



	$\sigma_{0}^{\#1}$	$ au_{0}^{\#1}$	$ au_{0}^{\#2}$	$\sigma_{0}^{\#1}$
$\sigma_{0}^{\#1}$ †	$-\frac{4 \beta_2}{\alpha_0^2 + 2 \alpha_0 \beta_2 - 4 (\alpha_4 + \alpha_6) \beta_2 k^2}$	$\frac{i \sqrt{2} (\alpha_0 + 2 \beta_2)}{-\alpha_0 (\alpha_0 + 2 \beta_2) k + 4 (\alpha_4 + \alpha_6) \beta_2 k^3}$	0	0
$ au_{0}^{\#1}$ †		$\frac{\frac{\alpha_0}{2} + \beta_2 + (\alpha_4 + \alpha_6) k^2}{-\frac{1}{2} \alpha_0 (\alpha_0 + 2 \beta_2) k^2 + 2 (\alpha_4 + \alpha_6) \beta_2 k^4}$	0	0
$\tau_{0}^{\#2}$ †	0	0	0	0
$\sigma_0^{\sharp 1}$ †	0	0	0	$\frac{2}{\alpha_0+8\beta_3+2(\alpha_2+\alpha_3)k^2}$

	$\sigma^{\#1}_{2^+lphaeta}$	$ au_{2}^{\#1}{}_{lphaeta}$	$\sigma_{2}^{\#1}{}_{lphaeta\chi}$
$\sigma_{2}^{\sharp 1} \dagger^{lphaeta}$	$\frac{16 \beta_1}{-\alpha_0^2 + 4 \alpha_0 \beta_1 + 16 (\alpha_1 + \alpha_4) \beta_1 k^2}$	$\frac{2 i \sqrt{2} (\alpha_0 - 4 \beta_1)}{\alpha_0 (\alpha_0 - 4 \beta_1) k - 16 (\alpha_1 + \alpha_4) \beta_1 k^3}$	0
$ au_2^{\#1} \dagger^{lphaeta}$	$-\frac{2 i \sqrt{2} (\alpha_0 - 4 \beta_1)}{\alpha_0 (\alpha_0 - 4 \beta_1) k - 16 (\alpha_1 + \alpha_4) \beta_1 k^3}$	$\frac{2 (\alpha_0 - 4 (\beta_1 + (\alpha_1 + \alpha_4) k^2))}{k^2 (\alpha_0^2 - 4 \alpha_0 \beta_1 - 16 (\alpha_1 + \alpha_4) \beta_1 k^2)}$	0
$\sigma_{2}^{\#1}\dagger^{lphaeta\chi}$	0	0	$\frac{1}{-\frac{\alpha_0}{4}+\beta_1+(\alpha_1+\alpha_2)k^2}$

Total #:	$\tau_{1+}^{\#1\alpha\beta} + ik \sigma_{1+}^{\#2\alpha\beta} == 0$ 3	$ \tau_{1}^{\#1\alpha} == 0 $	$\tau_{1}^{\#2\alpha} + 2ik \sigma_{1}^{\#2\alpha} == 0$	$\tau_{0+}^{\#2} == 0$	SO(3) irreps	Source constraints
10	3	3	3	1	#	

f#2+	f ₀ ^{#1} †	$\omega_{0}^{#1} + \frac{\alpha_{0}}{2}$		0	$2 \beta_1 k^2$	
0	$\frac{i(\alpha_0+2\beta_2)k}{\sqrt{2}}$	$\omega_{0+}^{*1} + \left \frac{\alpha_0}{2} + \beta_2 + (\alpha_4 + \alpha_6) k^2 \right - \frac{i(\alpha_0 + 2\beta_2)k}{\sqrt{2}}$	$\omega_{0^+}^{\#1}$	$-\frac{\alpha_0}{4} + \beta_1 + (\alpha_1 + \alpha_2) k^2$	0	
0	$2 \beta_2 k^2$	$-\frac{i(\alpha_0+2\beta_2)k}{\sqrt{2}}$	$f_{0}^{#1}$	$(2) k^2$		
0	0	0	$f_{0}^{#2}$			

 $\omega_{0^{-}}^{#1}$

0

0

 $+ \beta_1 + (\alpha_1 + \alpha_4) k^2 \left| \frac{i(\alpha_0 - 4\beta_1)k}{2\sqrt{2}} \right|$

