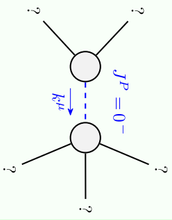
$r_2 < 0 \;\&\&\; t_2 > 0$



Massive particle	
Pole residue:	$-\frac{1}{r_2} > 0$
Polarisations:	1
Square mass:	$-\frac{t_2}{r_2} > 0$
Spin:	0
Parity:	Odd

(No massless particles)

Lagrangian density

$$
\begin{aligned}
&-\frac{1}{3} t_1\, \omega_{\iota}{}^{\alpha\iota}\, \omega_{\kappa\alpha}{}^{\kappa} - \frac{1}{3} t_1\, \omega_{\iota}{}^{\kappa\lambda}\, \omega_{\kappa\lambda}{}' + \frac{2}{3} t_2\, \omega_{\iota}{}^{\kappa\lambda}\, \omega_{\kappa\lambda}{}' + \frac{1}{3} t_1\, \omega_{\kappa\lambda}{}'\, \omega^{\kappa\lambda}{}_{\iota} + \\
&\frac{1}{3} t_2\, \omega_{\kappa\lambda}{}'\, \omega^{\kappa\lambda}{}_{\iota} + f^{\alpha\beta}\, \tau_{\alpha\beta} + \omega^{\alpha\beta\chi}\, \sigma_{\alpha\beta\chi} + \frac{2}{3} r_2\, \partial^{\beta}\omega^{\theta\alpha}{}_{\kappa}\, \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} + 4 r_3\, \partial_{\alpha}\omega_{\lambda}{}^{\alpha}{}_{\theta}\, \partial_{\kappa}\omega^{\theta\kappa\lambda} - \\
&4 r_3\, \partial_{\theta}\omega_{\lambda}{}^{\alpha}{}_{\alpha}\, \partial_{\kappa}\omega^{\theta\kappa\lambda} - \frac{1}{3} t_1\, \partial^{\alpha} f_{\theta\kappa}\, \partial^{\kappa} f_{\alpha}{}^{\theta} + \frac{1}{6} t_2\, \partial^{\alpha} f_{\theta\kappa}\, \partial^{\kappa} f_{\alpha}{}^{\theta} - \frac{2}{3} t_1\, \partial^{\alpha} f_{\kappa\theta}\, \partial^{\kappa} f_{\alpha}{}^{\theta} - \\
&\frac{1}{6} t_2\, \partial^{\alpha} f_{\kappa\theta}\, \partial^{\kappa} f_{\alpha}{}^{\theta} - \frac{1}{3} t_1\, \partial^{\alpha} f^{\lambda}{}_{\kappa}\, \partial^{\kappa} f_{\alpha\lambda} + \frac{1}{6} t_2\, \partial^{\alpha} f^{\lambda}{}_{\kappa}\, \partial^{\kappa} f_{\alpha\lambda} + \frac{1}{3} t_1\, \omega_{\kappa\alpha}{}^{\alpha}\, \partial^{\kappa} f'_{\iota} + \\
&\frac{1}{3} t_1\, \omega_{\kappa\lambda}{}^{\lambda}\, \partial^{\kappa} f'_{\iota} + \frac{2}{3} t_1\, \partial^{\alpha} f_{\kappa\alpha}\, \partial^{\kappa} f'_{\iota} - \frac{1}{3} t_1\, \partial_{\kappa} f^{\lambda}{}_{\lambda}\, \partial^{\kappa} f'_{\iota} + \frac{1}{3} t_1\, \omega_{\iota\theta\kappa}\, \partial^{\kappa} f'^{\theta} + \\
&\frac{1}{3} t_2\, \omega_{\iota\theta\kappa}\, \partial^{\kappa} f'^{\theta} + \frac{4}{3} t_1\, \omega_{\iota\kappa\theta}\, \partial^{\kappa} f'^{\theta} - \frac{2}{3} t_2\, \omega_{\iota\kappa\theta}\, \partial^{\kappa} f'^{\theta} - \frac{1}{3} t_1\, \omega_{\theta\iota\kappa}\, \partial^{\kappa} f'^{\theta} - \\
&\frac{1}{3} t_2\, \omega_{\theta\iota\kappa}\, \partial^{\kappa} f'^{\theta} + \frac{2}{3} t_1\, \omega_{\theta\kappa\iota}\, \partial^{\kappa} f'^{\theta} + \frac{2}{3} t_2\, \omega_{\theta\kappa\iota}\, \partial^{\kappa} f'^{\theta} - \frac{1}{3} t_1\, \omega_{\iota\alpha}{}^{\alpha}\, \partial^{\kappa} f'_{\kappa} - \\
&\frac{1}{3} t_1\, \omega_{\iota\lambda}{}^{\lambda}\, \partial^{\kappa} f'_{\kappa} + \frac{1}{3} t_1\, \partial^{\alpha} f^{\lambda}{}_{\kappa}\, \partial^{\kappa} f_{\lambda\alpha} - \frac{1}{6} t_2\, \partial^{\alpha} f^{\lambda}{}_{\kappa}\, \partial^{\kappa} f_{\lambda\alpha} + \frac{1}{3} t_1\, \partial_{\kappa} f_{\theta}{}^{\lambda}\, \partial^{\kappa} f_{\lambda}{}^{\theta} - \\
&\frac{1}{6} t_2\, \partial_{\kappa} f_{\theta}{}^{\lambda}\, \partial^{\kappa} f_{\lambda}{}^{\theta} + \frac{2}{3} t_1\, \partial_{\kappa} f^{\lambda}{}_{\theta}\, \partial^{\kappa} f_{\lambda}{}^{\theta} + \frac{1}{6} t_2\, \partial_{\kappa} f^{\lambda}{}_{\theta}\, \partial^{\kappa} f_{\lambda}{}^{\theta} - \frac{1}{3} t_1\, \partial^{\alpha} f^{\lambda}{}_{\alpha}\, \partial^{\kappa} f_{\lambda\kappa} + \\
&\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_{\iota}{}^{\alpha\lambda}\, \partial_{\lambda}\omega_{\alpha\beta}{}' + \\
&\frac{2}{3} r_2\, \partial^{\beta}\omega_{\iota}{}^{\lambda\alpha}\, \partial_{\lambda}\omega_{\alpha\beta}{}' - 4 r_3\, \partial^{\beta}\omega_{\iota}{}^{\lambda\alpha}\, \partial_{\lambda}\omega_{\alpha\beta}{}' - 4 r_3\, \partial_{\alpha}\omega_{\lambda}{}^{\alpha}{}_{\theta}\, \partial^{\lambda}\omega^{\theta\kappa}{}_{\kappa} + 4 r_3\, \partial_{\theta}\omega_{\lambda}{}^{\alpha}{}_{\alpha}\, \partial^{\lambda}\omega^{\theta\kappa}{}_{\kappa}
\end{aligned}
$$

