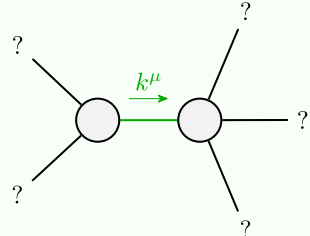


Massive particle	
Pole residue:	$-\frac{1}{r_2} > 0$
Polarisations:	1
Square mass:	$-\frac{t_2}{r_2} > 0$
Spin:	0
Parity:	Odd



Quadratic pole	
Pole residue:	$-\frac{1}{r_3(2r_3+r_5)(r_3+2r_5)p^2} > 0$
Polarisations:	2

$$r_2 < 0 \&\& r_3 < 0 \&\& r_5 < -\frac{r_3}{2} \&\& t_2 > 0 \parallel r_2 < 0 \&\& r_3 < 0 \&\& r_5 > -2r_3 \&\& t_2 > 0 \parallel r_2 < 0 \&\& r_3 > 0 \&\& -2r_3 < r_5 < -\frac{r_3}{2} \&\& t_2 > 0$$

$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#2} \dagger^{\alpha\beta}$	$\tau_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#1} \dagger^{\alpha}$	$\sigma_{1+}^{\#2} \dagger^{\alpha}$	$\tau_{1+}^{\#1} \dagger^{\alpha}$	$\tau_{1+}^{\#2} \dagger^{\alpha}$
$\frac{1}{k^2(2r_3+r_5)}$	$-\frac{\sqrt{2}}{k^2(1+k^2)(2r_3+r_5)}$	$-\frac{i\sqrt{2}}{k(1+k^2)(2r_3+r_5)}$	0	0	0	0
$-\frac{\sqrt{2}}{k^2(1+k^2)(2r_3+r_5)}$	$\frac{3k^2(2r_3+r_5)+2t_2}{(k+k^3)^2(2r_3+r_5)t_2}$	$\frac{i(3k^2(2r_3+r_5)+2t_2)}{k(1+k^2)^2(2r_3+r_5)t_2}$	0	0	0	0
$\frac{i\sqrt{2}}{k(1+k^2)(2r_3+r_5)}$	$-\frac{i(3k^2(2r_3+r_5)+2t_2)}{k(1+k^2)^2(2r_3+r_5)t_2}$	$\frac{3k^2(2r_3+r_5)+2t_2}{(1+k^2)^2(2r_3+r_5)t_2}$	0	0	0	0
0	0	0	$\frac{2}{k^2(r_3+2r_5)}$	$\frac{2\sqrt{2}}{k^2(1+2k^2)(r_3+2r_5)}$	0	$\frac{4i}{k(1+2k^2)(r_3+2r_5)}$
0	0	0	0	$\frac{3k^2(r_3+2r_5)+4t_3}{(k+2k^3)^2(r_3+2r_5)t_3}$	0	$\frac{i\sqrt{2}(3k^2(r_3+2r_5)+4t_3)}{k(1+2k^2)^2(r_3+2r_5)t_3}$
0	0	0	0	0	0	0
0	0	0	$-\frac{4i}{k(1+2k^2)(r_3+2r_5)}$	$-\frac{i\sqrt{2}(3k^2(r_3+2r_5)+4t_3)}{k(1+2k^2)^2(r_3+2r_5)t_3}$	0	$\frac{6k^2(r_3+2r_5)+8t_3}{(1+2k^2)^2(r_3+2r_5)t_3}$

