}{a_0^2}$	$-\frac{10\sqrt{\frac{2}{3}}c_1k^2}{a_0^2}$	$-\frac{20c_1k^2}{\sqrt{3}a_0^2}$	$-\frac{50i\sqrt{2}c_1k}{a_0^2}$	0	
$\Delta_0^{\#2} +$	$\frac{10\sqrt{6}c_1k^2}{a_0^2}$	$-\frac{3(4a_0+23c_1k^2)}{4a_0^2}$	$\frac{5a_0+23c_1k^2}{4a_0^2}$	$\frac{-a_0-23c_1k^2}{2\sqrt{2}a_0^2}$	$\frac{20i\sqrt{3}c_1k}{a_0^2}$	0
$\Delta_0^{\#3} +$	$-\frac{10\sqrt{\frac{2}{3}}c_1k^2}{a_0^2}$	$\frac{5a_0+23c_1k^2}{4a_0^2}$	$-\frac{9a_0+23c_1k^2}{12a_0^2}$	$-\frac{3a_0+23c_1k^2}{6\sqrt{2}a_0^2}$	$-\frac{20ic_1k}{\sqrt{3}a_0^2}$	0
$\Delta_0^{\#4} +$	$-\frac{20c_1k^2}{\sqrt{3}a_0^2}$	$-\frac{4a_0-23c_1k^2}{2\sqrt{2}a_0^2}$	$-\frac{3a_0+23c_1k^2}{6\sqrt{2}a_0^2}$	$-\frac{3a_0-23c_1k^2}{6a_0^2}$	$-\frac{20i\sqrt{\frac{3}{2}}c_1k}{a_0^2}$	0
$\mathcal{T}_0^{\#1} +$	$\frac{50i\sqrt{2}c_1k}{a_0^2}$	$-\frac{20i\sqrt{3}c_1k}{a_0^2}$	$\frac{20ic_1k}{\sqrt{3}a_0^2}$	$\frac{20i\sqrt{\frac{3}{2}}c_1k}{a_0^2}$	$\frac{4(a_0-25c_1k^2)}{a_0^2k^2}$	0
$\mathcal{T}_0^{\#2} +$	0	0	0	0	0	0
$\Delta_0^{\#1}$	0	0	0	0	0	$-\frac{2}{a_0c_1k^2}$

	$\Gamma_{2^+ \alpha\beta}^{\#1}$	$\Gamma_{2^+ \alpha\beta}^{\#2}$	$\Gamma_{2^+ \alpha\beta}^{\#3}$	$h_{2^+ \alpha\beta}^{\#1}$	$\Gamma_{2^+ \alpha\beta\chi}^{\#1}$	$\Gamma_{2^+ \alpha\beta\chi}^{\#2}$
$\Gamma_{2^+}^{\#1} \dagger \alpha\beta$	$\frac{1}{4} (a_0 + 11 c_1 k^2)$	$-5 \sqrt{\frac{2}{3}} c_1 k^2$	$\frac{5 c_1 k^2}{\sqrt{3}}$	$-\frac{11 i c_1 k^3}{4 \sqrt{2}}$	0	0
$\Gamma_{2^+}^{\#2} \dagger \alpha\beta$	$-5 \sqrt{\frac{2}{3}} c_1 k^2$	$\frac{1}{6} (-3 a_0 + c_1 k^2)$	$-\frac{c_1 k^2}{6 \sqrt{2}}$	$\frac{5 i c_1 k^3}{\sqrt{3}}$	0	0
$\Gamma_{2^+}^{\#3} \dagger \alpha\beta$	$\frac{5 c_1 k^2}{\sqrt{3}}$	$-\frac{c_1 k^2}{6 \sqrt{2}}$	$\frac{1}{12} (3 a_0 + c_1 k^2)$	$-\frac{5 i c_1 k^3}{\sqrt{6}}$	0	0
$h_{2^+}^{\#1} \dagger \alpha\beta$	$\frac{11 i c_1 k^3}{4 \sqrt{2}}$	$-\frac{5 i c_1 k^3}{\sqrt{3}}$	$\frac{5 i c_1 k^3}{\sqrt{6}}$	$-\frac{1}{8} k^2 (a_0 - 11 c_1 k^2)$	0	0
$\Gamma_{2^+}^{\#1} \dagger \alpha\beta\chi$	0	0	0	0	$\frac{1}{4} (a_0 - c_1 k^2)$	0
$\Gamma_{2^+}^{\#2} \dagger \alpha\beta\chi$	0	0	0	0	0	$\frac{1}{4} (a_0 - 5 c_1 k^2)$