	$\sigma^{\#1}_{1^+}{}_{\alpha\beta}$	$\sigma^{\#2}_{1^+}{}_{\alpha\beta}$	$\tau^{\#1}_{1^+}{}_{\alpha\beta}$	$\sigma^{\#1}_{1^-}{}_{\alpha}$	$\sigma^{\#2}_{1^-}{}_{\alpha}$	$\tau^{\#1}_{1^-}{}_{\alpha}$	$\tau^{\#2}_{1^-}{}_{\alpha}$
$\sigma^{\#1}_{1^+}{}^{\dagger\alpha\beta}$	$\frac{2(t_1+t_2)}{3 t_1 t_2}$	$\frac{\sqrt{2}(t_1-2t_2)}{3(1+k^2) t_1 t_2}$	$\frac{i\sqrt{2}\,k(t_1-2t_2)}{3(1+k^2) t_1 t_2}$	0	0	0	0
$\sigma^{\#2}_{1^+}{}^{\dagger\alpha\beta}$	$\frac{\sqrt{2}(t_1-2t_2)}{3(1+k^2) t_1 t_2}$	$\frac{t_1+4t_2}{3(1+k^2)^2 t_1 t_2}$	$\frac{i k(t_1+4t_2)}{3(1+k^2)^2 t_1 t_2}$	0	0	0	0
$\tau^{\#1}_{1^+}{}^{\dagger\alpha\beta}$	$-\frac{i\sqrt{2}\,k(t_1-2t_2)}{3(1+k^2) t_1 t_2}$	$-\frac{i k(t_1+4t_2)}{3(1+k^2)^2 t_1 t_2}$	$\frac{k^2(t_1+4t_2)}{3(1+k^2)^2 t_1 t_2}$	0	0	0	0
$\sigma^{\#1}_{1^-}{}^{\dagger\alpha}$	0	0	0	$\frac{6}{(3+4k^2)^2 t_1}$	$\frac{6\sqrt{2}}{(3+4k^2)^2 t_1}$	0	$\frac{12 i k}{(3+4k^2)^2 t_1}$
$\sigma^{\#2}_{1^-}{}^{\dagger\alpha}$	0	0	0	$\frac{6\sqrt{2}}{(3+4k^2)^2 t_1}$	$\frac{12}{(3+4k^2)^2 t_1}$	0	$\frac{12 i\sqrt{2}\,k}{(3+4k^2)^2 t_1}$
$\tau^{\#1}_{1^-}{}^{\dagger\alpha}$	0	0	0	0	0	0	0
$\tau^{\#2}_{1^-}{}^{\dagger\alpha}$	0	0	0	$-\frac{12 i k}{(3+4k^2)^2 t_1}$	$-\frac{12 i\sqrt{2}\,k}{(3+4k^2)^2 t_1}$	0	$\frac{24 k^2}{(3+4k^2)^2 t_1}$

