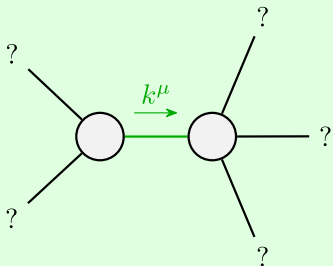


Massive particle

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



Quadratic pole

Pole residue:	$-\frac{1}{r_5 t_1^2} > 0$
Polarisations:	2

Unitarity conditions

$$r_2 < 0 \ \&\& \ r_5 < 0 \ \&\& \ t_1 < 0$$

$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#2}$	$\tau_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1-}^{\#1} \alpha$	$\sigma_{1-}^{\#2} \alpha$	$\tau_{1-}^{\#1} \alpha$	$\tau_{1-}^{\#2} \alpha$
0	$-\frac{\sqrt{2}}{t_1+k^2 t_1}$	$-\frac{i\sqrt{2}k}{t_1+k^2 t_1}$	0	0	0	0
$-\frac{\sqrt{2}}{t_1+k^2 t_1}$	$\frac{-2k^2 r_5+t_1}{(1+k^2)^2 t_1^2}$	$-\frac{i(2k^3 r_5-kt_1)}{(1+k^2)^2 t_1^2}$	0	0	0	0
$\frac{i\sqrt{2}k}{t_1+k^2 t_1}$	$\frac{i(2k^3 r_5-kt_1)}{(1+k^2)^2 t_1^2}$	$\frac{-2k^4 r_5+k^2 t_1}{(1+k^2)^2 t_1^2}$	0	0	0	0
0	0	0	$\frac{1}{k^2 r_5}$	$-\frac{1}{\sqrt{2}(k^2 r_5+2k^4 r_5)}$	0	$-\frac{i}{kr_5+2k^3 r_5}$
0	0	0	$-\frac{1}{\sqrt{2}(k^2 r_5+2k^4 r_5)}$	$\frac{6k^2 r_5+t_1}{2(k+2k^3)^2 r_5 t_1}$	0	$\frac{i(6k^2 r_5+t_1)}{\sqrt{2}k(1+2k^2)^2 r_5 t_1}$
0	0	0	0	0	0	0
0	0	0	$\frac{i}{kr_5+2k^3 r_5}$	$-\frac{i(6k^2 r_5+t_1)}{\sqrt{2}k(1+2k^2)^2 r_5 t_1}$	0	$\frac{6k^2 r_5+t_1}{(1+2k^2)^2 r_5 t_1}$

Lagrangian density

$$\begin{aligned}
 &-\frac{1}{3}t_1\omega_{\lambda'}^{\alpha\prime}\omega_{\kappa\alpha}^{\kappa}-t_1\omega_{\kappa\lambda}^{\kappa}\omega_{\lambda'}^{\prime}-r_5\partial_{\mu}\omega_{\kappa}^{\kappa\lambda}\partial^{\prime}\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\beta}^{\theta}-\frac{2}{3}r_2\partial_{\theta}\omega_{\alpha\beta}^{\kappa}\partial_{\kappa}\omega_{\alpha\beta}^{\theta\alpha}-r_5\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\theta}\omega^{\theta\kappa\lambda}+ \\
 &r_5\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\alpha}\omega^{\theta\kappa\lambda}-r_5\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\theta}\omega_{\kappa}^{\kappa\lambda\theta}+2r_5\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\alpha}\omega^{\kappa\lambda\theta}- \\
 &\frac{1}{2}t_1\partial^{\alpha}f_{\theta\kappa}^{\kappa}\partial_{\kappa}f_{\alpha}^{\theta}-\frac{1}{2}t_1\partial^{\alpha}f_{\kappa\theta}^{\kappa}\partial_{\theta}f_{\alpha}^{\theta}-\frac{1}{2}t_1\partial^{\alpha}f_{\lambda}^{\lambda}\partial_{\kappa}f_{\alpha\lambda}^{\kappa}+ \\
 &\frac{1}{3}t_1\omega_{\kappa\alpha}^{\alpha}\partial^{\kappa}f_{\lambda'}^{\prime}+\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}+ \\
 &2t_1\omega_{\lambda\kappa\theta}\partial^{\kappa}f_{\lambda'}^{\theta}-\frac{1}{3}t_1\omega_{\lambda'\alpha}^{\alpha}\partial^{\kappa}f_{\kappa}^{\prime}-\frac{1}{3}t_1\omega_{\lambda'}^{\lambda}\partial^{\kappa}f_{\kappa}^{\prime}+\frac{1}{2}t_1\partial^{\alpha}f_{\lambda}^{\lambda}\partial_{\kappa}f_{\alpha\lambda}^{\kappa}+ \\
 &\frac{1}{2}t_1\partial_{\kappa}f_{\theta}^{\lambda}\partial^{\kappa}f_{\lambda}^{\theta}+\frac{1}{2}t_1\partial_{\kappa}f_{\lambda}^{\lambda}\partial^{\kappa}f_{\theta}^{\theta}-\frac{1}{3}t_1\partial^{\alpha}f_{\lambda}^{\lambda}\partial_{\alpha}^{\kappa}f_{\lambda\kappa}^{\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_{\alpha\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}+r_5\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\theta}^{\theta\kappa}-r_5\partial_{\theta}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\alpha}^{\theta\kappa}
 \end{aligned}$$

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

$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#2}$	$f_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1-}^{\#1} \alpha$	$\omega_{1-}^{\#2} \alpha$	$f_{1-}^{\#1} \alpha$	$f_{1-}^{\#2} \alpha$
$k^2 r_5 - \frac{t_1}{2}$	$-\frac{t_1}{\sqrt{2}}$	$-\frac{ikt_1}{\sqrt{2}}$	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	$k^2 r_5 + \frac{t_1}{6}$	$\frac{t_1}{3\sqrt{2}}$	0	$\frac{ikt_1}{3}$
0	0	0	$\frac{t_1}{3\sqrt{2}}$	$\frac{t_1}{3}$	0	$\frac{1}{3}i\sqrt{2}kt_1$
0	0	0	0	0	0	0
0	0	0	$-\frac{1}{3}ikt_1$	$-\frac{1}{3}i\sqrt{2}kt_1$	0	$\frac{2k^2 t_1}{3}$

Source constraints

SO(3) irreps	#
$\tau_{0+}^{\#2} == 0$	1
$\tau_{0+}^{\#1} == 0$	1
$\sigma_{0+}^{\#1} == 0$	1
$\tau_{1-}^{\#2\alpha} + 2ik\sigma_{1-}^{\#2\alpha} == 0$	3
$\tau_{1-}^{\#1\alpha} == 0$	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 #:	17

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

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

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

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