	$\sigma_{1^{+}lphaeta}^{\sharp1}$	$\sigma_{1^+lphaeta}^{\#2}$	$ au_{1}^{\#1}{}_{lphaeta}$	$\sigma_{1}^{\sharp 1}{}_{lpha}$	$\sigma_{1}^{\#2}{}_{lpha}$	$\tau_{1}^{\#1}{}_{\alpha}$	$ au_1^{\#2}\alpha$
$\sigma_{1}^{\sharp 1} \dagger^{lpha eta}$	$-\frac{\frac{1}{3(\alpha_0-4\beta_1)(\alpha_0+8\beta_3)}+(\alpha_2+\alpha_5)k^2}{16(\beta_1+2\beta_3)}$	$-\frac{2\sqrt{2}(3\alpha_{0}-4\beta_{1}+16\beta_{3})}{(1+k^{2})(-3(\alpha_{0}-4\beta_{1})(\alpha_{0}+8\beta_{3})+16(\alpha_{2}+\alpha_{5})(\beta_{1}+2\beta_{3})k^{2})}$	$-\frac{2 i \sqrt{2} (3 \alpha_0 - 4 \beta_1 + 16 \beta_3) k}{(1+k^2) (-3 (\alpha_0 - 4 \beta_1) (\alpha_0 + 8 \beta_3) + 16 (\alpha_2 + \alpha_5) (\beta_1 + 2 \beta_3) k^2)}$	0	0	0	0
$\sigma_{1+}^{\#2}\dagger^{lphaeta}$	$-\frac{2\sqrt{2}(3\alpha_{0}-4\beta_{1}+16\beta_{3})}{(1+k^{2})(-3(\alpha_{0}-4\beta_{1})(\alpha_{0}+8\beta_{3})+16(\alpha_{2}+\alpha_{5})(\beta_{1}+2\beta_{3})k^{2})}$	$\frac{6\alpha_{0} + 8(\beta_{1} + 8\beta_{3} + 3(\alpha_{2} + \alpha_{5})k^{2})}{(1 + k^{2})^{2}(-3(\alpha_{0} - 4\beta_{1})(\alpha_{0} + 8\beta_{3}) + 16(\alpha_{2} + \alpha_{5})(\beta_{1} + 2\beta_{3})k^{2})}$	$\frac{2 i k (3 \alpha_0+4 (\beta_1+8 \beta_3+3 (\alpha_2+\alpha_5) k^2))}{(1+k^2)^2 (-3 (\alpha_0-4 \beta_1) (\alpha_0+8 \beta_3)+16 (\alpha_2+\alpha_5) (\beta_1+2 \beta_3) k^2)}$	0	0	0	0
$ au_{1}^{\#1} \dagger^{lphaeta}$	$\frac{2 i \sqrt{2} (3 \alpha_0 - 4 \beta_1 + 16 \beta_3) k}{(1 + k^2) (-3 (\alpha_0 - 4 \beta_1) (\alpha_0 + 8 \beta_3) + 16 (\alpha_2 + \alpha_5) (\beta_1 + 2 \beta_3) k^2)}$	$-\frac{2ik(3\alpha_{0}+4(\beta_{1}+8\beta_{3}+3(\alpha_{2}+\alpha_{5})k^{2}))}{(1+k^{2})^{2}(-3(\alpha_{0}-4\beta_{1})(\alpha_{0}+8\beta_{3})+16(\alpha_{2}+\alpha_{5})(\beta_{1}+2\beta_{3})k^{2})}$	$\frac{2k^2(3\alpha_0+4(\beta_1+8\beta_3+3(\alpha_2+\alpha_5)k^2))}{(1+k^2)^2(-3(\alpha_0-4\beta_1)(\alpha_0+8\beta_3)+16(\alpha_2+\alpha_5)(\beta_1+2\beta_3)k^2)}$	0	0	0	0
