



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

Unitarity conditions

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

Lagrangian density

$$\begin{aligned} &\frac{2}{3}t_2\omega_{\lambda'}^{\kappa\lambda}\omega_{\kappa\lambda}^{\prime}+\frac{1}{3}t_2\omega_{\kappa\lambda}^{\prime}\omega_{\lambda'}^{\kappa\lambda}+f^{\alpha\beta}\tau_{\alpha\beta}+\omega^{\alpha\beta\chi}\sigma_{\alpha\beta\chi}+2r_1\partial_{\lambda'}\omega_{\kappa}^{\kappa\lambda}\partial^{\prime}\omega_{\lambda}^{\alpha}- \\ &\frac{2}{3}r_1\partial^{\beta}\omega_{\kappa}^{\theta\alpha}\partial_{\theta}\omega_{\alpha\beta}^{\kappa}+\frac{2}{3}r_2\partial^{\beta}\omega_{\kappa}^{\theta\alpha}\partial_{\theta}\omega_{\alpha\beta}^{\kappa}-\frac{2}{3}r_1\partial_{\theta}\omega_{\alpha\beta}^{\kappa}\partial_{\kappa}\omega^{\theta\alpha\beta}-\frac{2}{3}r_2\partial_{\theta}\omega_{\alpha\beta}^{\kappa}\partial_{\kappa}\omega^{\theta\alpha\beta}+ \\ &2r_1\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega^{\theta\kappa\lambda}-2r_1\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\alpha}\omega_{\kappa}^{\theta\kappa\lambda}+2r_1\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega^{\kappa\lambda\theta}- \\ &4r_1\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega^{\kappa\lambda\theta}+\frac{1}{6}t_2\partial_2^{\alpha}f_{\theta\kappa}\partial^{\kappa}f_{\alpha}^{\theta}-\frac{1}{6}t_2\partial_2^{\alpha}f_{\kappa\theta}\partial^{\kappa}f_{\alpha}^{\theta}+\frac{1}{6}t_2\partial_2^{\alpha}f_{\lambda}^{\kappa}\partial^{\kappa}f_{\alpha}^{\lambda}+ \\ &\frac{1}{3}t_2\omega_{\theta\kappa}\partial^{\kappa}f^{\prime\theta}-\frac{2}{3}t_2\omega_{\iota\kappa\theta}\partial^{\kappa}f^{\prime\theta}-\frac{1}{3}t_2\omega_{\theta\iota\kappa}\partial^{\kappa}f^{\prime\theta}+\frac{2}{3}t_2\omega_{\theta\kappa\iota}\partial^{\kappa}f^{\prime\theta}- \\ &\frac{1}{6}t_2\partial^{\alpha}f_{\kappa}^{\lambda}\partial^{\kappa}f_{\lambda\alpha}^{\prime}-\frac{1}{6}t_2\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}r_1\partial_{\kappa}\omega^{\alpha\beta\theta}\partial^{\kappa}\omega_{\alpha\beta\theta}+ \\ &\frac{1}{3}r_2\partial_{\kappa}\omega^{\alpha\beta\theta}\partial^{\kappa}\omega_{\alpha\beta\theta}-\frac{2}{3}r_1\partial_{\kappa}\omega^{\theta\alpha\beta}\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_1\partial^{\beta}\omega_{\lambda'}^{\alpha\lambda}\partial_{\lambda}\omega_{\alpha\beta}^{\prime}-\frac{2}{3}r_2\partial^{\beta}\omega_{\lambda'}^{\alpha\lambda}\partial_{\lambda}\omega_{\alpha\beta}^{\prime}-\frac{8}{3}r_1\partial^{\beta}\omega_{\lambda'}^{\lambda\alpha}\partial_{\lambda}\omega_{\alpha\beta}^{\prime}+ \\ &\frac{2}{3}r_2\partial^{\beta}\omega_{\lambda'}^{\lambda\alpha}\partial_{\lambda}\omega_{\alpha\beta}^{\prime}-2r_1\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\theta}^{\theta\kappa}+2r_1\partial_{\theta}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\alpha}^{\theta\kappa} \end{aligned}$$

	$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#2} \dagger^{\alpha\beta}$	$f_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1-}^{\#1} \dagger^{\alpha}$	$\omega_{1-}^{\#2} \dagger^{\alpha}$	$f_{1-}^{\#1} \dagger^{\alpha}$	$f_{1-}^{\#2} \dagger^{\alpha}$
$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\frac{2t_2}{3}$	$\frac{\sqrt{2}t_2}{3}$	$\frac{1}{3}i\sqrt{2}kt_2$	0	0	0	0
$\omega_{1+}^{\#2} \dagger^{\alpha\beta}$	$\frac{\sqrt{2}t_2}{3}$	$\frac{t_2}{3}$	$\frac{ikt_2}{3}$	0	0	0	0
$f_{1+}^{\#1} \dagger^{\alpha\beta}$	$-\frac{1}{3}i\sqrt{2}kt_2$	$-\frac{1}{3}ikt_2$	$\frac{k^2t_2}{3}$	0	0	0	0
$\omega_{1-}^{\#1} \dagger^{\alpha}$	0	0	0	$-k^2r_1$	0	0	0
$\omega_{1-}^{\#2} \dagger^{\alpha}$	0	0	0	0	0	0	0
$f_{1-}^{\#1} \dagger^{\alpha}$	0	0	0	0	0	0	0
$f_{1-}^{\#2} \dagger^{\alpha}$	0	0	0	0	0	0	0

