



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

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

(No massless particles)

$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#2}$	$\tau_{1+}^{\#1} \alpha\beta$	$\sigma_{1-}^{\#1} \alpha$	$\sigma_{1-}^{\#2} \alpha$	$\tau_{1-}^{\#1} \alpha$	$\tau_{1-}^{\#2} \alpha$
$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	0	$-\frac{\sqrt{2}}{t_1+k^2}t_1$	$-\frac{i\sqrt{2}k}{t_1+k^2}t_1$	0	0	0
$\sigma_{1+}^{\#2} \dagger^{\alpha\beta}$	$-\frac{\sqrt{2}}{t_1+k^2}t_1$	$\frac{1}{(1+k^2)^2}t_1$	$\frac{ik}{(1+k^2)^2}t_1$	0	0	0
$\tau_{1+}^{\#1} \dagger^{\alpha\beta}$	$\frac{i\sqrt{2}k}{t_1+k^2}t_1$	$-\frac{ik}{(1+k^2)^2}t_1$	$-\frac{k^2}{(1+k^2)^2}t_1$	0	0	0
$\sigma_{1-}^{\#1} \dagger^\alpha$	0	0	$\frac{2(t_1+t_3)}{3t_1t_3}$	$-\frac{\sqrt{2}(t_1-2t_3)}{3(1+2k^2)}t_1t_3$	0	$-\frac{2ikt_1-4ikt_3}{3t_1t_3+6k^2}t_1t_3$
$\sigma_{1-}^{\#2} \dagger^\alpha$	0	0	$-\frac{\sqrt{2}(t_1-2t_3)}{3(1+2k^2)}t_1t_3$	$\frac{t_1+4t_3}{3(1+2k^2)^2}t_1t_3$	0	$\frac{i\sqrt{2}k(t_1+4t_3)}{3(1+2k^2)^2}t_1t_3$
$\tau_{1-}^{\#1} \dagger^\alpha$	0	0	0	0	0	0
$\tau_{1-}^{\#2} \dagger^\alpha$	0	0	$\frac{2ikt_1-4ikt_3}{3t_1t_3+6k^2}t_1t_3$	$-\frac{i\sqrt{2}k(t_1+4t_3)}{3(1+2k^2)^2}t_1t_3$	0	$\frac{2k^2(t_1+4t_3)}{3(1+2k^2)^2}t_1t_3$

$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#2}$	$f_{1+}^{\#1} \alpha\beta$	$\omega_{1-}^{\#1} \alpha$	$\omega_{1-}^{\#2} \alpha$	$f_{1-}^{\#1} \alpha$	$f_{1-}^{\#2} \alpha$
$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$-\frac{t_1}{2}$	$-\frac{ikt_1}{\sqrt{2}}$	0	0	0	0
$\omega_{1+}^{\#2} \dagger^{\alpha\beta}$	$-\frac{t_1}{\sqrt{2}}$	0	0	0	0	0
$f_{1+}^{\#1} \dagger^{\alpha\beta}$	$\frac{ikt_1}{\sqrt{2}}$	0	0	0	0	0
$\omega_{1-}^{\#1} \dagger^\alpha$	0	0	$\frac{1}{6}(t_1+4t_3)$	$\frac{t_1-2t_3}{3\sqrt{2}}$	0	$\frac{1}{3}i k(t_1-2t_3)$
$\omega_{1-}^{\#2} \dagger^\alpha$	0	0	$\frac{t_1-2t_3}{3\sqrt{2}}$	$\frac{t_1+t_3}{3}$	0	$\frac{1}{3}i\sqrt{2}k(t_1+t_3)$
$f_{1-}^{\#1} \dagger^\alpha$	0	0	0	0	0	0
$f_{1-}^{\#2} \dagger^\alpha$	0	0	$-\frac{1}{3}i k(t_1-2t_3)$	$-\frac{1}{3}i\sqrt{2}k(t_1+t_3)$	0	$\frac{2}{3}k^2(t_1+t_3)$