$\sigma_{1}^{\sharp 1} \dagger^{lpha}$	0	0	0	$-\frac{\frac{1}{3(\alpha_0-4\beta_1)(\alpha_0+2\beta_2)}+(\alpha_4+\alpha_5)k^2}{8(2\beta_1+\beta_2)}$	$\frac{2\sqrt{2}(3\alpha_0-4\beta_1+4\beta_2)}{(1+2k^2)(-3(\alpha_0-4\beta_1)(\alpha_0+2\beta_2)+8(\alpha_4+\alpha_5)(2\beta_1+\beta_2)k^2)}$	0	$\frac{4i(3\alpha_{0}-4\beta_{1}+4\beta_{2})k}{(1+2k^{2})(-3(\alpha_{0}-4\beta_{1})(\alpha_{0}+2\beta_{2})+8(\alpha_{4}+\alpha_{5})(2\beta_{1}+\beta_{2})k^{2})}$
$\sigma_1^{\!\scriptscriptstyle \#2}\dagger^lpha$	0	0	0	$\frac{2\sqrt{2}(3\alpha_{0}-4\beta_{1}+4\beta_{2})}{(1+2k^{2})(-3(\alpha_{0}-4\beta_{1})(\alpha_{0}+2\beta_{2})+8(\alpha_{4}+\alpha_{5})(2\beta_{1}+\beta_{2})k^{2})}$	$\frac{6 \alpha_0 + 8 (\beta_1 + 2 \beta_2 + 3 (\alpha_4 + \alpha_5) k^2)}{(1 + 2 k^2)^2 (-3 (\alpha_0 - 4 \beta_1) (\alpha_0 + 2 \beta_2) + 8 (\alpha_4 + \alpha_5) (2 \beta_1 + \beta_2) k^2)}$	0	$\frac{2 i \sqrt{2} k (3 \alpha_0 + 4 (\beta_1 + 2 \beta_2 + 3 (\alpha_4 + \alpha_5) k^2))}{(1 + 2 k^2)^2 (-3 (\alpha_0 - 4 \beta_1) (\alpha_0 + 2 \beta_2) + 8 (\alpha_4 + \alpha_5) (2 \beta_1 + \beta_2) k^2)}$
$ au_{1}^{\#1} + ^{lpha}$	0	0	0	0	0	0	0
$\tau_1^{\#2} \uparrow^{\alpha}$	0	0	0	$-\frac{4 i (3 \alpha_{0}-4 \beta_{1}+4 \beta_{2}) k}{(1+2 k^{2}) (-3 (\alpha_{0}-4 \beta_{1}) (\alpha_{0}+2 \beta_{2})+8 (\alpha_{4}+\alpha_{5}) (2 \beta_{1}+\beta_{2}) k^{2})}$	$-\frac{2 i \sqrt{2} k (3 \alpha_0 + 4 (\beta_1 + 2 \beta_2 + 3 (\alpha_4 + \alpha_5) k^2))}{(1 + 2 k^2)^2 (-3 (\alpha_0 - 4 \beta_1) (\alpha_0 + 2 \beta_2) + 8 (\alpha_4 + \alpha_5) (2 \beta_1 + \beta_2) k^2)}$	0	$\frac{4 k^2 (3 \alpha_0 + 4 (\beta_1 + 2 \beta_2 + 3 (\alpha_4 + \alpha_5) k^2))}{(1 + 2 k^2)^2 (-3 (\alpha_0 - 4 \beta_1) (\alpha_0 + 2 \beta_2) + 8 (\alpha_4 + \alpha_5) (2 \beta_1 + \beta_2) k^2)}$