	$\Delta_{2^+}^1 \alpha\beta$	$\Delta_{2^+}^2 \alpha\beta$	$\Delta_{2^+}^3 \alpha\beta$	$\mathcal{T}_{2^+}^1 \alpha\beta$	$\Delta_{2^-}^1 \alpha\beta_X$	$\Delta_{2^-}^2 \alpha\beta_X$
$\Delta_{2^+}^1 \uparrow \alpha\beta$	$\frac{4(a_0 - 11c_1 k^2)}{a_0^2}$	$-\frac{40\sqrt{\frac{2}{3}}c_1 k^2}{a_0^2}$	$-\frac{80c_1 k^2}{\sqrt{3}a_0^2}$	$-\frac{44i\sqrt{\frac{2}{3}}c_1 k}{a_0^2}$	0	0
$\Delta_{2^+}^2 \uparrow \alpha\beta$	$-\frac{40\sqrt{\frac{2}{3}}c_1 k^2}{a_0^2}$	$-\frac{2(3a_0 + c_1 k^2)}{3a_0^2}$	$-\frac{2\sqrt{\frac{2}{3}}c_1 k^2}{3a_0^2}$	$-\frac{80ic_1 k}{\sqrt{3}a_0^2}$	0	0
$\Delta_{2^+}^3 \uparrow \alpha\beta$	$-\frac{80c_1 k^2}{\sqrt{3}a_0^2}$	$-\frac{2\sqrt{\frac{2}{3}}c_1 k^2}{3a_0^2}$	$\frac{4(3a_0 - c_1 k^2)}{3a_0^2}$	$-\frac{80i\sqrt{\frac{2}{3}}c_1 k}{a_0^2}$	0	0
$\mathcal{T}_{2^+}^1 \uparrow \alpha\beta$	$\frac{44i\sqrt{\frac{2}{3}}c_1 k}{a_0^2}$	$\frac{80ic_1 k}{\sqrt{3}a_0^2}$	$\frac{80i\sqrt{\frac{2}{3}}c_1 k}{a_0^2}$	$-\frac{8(a_0 + 11c_1 k^2)}{a_0^2 k^2}$	0	0
$\Delta_{2^+}^1 \uparrow \alpha\beta_X$	0	0	0	0	$\frac{4}{a_0 - c_1 k^2}$	0
$\Delta_{2^+}^2 \uparrow \alpha\beta_X$	0	0	0	0	0	$\frac{4}{a_0 - 5c_1 k^2}$

$$\begin{aligned}
 & \Gamma_{\frac{1}{3}}^{\#1} a\beta\chi \\
 & \Gamma_{\frac{1}{3}}^{\#1} + a\beta\chi \quad \frac{1}{2} (-a_0 - 7c_1 k^2) \\
 & \Delta_{\frac{1}{3}}^{\#1} + a\beta\chi \\
 & \Delta_{\frac{1}{3}}^{\#1} a\beta\chi - \frac{2}{a_0 + 7c_1 k^2}
 \end{aligned}$$

Massive particle	
Pole residue:	$-\frac{4164}{24\,389\,c_1} > 0$
Polarisations:	3
Square mass:	$-\frac{a_0}{29\,c_1} > 0$
Spin:	1
Parity:	Even

The diagram shows a Feynman diagram for the decay of a ρ meson. A central wavy line represents the ρ meson, with a blue label \vec{k}^μ below it. It connects two vertices, each represented by a pink circle. From each vertex, two lines extend outwards, each ending in a question mark, representing unknown decay products. Above the left vertex, the text $J^P = 1^-$ is written. To the right of the diagram is a table listing the properties of the ρ meson.

Massive particle	
Pole residue:	$\frac{4907}{35937 c_1} > 0$
Polarisations:	3
Square mass:	$\frac{a_0}{33 c_1} > 0$
Spin:	1
Parity:	Odd

Quadratic pole	
Pole residue:	$-\frac{1}{a_0} > 0$
Polarisations:	2

Massive particle	
Pole residue:	$\frac{2}{7\tau_1} > 0$
Polarisations:	4
Square mass:	$\frac{a_0}{\tau_1} > 0$
Spin:	3
Parity:	Odd

The figure shows two Feynman diagrams for massive particle production and decay. The left diagram shows a massive particle (pink circle) decaying into two massless particles (green circles). The right diagram shows two massless particles (green circles) merging into a massive particle (pink circle). Both diagrams are labeled with $J^P = 0^-$ and \vec{k}^{μ} .