	$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#2} \dagger^{\alpha\beta}$	$\tau_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1-}^{\#1} \dagger^{\alpha}$	$\sigma_{1-}^{\#2} \dagger^{\alpha}$	$\tau_{1-}^{\#1} \dagger^{\alpha}$	$\tau_{1-}^{\#2} \dagger^{\alpha}$
$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\frac{6}{(3+k^2)^2t_2}$	$\frac{3i\sqrt{2}}{(3+k^2)^2t_2}$	$\frac{3i\sqrt{2}k}{(3+k^2)^2t_2}$	0	0	0	0
$\sigma_{1+}^{\#2} \dagger^{\alpha\beta}$	$\frac{3\sqrt{2}}{(3+k^2)^2t_2}$	$\frac{3}{(3+k^2)^2t_2}$	$\frac{3ik}{(3+k^2)^2t_2}$	0	0	0	0
$\tau_{1+}^{\#1} \dagger^{\alpha\beta}$	$-\frac{3i\sqrt{2}k}{(3+k^2)^2t_2}$	$-\frac{3ik}{(3+k^2)^2t_2}$	$\frac{3k^2}{(3+k^2)^2t_2}$	0	0	0	0
$\sigma_{1-}^{\#1} \dagger^{\alpha}$	0	0	0	$-\frac{1}{k^2r_1}$	0	0	0
$\sigma_{1-}^{\#2} \dagger^{\alpha}$	0	0	0	0	0	0	0
$\tau_{1-}^{\#1} \dagger^{\alpha}$	0	0	0	0	0	0	0
$\tau_{1-}^{\#2} \dagger^{\alpha}$	0	0	0	0	0	0	0

Source constraints	#
SO(3) irreps	
$\tau_{0+}^{\#2} == 0$	1
$\tau_{0+}^{\#1} == 0$	1
$\sigma_{0+}^{\#1} == 0$	1
$\tau_{1-}^{\#2\alpha} == 0$	3
$\tau_{1-}^{\#1\alpha} == 0$	3
$\sigma_{1-}^{\#2\alpha} == 0$	3
$\tau_{1+}^{\#1\alpha\beta} + ik\sigma_{1+}^{\#1\alpha\beta} == 0$	3
$\sigma_{1+}^{\#1\alpha\beta} == \sigma_{1+}^{\#2\alpha\beta}$	3
$\tau_{2+}^{\#1\alpha\beta} == 0$	5
$\sigma_{2+}^{\#1\alpha\beta} == 0$	5
Total #:	28

	$\omega_{0+}^{\#1} \dagger^{\alpha\beta}$	$f_{0+}^{\#1} \dagger^{\alpha\beta}$	$f_{0+}^{\#2} \dagger^{\alpha\beta}$	$\omega_{0-}^{\#1} \dagger^{\alpha\beta\chi}$
$\omega_{0+}^{\#1} \dagger^{\alpha\beta}$	0	0	0	0
$f_{0+}^{\#1} \dagger^{\alpha\beta}$	0	0	0	0
$f_{0+}^{\#2} \dagger^{\alpha\beta}$	0	0	0	0
$\omega_{0-}^{\#1} \dagger^{\alpha\beta\chi}$	0	0	0	$k^2r_2+t_2$

	$\sigma_{0+}^{\#1} \dagger^{\alpha\beta}$	$\tau_{0+}^{\#1} \dagger^{\alpha\beta}$	$\tau_{0+}^{\#2} \dagger^{\alpha\beta}$	$\sigma_{0-}^{\#1} \dagger^{\alpha\beta\chi}$
$\sigma_{0+}^{\#1} \dagger^{\alpha\beta}$	0	0	0	0
$\tau_{0+}^{\#1} \dagger^{\alpha\beta}$	0	0	0	0
$\tau_{0+}^{\#2} \dagger^{\alpha\beta}$	0	0	0	0
$\sigma_{0-}^{\#1} \dagger^{\alpha\beta\chi}$	0	0	0	$\frac{1}{k^2r_2+t_2}$

	$\omega_{2+}^{\#1} \dagger^{\alpha\beta}$	$f_{2+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{2-}^{\#1} \dagger^{\alpha\beta\chi}$
$\omega_{2+}^{\#1} \dagger^{\alpha\beta}$	0	0	0
$f_{2+}^{\#1} \dagger^{\alpha\beta}$	0	0	0
$\omega_{2-}^{\#1} \dagger^{\alpha\beta\chi}$	0	0	k^2r_1

	$\sigma_{2+}^{\#1} \dagger^{\alpha\beta}$	$\tau_{2+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{2-}^{\#1} \dagger^{\alpha\beta\chi}$
$\sigma_{2+}^{\#1} \dagger^{\alpha\beta}$	0	0	0
$\tau_{2+}^{\#1} \dagger^{\alpha\beta}$	0	0	0
$\sigma_{2-}^{\#1} \dagger^{\alpha\beta\chi}$	0	0	$\frac{1}{k^2r_1}$