



$$r_2 < 0 \&\& t_1 < 0$$

Massive particle	
Pole residue:	$-\frac{1}{r_2} > 0$
Polarisations:	1
Square mass:	$\frac{t_1}{r_2} > 0$
Spin:	0
Parity:	Odd

(No massless particles)

Lagrangian density

$$\begin{aligned}
 & -\frac{1}{3} t_1 \omega_{\lambda'}^{\alpha'} \omega_{\kappa\alpha}^{\kappa} - t_1 \omega_{\kappa\lambda}^{\kappa\lambda} \omega_{\lambda'}^{\prime} + f^{\alpha\beta} \tau_{\alpha\beta} + \omega^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} + \\
 & \frac{2}{3} r_2 \partial^\beta \omega_{\kappa}^{\theta\alpha} \partial_\theta \omega_{\alpha\beta}^{\kappa} - \frac{1}{3} r_2 \partial_\theta \omega_{\alpha\beta}^{\kappa} \partial_\kappa \omega^{\alpha\beta\theta} - \frac{2}{3} r_2 \partial_\theta \omega_{\alpha\beta}^{\kappa} \partial_\kappa \omega^{\theta\alpha\beta} - \\
 & \frac{1}{2} t_1 \partial^\alpha f_{\theta\kappa} \partial^\kappa f_{\alpha}^{\theta} - \frac{1}{2} t_1 \partial^\alpha f_{\kappa\theta} \partial^\kappa f_{\alpha}^{\theta} - \frac{1}{2} t_1 \partial^\alpha f_{\lambda}^{\theta} \partial^\kappa f_{\alpha}^{\theta} - \frac{1}{2} t_1 \partial^\alpha f_{\lambda}^{\theta} \partial^\kappa f_{\alpha}^{\theta} + \frac{1}{3} t_1 \omega_{\kappa\alpha}^{\alpha} \partial^\kappa f_{\lambda}^{\theta} + \\
 & \frac{1}{3} t_1 \omega_{\kappa\lambda}^{\lambda} \partial^\kappa f_{\lambda'}^{\prime} + \frac{2}{3} t_1 \partial^\alpha f_{\kappa\alpha} \partial^\kappa f_{\lambda'}^{\prime} - \frac{1}{3} t_1 \partial_\kappa f_{\lambda}^{\lambda} \partial^\kappa f_{\lambda'}^{\prime} + 2 t_1 \omega_{\kappa\theta} \partial^\kappa f_{\lambda}^{\theta} - \\
 & \frac{1}{3} t_1 \omega_{\lambda\alpha}^{\alpha} \partial^\kappa f_{\kappa}^{\theta} - \frac{1}{3} t_1 \omega_{\lambda\lambda}^{\lambda} \partial^\kappa f_{\kappa}^{\theta} + \frac{1}{2} t_1 \partial^\alpha f_{\lambda}^{\theta} \partial^\kappa f_{\alpha}^{\theta} + \frac{1}{2} t_1 \partial^\alpha f_{\lambda}^{\theta} \partial^\kappa f_{\alpha}^{\theta} + \\
 & \frac{1}{2} t_1 \partial_\kappa f_{\theta}^{\lambda} \partial^\kappa f_{\lambda}^{\theta} - \frac{1}{3} t_1 \partial^\alpha f_{\lambda}^{\theta} \partial^\kappa f_{\alpha}^{\theta} + \frac{1}{3} r_2 \partial_\kappa \omega^{\alpha\beta\theta} \partial^\kappa \omega_{\alpha\beta\theta} + \\
 & \frac{2}{3} r_2 \partial_\kappa \omega^{\theta\alpha\beta} \partial^\kappa \omega_{\alpha\beta\theta} - \frac{2}{3} r_2 \partial^\beta \omega_{\lambda'}^{\alpha\lambda} \partial_\lambda \omega_{\alpha\beta}^{\prime} + \frac{2}{3} r_2 \partial^\beta \omega_{\lambda'}^{\lambda\alpha} \partial_\lambda \omega_{\alpha\beta}^{\prime}
 \end{aligned}$$