	$\omega^{\#1}_{1^+}{}_{\alpha\beta}$	$\omega^{\#2}_{1^+}{}_{\alpha\beta}$	$f^{\#1}_{1^+}{}_{\alpha\beta}$	$\omega^{\#1}_{1^-}{}_{\alpha}$	$\omega^{\#2}_{1^-}{}_{\alpha}$	$f^{\#1}_{1^-}{}_{\alpha}$	$f^{\#2}_{1^-}{}_{\alpha}$
$\omega^{\#1}_{1^+}{}^{\dagger\alpha\beta}$	$\frac{1}{6}(t_1+4t_2)$	$-\frac{t_1-2t_2}{3\sqrt{2}}$	$-\frac{i k(t_1-2t_2)}{3\sqrt{2}}$	0	0	0	0
$\omega^{\#2}_{1^+}{}^{\dagger\alpha\beta}$	$-\frac{t_1-2t_2}{3\sqrt{2}}$	$\frac{t_1+t_2}{3}$	$\frac{1}{3} i k(t_1+t_2)$	0	0	0	0
$f^{\#1}_{1^+}{}^{\dagger\alpha\beta}$	$\frac{i k(t_1-2t_2)}{3\sqrt{2}}$	$-\frac{1}{3} i k(t_1+t_2)$	$\frac{1}{3} k^2(t_1+t_2)$	0	0	0	0
$\omega^{\#1}_{1^-}{}^{\dagger\alpha}$	0	0	0	$\frac{t_1}{6}$	$\frac{t_1}{3\sqrt{2}}$	0	$\frac{i k t_1}{3}$
$\omega^{\#2}_{1^-}{}^{\dagger\alpha}$	0	0	0	$\frac{t_1}{3\sqrt{2}}$	$\frac{t_1}{3}$	0	$\frac{1}{3} i\sqrt{2}\,k t_1$
$f^{\#1}_{1^-}{}^{\dagger\alpha}$	0	0	0	0	0	0	0
$f^{\#2}_{1^-}{}^{\dagger\alpha}$	0	0	0	$-\frac{1}{3} i k t_1$	$-\frac{1}{3} i\sqrt{2}\,k t_1$	0	$\frac{2 k^2 t_1}{3}$