Lagrangian density $\frac{1}{2}\alpha_0 \omega_{\alpha\beta} \omega_{\alpha\beta} \omega_{\beta}^{SK} - \frac{1}{2}\alpha_0 \omega_{\alpha\beta} \omega_{\beta}^{SK} \times \frac{1}{2}\beta_1 \omega_{\alpha}^{CB} \omega_{\beta}^{K} \times \frac{1}{2}\beta_2 \omega_{\alpha}^{CB} \omega_{\beta}^{K} \times \frac{1}{2}\beta_3 \omega_{\alpha}^{CB} \omega_{\beta}^{K} \times \frac{1}{2}\beta_2 \omega_{\alpha}^{CB} \omega_{\beta}^{K} \times \frac{1}{2}\beta_3 \omega_{\alpha}^{CB} \omega_{\alpha}^{K} \times \frac{1}{2}\beta_3 \omega_{\alpha}^{CB} \omega_{\alpha}^{CB} \times \frac{1}{2}\beta_3 \omega_{\alpha}^{CB} \omega_{$
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	$\omega_{1^{+}lphaeta}^{\sharp1}$	$\omega_{1}^{\#2}{}_{lphaeta}$	$f_{1}^{\#1}{}_{\alpha\beta}$	$\omega_{1^{-}lpha}^{\sharp 1}$	$\omega_{1}^{ extstyle 2}{}_{lpha}$	$f_{1-\alpha}^{\#1}$	$f_{1-\alpha}^{\#2}$
$\omega_{1}^{\#1} \dagger^{lphaeta}$	$\frac{\alpha_0}{4} + \frac{1}{3} (\beta_1 + 8 \beta_3) + (\alpha_2 + \alpha_5) k^2$	$\frac{3 \alpha_0 - 4 \beta_1 + 16 \beta_3}{6 \sqrt{2}}$	$\frac{i(3\alpha_0-4\beta_1+16\beta_3)k}{6\sqrt{2}}$	0	0	0	0
$\omega_{1}^{\#2} \dagger^{lphaeta}$	$\frac{3 \alpha_0 - 4 \beta_1 + 16 \beta_3}{6 \sqrt{2}}$	$\frac{2}{3}\left(\beta_1+2\beta_3\right)$	$\frac{2}{3}i(\beta_1+2\beta_3)k$	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
$\omega_1^{\sharp 1} \dagger^{lpha}$	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	$-\frac{1}{6}i(3\alpha_0-4\beta_1+4\beta_2)k$
$\omega_{1}^{\#2} \dagger^{\alpha}$	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	$\frac{1}{3}\bar{i}\sqrt{2}\left(2\beta_1+\beta_2\right)k$
$f_{1}^{#1} \dagger^{\alpha}$	0	0	0	0	0	0	0
$f_{1}^{#2} \dagger^{\alpha}$	0	0	0	$\frac{1}{6}$ $i$ (3 $\alpha_0$ - 4 $\beta_1$ + 4 $\beta_2$ ) $k$	$-\frac{1}{3}i\sqrt{2}(2\beta_1+\beta_2)k$	0	$\frac{2}{3}$ (2 $\beta_1 + \beta_2$ ) $k^2$