$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#2} \omega_{1+}^{\alpha\beta}$	$f_{1+}^{\#1} \omega_{1+}^{\alpha\beta}$	$\omega_{1-}^{\#1} \omega_{1-}^{\alpha}$	$\omega_{1-}^{\#2} \omega_{1-}^{\alpha}$	$f_{1-}^{\#1} \omega_{1-}^{\alpha}$	$f_{1-}^{\#2} \omega_{1-}^{\alpha}$
$-\frac{t_1}{2}$	$-\frac{t_1}{\sqrt{2}}$	$-\frac{ikt_1}{\sqrt{2}}$	0	0	0	0
$-\frac{t_1}{\sqrt{2}}$	0	0	0	0	0	0
$\frac{ikt_1}{\sqrt{2}}$	0	0	0	0	0	0
0	0	0	$\frac{t_1}{6}$	$\frac{t_1}{3\sqrt{2}}$	0	$\frac{ikt_1}{3}$
0	0	0	$\frac{t_1}{3\sqrt{2}}$	$\frac{t_1}{3}$	0	$\frac{1}{3} i \sqrt{2} k t_1$
0	0	0	0	0	0	0
0	0	0	$-\frac{1}{3} i k t_1$	$-\frac{1}{3} i \sqrt{2} k t_1$	0	$\frac{2k^2 t_1}{3}$

	$\sigma_{2+}^{\#1} \alpha\beta$	$\tau_{2+}^{\#1} \alpha\beta$	$\sigma_{2-}^{\#1} \alpha\beta\chi$
$\sigma_{2+}^{\#1} \dagger^{\alpha\beta}$	$\frac{2}{(1+2k^2)^2 t_1}$	$-\frac{2i\sqrt{2}k}{(1+2k^2)^2 t_1}$	0
$\tau_{2+}^{\#1} \dagger^{\alpha\beta}$	$\frac{2i\sqrt{2}k}{(1+2k^2)^2 t_1}$	$\frac{4k^2}{(1+2k^2)^2 t_1}$	0
$\sigma_{2-}^{\#1} \dagger^{\alpha\beta\chi}$	0	0	$\frac{2}{t_1}$

Source constraints	
SO(3) irreps	#
$\tau_{0+}^{\#2} == 0$	1
$\tau_{0+}^{\#1} == 0$	1
$\sigma_{0+}^{\#1} == 0$	1
$\tau_{1-}^{\#2\alpha} + 2ik \sigma_{1-}^{\#1\alpha} == 0$	3
$\tau_{1-}^{\#1\alpha} == 0$	3
$\sigma_{1-}^{\#1\alpha} == \sigma_{1-}^{\#2\alpha}$	3
$\tau_{1+}^{\#1\alpha\beta} + ik \sigma_{1+}^{\#2\alpha\beta} == 0$	3
$\tau_{2+}^{\#1\alpha\beta} - 2ik \sigma_{2+}^{\#1\alpha\beta} == 0$	5
Total #:	20

$\omega_{2+}^{\#1} \alpha\beta$	$f_{2+}^{\#1} \omega_{2+}^{\alpha\beta}$	$\omega_{2-}^{\#1} \alpha\beta\chi$
$\frac{t_1}{2}$	$-\frac{ikt_1}{\sqrt{2}}$	0
$\frac{ikt_1}{\sqrt{2}}$	$k^2 t_1$	0
0	0	$\frac{t_1}{2}$

$\sigma_{0+}^{\#1} \dagger$	$\tau_{0+}^{\#1}$	$\tau_{0+}^{\#2}$	$\sigma_{0-}^{\#1}$
0	0	0	0
$\tau_{0+}^{\#1} \dagger$	0	0	0
$\tau_{0+}^{\#2} \dagger$	0	0	0
$\sigma_{0-}^{\#1} \dagger$	0	0	$\frac{1}{k^2 r_2 - t_1}$

$\omega_{0+}^{\#1} \dagger$	$f_{0+}^{\#1}$	$f_{0+}^{\#2}$	$\omega_{0-}^{\#1}$
0	0	0	0
$f_{0+}^{\#1} \dagger$	0	0	0
$f_{0+}^{\#2} \dagger$	0	0	0
$\omega_{0-}^{\#1} \dagger$	0	0	$k^2 r_2 - t_1$