Source constraints

SO(3) irreps	#
$\tau^{\#2}_{0^+} == 0$	1
$\tau^{\#1}_{0^+} == 0$	1
$\tau^{\#2\,\alpha}_{1^-} + 2 i k\, \sigma^{\#1\,\alpha}_{1^-} == 0$	3
$\tau^{\#1\,\alpha}_{1^-} == 0$	3
$\sigma^{\#1\,\alpha}_{1^-} == \sigma^{\#2\,\alpha}_{1^-}$	3
$\tau^{\#1\,\alpha\beta}_{1^+} + i k\, \sigma^{\#2\,\alpha\beta}_{1^+} == 0$	3
$\tau^{\#1\,\alpha\beta}_{2^+} - 2 i k\, \sigma^{\#1\,\alpha\beta}_{2^+} == 0$	5
Total #:	19

	$\sigma^{\#1}_{0^+}{}^{\dagger}$	$\tau^{\#2}_{0^+}{}^{\dagger}$	$\tau^{\#1}_{0^+}{}^{\dagger}$	$\sigma^{\#1}_{0^+}{}^{\dagger}$
$\sigma^{\#1}_{0^+}$	0	0	0	$\frac{1}{6 k^2 r_3}$
$\tau^{\#1}_{0^+}$	0	0	0	0
$\tau^{\#2}_{0^+}$	0	0	0	0
$\sigma^{\#1}_{0^-}$	$\frac{1}{k^2 r_2 + t_2}$	0	0	0

	$\omega^{\#1}_{2^+}{}_{\alpha\beta}$	$f^{\#1}_{2^+}{}_{\alpha\beta}$	$\omega^{\#1}_{2^-}{}_{\alpha\beta\chi}$
$\omega^{\#1}_{2^+}{}^{\dagger\alpha\beta}$	$\frac{t_1}{2}$	$-\frac{i k t_1}{\sqrt{2}}$	0
$f^{\#1}_{2^+}{}^{\dagger\alpha\beta}$	$\frac{i k t_1}{\sqrt{2}}$	$k^2 t_1$	0
$\omega^{\#1}_{2^-}{}^{\dagger\alpha\beta\chi}$	0	0	$\frac{t_1}{2}$

	$\omega^{\#1}_{0^+}$	$f^{\#1}_{0^+}$	$f^{\#2}_{0^+}$	$\omega^{\#1}_{0^-}$
$\omega^{\#1}_{0^+}{}^{\dagger}$	$6 k^2 r_3$	0	0	0
$f^{\#1}_{0^+}{}^{\dagger}$	0	0	0	0
$f^{\#2}_{0^+}{}^{\dagger}$	0	0	0	0
$\omega^{\#1}_{0^-}{}^{\dagger}$	0	0	0	$k^2 r_2 + t_2$

	$\sigma^{\#1}_{2^+}{}_{\alpha\beta}$	$\tau^{\#1}_{2^+}{}_{\alpha\beta}$	$\sigma^{\#1}_{2^-}{}_{\alpha\beta\chi}$
$\sigma^{\#1}_{2^+}{}^{\dagger\alpha\beta}$	$\frac{2}{(1+2k^2)^2 t_1}$	$-\frac{2 i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	0
$\tau^{\#1}_{2^+}{}^{\dagger\alpha\beta}$	$\frac{2 i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	$\frac{4k^2}{(1+2k^2)^2 t_1}$	0
$\sigma^{\#1}_{2^-}{}^{\dagger\alpha\beta\chi}$	0	0	$\frac{2}{t_1}$