Lagrangian density

$$\begin{aligned} & \frac{2}{3}t_3\omega_{\lambda'}^{\alpha\prime}\omega_{\kappa\alpha}^{\kappa}+\frac{2}{3}t_2\omega_{\kappa\lambda'}^{\kappa\lambda}\omega_{\lambda'}^{\prime}+\frac{1}{3}t_2\omega_{\kappa\lambda'}^{\prime}\omega_{\kappa\lambda}^{\prime\prime}\omega_{\alpha\beta}^{\tau}+f^{\alpha\beta}\tau_{\alpha\beta}+ \\ & \omega^{\alpha\beta\chi}\sigma_{\alpha\beta\chi}^{\#1}-\frac{1}{2}r_3\partial_{\lambda}\omega_{\kappa}^{\kappa\lambda}\partial^{\prime}\omega_{\lambda\alpha}^{\alpha}-r_5\partial_{\lambda}\omega_{\kappa}^{\kappa\lambda}\partial^{\prime}\omega_{\lambda\alpha}^{\alpha}+\frac{2}{3}r_2\partial_{\theta}^{\beta}\omega_{\alpha}^{\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\kappa\lambda}-\frac{2}{3}r_2\partial_{\theta}\omega_{\alpha\beta}^{\kappa}\partial_{\kappa}\omega_{\alpha\beta}^{\theta\alpha\beta}+\frac{1}{2}r_3\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega^{\theta\kappa\lambda}- \\ & r_5\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega_{\alpha}^{\theta\kappa\lambda}+r_5\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega_{\alpha}^{\kappa\lambda\theta}+2r_5\partial_{\theta}\omega_{\lambda}^{\alpha}\partial_{\kappa}\omega_{\alpha}^{\kappa\lambda\theta}+ \\ & \frac{1}{6}t_2\partial^{\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^{\alpha}f_{\lambda}^{\lambda}\partial^{\kappa}f_{\alpha\lambda}^{\prime}-\frac{2}{3}t_3\omega_{\kappa\alpha}^{\alpha}\partial^{\kappa}f_{\lambda}^{\prime}- \\ & \frac{2}{3}t_3\omega_{\kappa\lambda}^{\lambda}\partial^{\kappa}f_{\lambda}^{\prime}-\frac{4}{3}t_3\partial^{\alpha}f_{\kappa\alpha}\partial^{\kappa}f_{\lambda}^{\prime}+\frac{2}{3}t_3\partial_{\kappa}f_{\lambda}^{\lambda}\partial^{\kappa}f_{\lambda}^{\prime}+\frac{1}{3}t_2\omega_{\theta\kappa}\partial^{\kappa}f_{\theta}^{\prime}- \\ & \frac{2}{3}t_2\omega_{\lambda\kappa\theta}\partial^{\kappa}f_{\theta}^{\prime}-\frac{1}{3}t_2\omega_{\theta\lambda\kappa}\partial^{\kappa}f_{\theta}^{\prime}+\frac{2}{3}t_2\omega_{\theta\kappa\lambda}\partial^{\kappa}f_{\theta}^{\prime}+\frac{2}{3}t_3\omega_{\lambda\alpha}^{\alpha}\partial^{\kappa}f_{\lambda}^{\prime}+ \\ & \frac{2}{3}t_3\omega_{\lambda\lambda}^{\lambda}\partial^{\kappa}f_{\lambda}^{\prime}-\frac{1}{6}t_2\partial^{\alpha}f_{\lambda}^{\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}t_3\partial^{\alpha}f_{\alpha}^{\lambda}\partial^{\kappa}f_{\lambda\kappa}^{\prime}+\frac{1}{3}r_2\partial_{\kappa}\omega_{\alpha}^{\alpha\beta\theta}\partial^{\kappa}\omega_{\alpha\beta\theta}^{\prime}+\frac{2}{3}r_2\partial_{\kappa}\omega_{\alpha}^{\theta\alpha\beta}\partial^{\kappa}\omega_{\alpha\beta\theta}^{\prime}- \\ & \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}-4r_3\partial^{\beta}\omega_{\lambda}^{\lambda\alpha}\partial_{\lambda}\omega_{\alpha\beta}^{\prime}- \\ & \frac{1}{2}r_3\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\theta}^{\theta\kappa}+r_5\partial_{\alpha}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\theta}^{\theta\kappa}+\frac{1}{2}r_3\partial_{\theta}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\kappa}^{\theta\kappa}-r_5\partial_{\theta}\omega_{\lambda}^{\alpha}\partial^{\lambda}\omega_{\kappa}^{\theta\kappa} \end{aligned}$$

$\sigma_{0+}^{\#1} \dagger$	$\tau_{0+}^{\#1} \dagger$	$\tau_{0+}^{\#2} \dagger$	$\sigma_{0+}^{\#1} \dagger$
$\frac{1}{(1+2k^2)^2t_3}$	$-\frac{i\sqrt{2}k}{(1+2k^2)^2t_3}$	0	0
$\frac{i\sqrt{2}k}{(1+2k^2)^2t_3}$	$\frac{2k^2}{(1+2k^2)^2t_3}$	0	0
0	0	0	0
0	0	0	$\frac{1}{k^2r_2+t_2}$

$\omega_{2+}^{\#1} \dagger^{\alpha\beta}$	$f_{2+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{2+}^{\#1} \dagger^{\alpha\beta\chi}$
$-\frac{3k^2r_3}{2}$	0	0
0	0	0
0	0	0

$\omega_{0+}^{\#1} \dagger$	$f_{0+}^{\#1} \dagger$	$f_{0+}^{\#2} \dagger$	$\omega_{0+}^{\#1} \dagger$
t_3	$-i\sqrt{2}kt_3$	0	0
$i\sqrt{2}kt_3$	$2k^2t_3$	0	0
0	0	0	0
0	0	0	$k^2r_2+t_2$

Source constraints		#
SO(3) irreps		
$\tau_{0+}^{\#2} == 0$		1
$\tau_{0+}^{\#1} - 2ik\sigma_{0+}^{\#1} == 0$		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
$\sigma_{2-}^{\#1\alpha\beta\chi} == 0$		5
$\tau_{2+}^{\#1\alpha\beta} == 0$		5
Total #:		21

$\sigma_{2+}^{\#1} \dagger^{\alpha\beta}$	$\tau_{2+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{2+}^{\#1} \dagger^{\alpha\beta\chi}$
$-\frac{2}{3k^2r_3}$	0	0
0	0	0
0	0	0

	$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#2} \dagger^{\alpha\beta}$	$f_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#1} \dagger^{\alpha}$	$\omega_{1+}^{\#2} \dagger^{\alpha}$	$f_{1+}^{\#1} \dagger^{\alpha}$	$f_{1+}^{\#2} \dagger^{\alpha}$
$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$k^2(2r_3+r_5)+\frac{2t_2}{3}$	$\frac{\sqrt{2}t_2}{3}$	$\frac{1}{3}i\sqrt{2}kt_2$	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	$k^2(\frac{r_3}{2}+r_5)+\frac{2t_3}{3}$	$-\frac{\sqrt{2}t_3}{3}$	0	$-\frac{2}{3}ikt_3$
$\omega_{1+}^{\#2} \dagger^{\alpha}$	0	0	0	$-\frac{\sqrt{2}t_3}{3}$	$\frac{t_3}{3}$	0	$\frac{1}{3}i\sqrt{2}kt_3$
$f_{1+}^{\#1} \dagger^{\alpha}$	0	0	0	0	0	0	0
$f_{1+}^{\#2} \dagger^{\alpha}$	0	0	0	$\frac{2ikt_3}{3}$	$-\frac{1}{3}i\sqrt{2}kt_3$	0	$\frac{2k^2t_3}{3}$