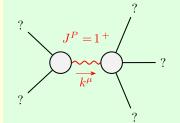
_	$\omega_0^{\sharp 1}$	$f_{0}^{#1}$	$f_{0}^{#2}$	$\omega_0^{\sharp 1}$
$\omega_{0}^{\#1}$ †	$\frac{\alpha_0}{2} + \beta_2 + (\alpha_4 + \alpha_6) k^2$	$-\frac{i(\alpha_0+2\beta_2)k}{\sqrt{2}}$	0	0
$f_{0}^{#1}$ †	$\frac{i(\alpha_0+2\beta_2)k}{\sqrt{2}}$	$2 \beta_2 k^2$	0	0
$f_{0}^{#2}$ †	0	0	0	0
$\omega_0^{\#1}$ †	0	0	0	$\frac{\alpha_0}{2}+4\beta_3+(\alpha_2+\alpha_3)k^2$

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

	$\sigma_{0}^{\sharp 1}$	$ au_{0}^{\#1}$	$\tau_0^{\#2}$	$\sigma_0^{\#1}$
$\sigma_{0^{+}}^{#1}$ †	$-\frac{4 \beta_2}{{\alpha_0}^2 + 2 \alpha_0 \beta_2 - 4 (\alpha_4 + \alpha_6) \beta_2 k^2}$	$\frac{i\sqrt{2}(\alpha_0 + 2\beta_2)}{-\alpha_0(\alpha_0 + 2\beta_2)k + 4(\alpha_4 + \alpha_6)\beta_2 k^3}$	0	0
$ au_{0}^{\#1}$ †	$\frac{i\sqrt{2}(\alpha_0+2\beta_2)}{\alpha_0(\alpha_0+2\beta_2)k-4(\alpha_4+\alpha_6)\beta_2k^3}$	$\frac{\frac{\alpha_0}{2} + \beta_2 + (\alpha_4 + \alpha_6) k^2}{\frac{1}{2} \alpha_0 (\alpha_0 + 2 \beta_2) k^2 + 2 (\alpha_4 + \alpha_6) \beta_2 k^4}$	0	0
$\tau_{0}^{\#2}$ †	0	0	0	0
$\sigma_{0}^{\#1}$ †	0	0	0	$\frac{2}{\alpha_0 + 8\beta_3 + 2(\alpha_2 + \alpha_3)k^2}$

	$\sigma_{2^{+}lphaeta}^{\sharp1}$	$ au_2^{\#1}_{lphaeta}$	$\sigma_{2}^{\sharp 1}{}_{lphaeta\chi}$
$\sigma_{2^+}^{\sharp 1} \dagger^{lphaeta}$	$\frac{16 \beta_1}{-\alpha_0^2 + 4 \alpha_0 \beta_1 + 16 (\alpha_1 + \alpha_4) \beta_1 k^2}$	$\frac{2 i \sqrt{2} (\alpha_0 - 4 \beta_1)}{\alpha_0 (\alpha_0 - 4 \beta_1) k - 16 (\alpha_1 + \alpha_4) \beta_1 k^3}$	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
$\sigma_2^{\sharp 1} \dagger^{lphaeta\chi}$	0	0	$\frac{1}{-\frac{\alpha_0}{4} + \beta_1 + (\alpha_1 + \alpha_2) k^2}$

	$\omega_{2^{+}lphaeta}^{\sharp1}$	$f_{2^{+}\alpha\beta}^{\#1}$	$\omega_{2^{-}lphaeta\chi}^{$ #1	
$\omega_{2}^{\#1} \dagger^{\alpha\beta}$	$-\frac{\alpha_0}{4} + \beta_1 + (\alpha_1 + \alpha_4) k^2$	$\frac{i(\alpha_0-4\beta_1)k}{2\sqrt{2}}$	0	
$f_{2+}^{\#1}\dagger^{\alpha\beta}$	2 V2	$2 \beta_1 k^2$	0	
$\omega_2^{\#1}$ † $^{lphaeta\chi}$	0	0	$-\frac{\alpha_0}{4}+\beta_1+(\alpha_1+\alpha_2)k^2$	



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Pole residue: $(3 (\alpha_0^2 (3 \alpha_2 + 3 \alpha_5 + 2 \beta_1 + 4 \beta_3))$	)
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 $8 \alpha_{0} (\beta_{1}^{2} + \alpha_{2} (\beta_{1} - 4 \beta_{3}) + \alpha_{5} (\beta_{1} - 4 \beta_{3}) - 4 \beta_{3}^{2}) + 16 (-4 \beta_{1} \beta_{3} (\beta_{1} + 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}) + \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}) + \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}) + \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}) + \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}) + \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}) + \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}) + \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}) + \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}) + \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}) + \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}) + \alpha_{5} (\beta_{1}^{2} + \beta_{1}^{2} +$ 

 $16 (\alpha_5 \beta_1 + 2 \alpha_5 \beta_3 - 6 \beta_1 \beta_3 + \alpha_2 (\beta_1 + 2 \beta_3)))) > 0$ 

## Polarisations: 3

 $\frac{3(\alpha_0 - 4\beta_1)(\alpha_0 + 8\beta_3)}{16(\alpha_2 + \alpha_5)(\beta_1 + 2\beta_3)} > 0$ Square mass:

Spin: Parity: Even

? $J^P = 1^-$
$ \stackrel{?}{\overrightarrow{k^{\mu}}} $

## Massive particle

Pole residue:  $-((3(\alpha_0^2(3\alpha_4 + 3\alpha_5 + 4\beta_1 + 2\beta_2) +$ 

 $4 \alpha_{0} (-2 \alpha_{4} \beta_{1} - 2 \alpha_{5} \beta_{1} - 4 \beta_{1}^{2} + 2 \alpha_{4} \beta_{2} + 2 \alpha_{5} \beta_{2} + \beta_{2}^{2}) +$  $8 (-2 \beta_{1} \beta_{2} (2 \beta_{1} + \beta_{2}) + \alpha_{4} (2 \beta_{1}^{2} + \beta_{2}^{2}) + \alpha_{5} (2 \beta_{1}^{2} + \beta_{2}^{2}))))/$  $(2 (\alpha_{4} + \alpha_{5}) (2 \beta_{1} + \beta_{2}) (3 \alpha_{0}^{2} + 6 \alpha_{0} (-2 \beta_{1} + \beta_{2}) +$  $4 (2 \alpha_5 \beta_1 + \alpha_5 \beta_2 - 6 \beta_1 \beta_2 + \alpha_4 (2 \beta_1 + \beta_2))))) > 0$ 

## Polarisations: 3

 $\frac{3(\alpha_0 - 4\beta_1)(\alpha_0 + 2\beta_2)}{8(\alpha_4 + \alpha_5)(2\beta_1 + \beta_2)} > 0$ Square mass:

Spin: Parity: Odd

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Parity:	Spin:	Square mass:	Polarisations: 5	Pole residue:	Massive particle
Even	2	$\frac{\alpha_0 (\alpha_0 - 4\beta_1)}{16 (\alpha_1 + \alpha_4) \beta_1} > 0$	5	$-\frac{2}{\alpha_0} + \frac{\alpha_1 + \alpha_4 + 2\beta_1}{2\alpha_1\beta_1 + 2\alpha_4\beta_1} > 0$	le

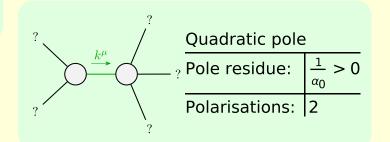
.7`	$k^{\mu}$		?	
Spin:	Square mass:	Polarisations:	Pole residue:	Massive particle
0	$\frac{\alpha_0}{4}$	1	$\frac{1}{\alpha_0}$	e

0+						
	.~) `			,		
Parity:	Spin:	Square mass:	Polarisations:	Pole residue:	Massive particle	
Even	0	$\frac{\alpha_0 (\alpha_0 + 2\beta_2)}{4 (\alpha_4 + \alpha_6)\beta_2} > 0$	1	$\frac{1}{\alpha_0} + \frac{\alpha_4 + \alpha_6 + 2\beta_2}{2\alpha_4\beta_2 + 2\alpha_6\beta_2} > 0$	e	

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? \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	=0-	_
		Po
$\frac{\sqrt{-\frac{1}{k}}}{k}$	?	Sc
?	\	_
	?	Sp
		Da

	Massive partic	particle	
? /	Pole residue:	$-\frac{1}{\alpha_2 + \alpha_3} > 0$	
$J^P = 0^-$	Polarisations:	1	
$\frac{1}{k^{\mu}}$ ?	Square mass:	$-\frac{\alpha_0+8\beta_3}{2(\alpha_2+\alpha_3)}>0$	
?	Spin:	0	
	Parity:	Odd	

	Massive particl	particle	
? /	Pole residue:	$-\frac{1}{\alpha_1+\alpha_2}$	
$J^P = 2^-$	Polarisations:	5	
?	Square mass:	$\frac{\alpha_0 - 4 \beta_1}{4 (\alpha_1 + \alpha_2)}$	
?	Spin:	2	
	Parity:	Odd	



Unitarity conditions

(Unitarity is demonstrably impossible)