



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{2}{3}t_2\omega_{\lambda'}^{\kappa\lambda}\omega_{\kappa\lambda}'+\frac{1}{3}t_2\omega_{\kappa\lambda}'\omega_{\kappa\lambda}^{\lambda'}-r_3\partial_{\lambda'}\omega_{\kappa}^{\kappa\lambda}\partial_{\lambda}\omega_{\lambda}^{\alpha}+\\ &\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\theta\beta}-\frac{2}{3}r_2\partial_{\theta}\omega_{\alpha\beta}^{\kappa}\partial_{\kappa}\omega^{\theta\alpha\beta}+\\ &3r_3\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\theta}\omega_{\theta}^{\theta\kappa\lambda}-3r_3\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega_{\alpha}^{\theta\kappa\lambda}-r_3\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega_{\theta}^{\kappa\lambda\theta}+\\ &2r_3\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega^{\kappa\lambda\theta}+\frac{1}{6}t_2\partial^{\alpha}f_{\theta\kappa}\partial_{\kappa}f_{\alpha}^{\theta}-\frac{1}{6}t_2\partial^{\alpha}f_{\kappa\theta}\partial_{\theta}f_{\alpha}^{\kappa}+\\ &\frac{1}{6}t_2\partial^{\alpha}f_{\kappa}^{\lambda}\partial_{\kappa}f_{\alpha\lambda}^{\lambda}+\frac{1}{3}t_2\omega_{\theta\kappa}\partial^{\kappa}f^{\theta\lambda}-\frac{2}{3}t_2\omega_{\lambda\theta\kappa}\partial^{\kappa}f^{\theta\lambda}-\\ &\frac{1}{3}t_2\omega_{\theta\lambda\kappa}\partial^{\kappa}f^{\theta\lambda}+\frac{2}{3}t_2\omega_{\theta\kappa\lambda}\partial^{\kappa}f^{\theta\lambda}-\frac{1}{6}t_2\partial^{\alpha}f_{\kappa}^{\lambda}\partial_{\lambda}f_{\alpha}^{\kappa}-\\ &\frac{1}{6}t_2\partial_{\kappa}f_{\theta}^{\lambda}\partial^{\kappa}f_{\lambda}^{\theta}+\frac{1}{6}t_2\partial_{\kappa}f_{\lambda}^{\lambda}\partial^{\kappa}f_{\theta}^{\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}^{'\lambda}+\frac{2}{3}r_2\partial^{\beta}\omega_{\lambda'}^{\lambda\alpha}\partial_{\lambda}\omega_{\alpha\beta}^{'\lambda}-\\ &4r_3\partial^{\beta}\omega_{\lambda'}^{\lambda\alpha}\partial_{\lambda}\omega_{\alpha\beta}^{'\lambda}-3r_3\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\theta}\omega_{\lambda}^{\theta\kappa}+3r_3\partial_{\theta}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\alpha}^{\theta\kappa}\end{aligned}$$

Added source term: $f^{\alpha\beta}\tau_{\alpha\beta}+\omega^{\alpha\beta\chi}\sigma_{\alpha\beta\chi}$

	$\sigma_{1+}^{\#1}+\alpha\beta$	$\sigma_{1+}^{\#2}+\alpha\beta$	$\tau_{1+}^{\#1}+\alpha\beta$	$\sigma_{1-}^{\#1}+\alpha$	$\sigma_{1-}^{\#2}+\alpha$	$\tau_{1-}^{\#1}+\alpha$	$\tau_{1-}^{\#2}+\alpha$
$\sigma_{1+}^{\#1}+\alpha\beta$	$\frac{1}{k^2r_3}$	$-\frac{\sqrt{2}}{k^2r_3+k^4r_3}$	$-\frac{i\sqrt{2}}{kr_3+k^3r_3}$	0	0	0	0
$\sigma_{1+}^{\#2}+\alpha\beta$	$-\frac{\sqrt{2}}{k^2r_3+k^4r_3}$	$\frac{3k^2r_3+2t_2}{(k+k^3)^2r_3t_2}$	$\frac{i(3k^2r_3+2t_2)}{k(1+k^2)^2r_3t_2}$	0	0	0	0
$\tau_{1+}^{\#1}+\alpha\beta$	$\frac{i\sqrt{2}}{kr_3+k^3r_3}$	$-\frac{i(3k^2r_3+2t_2)}{k(1+k^2)^2r_3t_2}$	$\frac{3k^2r_3+2t_2}{(1+k^2)^2r_3t_2}$	0	0	0	0
$\sigma_{1-}^{\#1}+\alpha$	0	0	0	$\frac{1}{k^2r_3}$	0	0	0
$\sigma_{1-}^{\#2}+\alpha$	0	0	0	0	0	0	0
$\tau_{1-}^{\#1}+\alpha$	0	0	0	0	0	0	0
$\tau_{1-}^{\#2}+\alpha$	0	0	0	0	0	0	0