Lagrangian density

$$\begin{aligned}
 &-\frac{1}{3}t_1\omega_{\kappa\alpha}^{\prime\prime}\omega_{\kappa\alpha}^{\prime\prime}+\frac{2}{3}t_3\omega_{\kappa\alpha}^{\prime\prime}\omega_{\kappa\alpha}^{\prime\prime}-t_1\omega_{\kappa\alpha}^{\prime\prime}\omega_{\kappa\alpha}^{\prime\prime}+\omega_{\kappa\alpha}^{\prime\prime}\omega_{\kappa\alpha}^{\prime\prime} \\
 &f_{\alpha\beta}^{\alpha\beta}\tau_{\alpha\beta}+\omega_{\alpha\beta\chi}^{\alpha\beta}\sigma_{\alpha\beta\chi}+\frac{2}{3}r_2\partial^\beta\omega_{\alpha\beta}^{\theta\alpha}\partial_\theta\omega_{\alpha\beta}^{\theta\alpha}-\frac{1}{3}r_2\partial_\theta\omega_{\alpha\beta}^{\theta\alpha}\partial_\kappa\omega_{\alpha\beta}^{\theta\alpha} \\
 &\frac{2}{3}r_2\partial_\theta\omega_{\alpha\beta}^{\theta\alpha}\partial_\kappa\omega_{\alpha\beta}^{\theta\alpha}-\frac{1}{2}t_1\partial^\alpha f_{\theta\kappa}^{\alpha\beta}\partial^\kappa f_{\alpha}^{\theta}-\frac{1}{2}t_1\partial^\alpha f_{\kappa\theta}^{\alpha\beta}\partial^\kappa f_{\alpha}^{\theta}-\frac{1}{2}t_1\partial^\alpha f_{\alpha}^{\theta}\partial^\kappa f_{\kappa}^{\theta} \\
 &\frac{1}{3}t_1\omega_{\kappa\alpha}^{\alpha}\partial^\kappa f_{\prime}^{\prime}-\frac{2}{3}t_3\omega_{\kappa\alpha}^{\alpha}\partial^\kappa f_{\prime}^{\prime}+\frac{1}{3}t_1\omega_{\kappa\alpha}^{\lambda}\partial^\kappa f_{\prime}^{\prime}-\frac{2}{3}t_3\omega_{\kappa\alpha}^{\lambda}\partial^\kappa f_{\prime}^{\prime}+ \\
 &\frac{2}{3}t_1\partial^\alpha f_{\kappa\alpha}^{\alpha}\partial^\kappa f_{\prime}^{\prime}-\frac{4}{3}t_3\partial^\alpha f_{\kappa\alpha}^{\alpha}\partial^\kappa f_{\prime}^{\prime}-\frac{1}{3}t_1\partial_\kappa f_{\lambda}^{\alpha}\partial^\kappa f_{\prime}^{\prime}+\frac{2}{3}t_3\partial_\kappa f_{\lambda}^{\alpha}\partial^\kappa f_{\prime}^{\prime}+ \\
 &2t_1\omega_{\kappa\theta}^{\alpha}\partial^\kappa f_{\theta}^{\prime}-\frac{1}{3}t_1\omega_{\kappa\theta}^{\alpha}\partial^\kappa f_{\prime}^{\prime}+\frac{2}{3}t_3\omega_{\kappa\theta}^{\alpha}\partial^\kappa f_{\prime}^{\prime}-\frac{1}{3}t_1\omega_{\kappa\theta}^{\lambda}\partial^\kappa f_{\prime}^{\prime}+ \\
 &\frac{2}{3}t_3\omega_{\kappa\theta}^{\lambda}\partial^\kappa f_{\prime}^{\prime}+\frac{1}{2}t_1\partial^\alpha f_{\kappa}^{\alpha}\partial^\kappa f_{\lambda\alpha}^{\alpha}+\frac{1}{2}t_1\partial_\kappa f_{\theta}^{\lambda}\partial^\kappa f_{\lambda}^{\theta}+\frac{1}{2}t_1\partial_\kappa f_{\theta}^{\lambda}\partial^\kappa f_{\lambda}^{\theta}- \\
 &\frac{1}{3}t_1\partial^\alpha f_{\alpha}^{\alpha}\partial^\kappa f_{\lambda\kappa}^{\alpha}+\frac{2}{3}t_3\partial^\alpha f_{\alpha}^{\alpha}\partial^\kappa f_{\lambda\kappa}^{\alpha}+\frac{1}{3}r_2\partial_\kappa\omega_{\alpha\beta\theta}^{\alpha\beta\theta}\partial^\kappa\omega_{\alpha\beta\theta}^{\alpha\beta\theta}+ \\
 &\frac{2}{3}r_2\partial_\kappa\omega_{\alpha\beta\theta}^{\alpha\beta\theta}\partial^\kappa\omega_{\alpha\beta\theta}^{\alpha\beta\theta}-\frac{2}{3}r_2\partial^\beta\omega_{\alpha\beta}^{\alpha\lambda}\partial_\lambda\omega_{\alpha\beta}^{\prime}+\frac{2}{3}r_2\partial^\beta\omega_{\alpha\beta}^{\lambda\alpha}\partial_\lambda\omega_{\alpha\beta}^{\prime}
 \end{aligned}$$