0

	$\omega_{1^{+}lphaeta}^{\sharp1}$	$\omega_{1^+lphaeta}^{\#2}$	$f_{1}^{\#1}{}_{\alpha\beta}$	$\omega_{1^{-}lpha}^{\sharp 1}$	$\omega_{1^{-}\ lpha}^{$ #2}	$f_{1-\alpha}^{\#1}$	$f_{1-\alpha}^{\#2}$
$\omega_{1}^{\sharp 1} \dagger^{\alpha \beta}$	$\frac{\alpha_0}{4} + \frac{1}{3} (\beta_1 + 8 \beta_3) + (\alpha_2 + \alpha_5) k^2$	$\frac{3 \alpha_0 - 4 \beta_1 + 16 \beta_3}{6 \sqrt{2}}$	$\frac{i (3 \alpha_0 - 4 \beta_1 + 16 \beta_3) k}{6 \sqrt{2}}$	0	0	0	0
$\omega_{1}^{\#2} \dagger^{\alpha\beta}$	$\frac{3 \alpha_0 - 4 \beta_1 + 16 \beta_3}{6 \sqrt{2}}$	$\frac{2}{3}\left(\beta_1+2\beta_3\right)$	$\frac{2}{3}i(\beta_1+2\beta_3)k$	0	0	0	0
$f_{1}^{#1} \dagger^{\alpha\beta}$	$-\frac{i(3\alpha_{0}-4\beta_{1}+16\beta_{3})k}{6\sqrt{2}}$	$-\frac{2}{3}\bar{i}\left(\beta_1+2\beta_3\right)k$	$\frac{2}{3}(\beta_1 + 2\beta_3)k^2$	0	0	0	0
$\omega_{1}^{\sharp_{1}}$ † lpha	0	0	0	$\frac{\alpha_0}{4} + \frac{1}{3} (\beta_1 + 2 \beta_2) + (\alpha_4 + \alpha_5) k^2$	$-\frac{3 \alpha_0 - 4 \beta_1 + 4 \beta_2}{6 \sqrt{2}}$	0	$-\frac{1}{6}i(3\alpha_0-4\beta_1+4\beta_2)k$
$\omega_1^{\#2} \dagger^{lpha}$	0	0	0	$-\frac{3 \alpha_0 - 4 \beta_1 + 4 \beta_2}{6 \sqrt{2}}$	$\frac{1}{3}\left(2\beta_1+\beta_2\right)$	0	$\frac{1}{3}i\sqrt{2}(2\beta_1+\beta_2)k$
$f_{1}^{#1} \dagger^{\alpha}$	0	0	0	0	0	0	0
$f_{1}^{#2} \dagger^{\alpha}$	0	0	0	$\frac{1}{6}$ \bar{i} (3 α_0 - 4 β_1 + 4 β_2) k	$-\frac{1}{3} \bar{l} \sqrt{2} (2 \beta_1 + \beta_2) k$	0	$\frac{2}{3}$ (2 $\beta_1 + \beta_2$) k^2

Parity: Even	Square mass: $\frac{3(\alpha_0-4\beta_1)(\alpha_0+8\beta_3)}{16(\alpha_2+\alpha_5)(\beta_1+2\beta_3)}$	Polarisations: 3	Pole residue: $(3 (\alpha_0^2 (3 \alpha_2 + 3 \alpha_5 + 2 \beta_1 + 4 \beta_3) - \alpha_5 + 2 \beta_1 + 4 \beta_3) - \alpha_5 (\beta_1^2 + \alpha_2 (\beta_1 - 4 \beta_3) + \alpha_5 (\beta_1 - 4 \beta_1 \beta_3) + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 - 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + 2 \beta_1 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + \alpha_2 + \alpha_2 (\beta_1^2 + 2 \beta_1 + 2 \beta_1 + \alpha_2 + \alpha$	Massive particle	. ?
	$\frac{3(\alpha_0 - 4\beta_1)(\alpha_0 + 8\beta_3)}{16(\alpha_2 + \alpha_5)(\beta_1 + 2\beta_3)} > 0$		$(3 (\alpha_0^2 (3 \alpha_2 + 3 \alpha_5 + 2 \beta_1 + 4 \beta_3) - (3 (\alpha_0^2 (3 \alpha_2 + 3 \alpha_5 + 2 \beta_1 + 4 \beta_3) - 4 \beta_3^2) + (3 (\alpha_0^2 (\beta_1^2 + \alpha_2 (\beta_1 - 4 \beta_3) + \alpha_5 (\beta_1 - 4 \beta_3) - 4 \beta_3^2) + (3 (\alpha_2^2 + \beta_3^2 (\beta_1^2 + 2 \beta_3) + \alpha_2 (\beta_1^2 + 8 \beta_3^2) + \alpha_5 (\beta_1^2 + 8 \beta_3^2)))))/$ $(2 (\alpha_2 + \alpha_5) (\beta_1 + 2 \beta_3) (3 \alpha_0^2 - 12 \alpha_0 (\beta_1 - 2 \beta_3) + (3 (\alpha_5 \beta_1 + 2 \alpha_5 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1 + 2 \beta_3)))) > 0$		