	$\omega_{1+}^{\#1}+\alpha\beta$	$\omega_{1+}^{\#2}+\alpha\beta$	$f_{1+}^{\#1}+\alpha\beta$	$\omega_{1-}^{\#1}+\alpha$	$\omega_{1-}^{\#2}+\alpha$	$f_{1-}^{\#1}+\alpha$	$f_{1-}^{\#2}+\alpha$
$\omega_{1+}^{\#1}+\alpha\beta$	$k^2r_3+\frac{2t_2}{3}$	$\frac{\sqrt{2}t_2}{3}$	$\frac{1}{3}i\sqrt{2}kt_2$	0	0	0	0
$\omega_{1+}^{\#2}+\alpha\beta$	$\frac{\sqrt{2}t_2}{3}$	$\frac{t_2}{3}$	$\frac{ikt_2}{3}$	0	0	0	0
$f_{1+}^{\#1}+\alpha\beta$	$-\frac{1}{3}i\sqrt{2}kt_2$	$-\frac{1}{3}ikt_2$	$\frac{k^2t_2}{3}$	0	0	0	0
$\omega_{1-}^{\#1}+\alpha$	0	0	0	k^2r_3	0	0	0
$\omega_{1-}^{\#2}+\alpha$	0	0	0	0	0	0	0
$f_{1-}^{\#1}+\alpha$	0	0	0	0	0	0	0
$f_{1-}^{\#2}+\alpha$	0	0	0	0	0	0	0

Source constraints

SO(3) irreps	#
$\tau_{0+}^{\#2}==0$	1
$\tau_{0+}^{\#1}==0$	1
$\tau_{1-}^{\#2\alpha}==0$	3
$\tau_{1-}^{\#1\alpha}==0$	3
$\sigma_{1-}^{\#2\alpha}==0$	3
$\tau_{1+}^{\#1\alpha\beta}+ik\sigma_{1+}^{\#2\alpha\beta}==0$	3
$\sigma_{2-}^{\#1\alpha\beta\chi}==0$	5
$\tau_{2+}^{\#1\alpha\beta}==0$	5
$\sigma_{2+}^{\#1\alpha\beta}==0$	5
Total #:	29

	$\sigma_{0+}^{\#1}+$	$\tau_{0+}^{\#1}+$	$\tau_{0+}^{\#2}+$	$\sigma_{0-}^{\#1}+$
$\sigma_{0+}^{\#1}+$	$\frac{1}{6k^2r_3}$	0	0	0
$\tau_{0+}^{\#1}+$	0	0	0	0
$\tau_{0+}^{\#2}+$	0	0	0	0
$\sigma_{0-}^{\#1}+$	0	0	0	$\frac{1}{k^2r_2+t_2}$

	$\sigma_{2+}^{\#1}+\alpha\beta$	$\tau_{2+}^{\#1}+\alpha\beta$	$\sigma_{2-}^{\#1}+\alpha\beta\chi$
$\sigma_{2+}^{\#1}+\alpha\beta$	0	0	0
$\tau_{2+}^{\#1}+\alpha\beta$	0	0	0
$\sigma_{2-}^{\#1}+\alpha\beta\chi$	0	0	0

	$\omega_{0+}^{\#1}+f_{0+}^{\#1}$	$f_{0+}^{\#2}+$	$\omega_{0-}^{\#1}+$
$\omega_{0+}^{\#1}+$	$6k^2r_3$	0	0
$f_{0+}^{\#1}+$	0	0	0
$f_{0+}^{\#2}+$	0	0	0
$\omega_{0-}^{\#1}+$	0	0	$k^2r_2+t_2$

Unitarity conditions

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