$\sigma_{0+}^{\#1} \dagger$	$\sigma_{0+}^{\#1}$	$\tau_{0+}^{\#1} \dagger$	$\tau_{0+}^{\#1}$	$\tau_{0+}^{\#2} \dagger$	$\tau_{0+}^{\#2}$	$\sigma_{0-}^{\#1} \dagger$
$\sigma_{0+}^{\#1} \dagger$	$\frac{1}{(1+2k^2)^2}t_3$	$-\frac{i\sqrt{2}k}{(1+2k^2)^2}t_3$	0	0	0	0
$\tau_{0+}^{\#1} \dagger$	$\frac{i\sqrt{2}k}{(1+2k^2)^2}t_3$	$\frac{2k^2}{(1+2k^2)^2}t_3$	0	0	0	0
$\tau_{0+}^{\#2} \dagger$	0	0	0	0	0	0
$\sigma_{0-}^{\#1} \dagger$	0	0	0	$\frac{1}{k^2r_2-t_1}$	0	0

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
$\tau_{2+}^{\#1\alpha\beta} - 2ik\sigma_{2+}^{\#1\alpha\beta} == 0$		5
Total #:		16

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

$\sigma_2^{\#1} + \alpha\beta$	$\sigma_2^{\#1} + \alpha\beta$	$\tau_2^{\#1} + \alpha\beta$	$\sigma_2^{\#1} - \alpha\beta\chi$
$\sigma_2^{\#1} + \alpha\beta$	$\frac{2}{(1+2k^2)^2 t_1}$	$-\frac{2i\sqrt{2}k}{(1+2k^2)^2 t_1}$	0
$\tau_2^{\#1} + \alpha\beta$	$\frac{2i\sqrt{2}k}{(1+2k^2)^2 t_1}$	$\frac{4k^2}{(1+2k^2)^2 t_1}$	0
$\sigma_2^{\#1} + \alpha\beta\chi$	0	0	$\frac{2}{t_1}$

$\omega_{0+}^{\#1} \dagger$	$f_{0+}^{\#1}$	$f_{0+}^{\#2}$	$\omega_{0-}^{\#1}$
$\omega_{0+}^{\#1} \dagger$	t_3	$-i\sqrt{2}kt_3$	0
$f_{0+}^{\#1} \dagger$	$i\sqrt{2}kt_3$	$2k^2t_3$	0
$f_{0+}^{\#2} \dagger$	0	0	0
$\omega_{0-}^{\#1} \dagger$	0	0	$k^2r_2-t_1$