Parity:	Spin:	Square mass:	Polarisations:		Pole residue:	Massive particle		$\frac{1}{2}$	$^{?}$ $J^{P}=1$
Odd	1	$\frac{3(\alpha_0 - 4\beta_1)(\alpha_0 + 2\beta_2)}{8(\alpha_4 + \alpha_5)(2\beta_1 + \beta_2)} > 0$	3	$8 (-2 \beta_{1} \beta_{2} (2 \beta_{1} + \beta_{2}) + \alpha_{4} (2 \beta_{1}^{2} + \beta_{2}^{2}) + \alpha_{5} (2 \beta_{1}^{2} + \beta_{2}^{2}))))/$ $(2 (\alpha_{4} + \alpha_{5}) (2 \beta_{1} + \beta_{2}) (3 \alpha_{0}^{2} + 6 \alpha_{0} (-2 \beta_{1} + \beta_{2}) +$ $4 (2 \alpha_{5} \beta_{1} + \alpha_{5} \beta_{2} - 6 \beta_{1} \beta_{2} + \alpha_{4} (2 \beta_{1} + \beta_{2}))))) > 0$	$\begin{vmatrix} -((3(\alpha_0^2(3\alpha_4 + 3\alpha_5 + 4\beta_1 + 2\beta_2) + \\ 4\alpha_0(-2\alpha_4\beta_1 - 2\alpha_5\beta_1 - 4\beta_1^2 + 2\alpha_4\beta_2 + 2\alpha_5\beta_2 + \beta_2^2) + \end{vmatrix}$	е	?		· .

$ \begin{array}{cccccccccccccccccccccccccccccccccccc$?	$\frac{1}{k^{\mu}}$		$ \frac{1}{3} = \frac{1}{3} = \frac{1}{3} $
Parity:	Spin:	Square mass:	Polarisations:	Pole residue:	Massive particle		Parity:	Spin:	Square mass:	Polarisations:	Pole residue:
Even	2	$\frac{\alpha_0 (\alpha_0 - 4\beta_1)}{16 (\alpha_1 + \alpha_4) \beta_1} > 0$	5	$-\frac{2}{\alpha_0} + \frac{\alpha_1 + \alpha_4 + 2\beta_1}{2\alpha_1\beta_1 + 2\alpha_4\beta_1} > 0$	ric i		Even	0	$\frac{\alpha_0 (\alpha_0 + 2\beta_2)}{4 (\alpha_4 + \alpha_6) \beta_2} > 0$	1	$\frac{1}{\alpha_0} + \frac{\alpha_4 + \alpha_6 + 2\beta_2}{2\alpha_4\beta_2 + 2\alpha_6\beta_2} > 0$

Unitarity conditions
(Unitarity is demonstrably impossible)

$\frac{1}{2}$	$\int_{J} \int_{D} = 0$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$					
Square mass: Spin: Parity:	Massive particle Pole residue: - Polarisations: 1	Quadratic pole ? Pole residue: Polarisations:					
$-\frac{\alpha_0 + 8\beta_3}{2(\alpha_2 + \alpha_3)} > 0$ 0 Odd	$\begin{vmatrix} -\frac{1}{\alpha_2 + \alpha_3} > 0 \\ 1 \end{vmatrix}$	$\frac{1}{2} > 0$					
	Massive particle						

	Massive partic	le
? $J^P = 2^{-/}$	Pole residue:	$-\frac{1}{\alpha_1 + \alpha_2} > 0$
	Polarisations:	5
$\frac{\sqrt{k^{\mu}}}{k^{\mu}}$?	Square mass:	$\frac{\alpha_0 - 4\beta_1}{4(\alpha_1 + \alpha_2)} > 0$
?	Spin:	2
	Parity:	Odd