



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

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

$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#2} \alpha\beta$	$\tau_{1+}^{\#1} \alpha\beta$	$\sigma_{1-}^{\#1} \alpha$	$\sigma_{1-}^{\#2} \alpha$	$\tau_{1-}^{\#1} \alpha$	$\tau_{1-}^{\#2} \alpha$
$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\frac{1}{k^2 (2 r_3 - r_4)}$	$-\frac{\sqrt{2}}{k^2 (1 + k^2) (2 r_3 - r_4)}$	$-\frac{i \sqrt{2}}{k (1 + k^2) (2 r_3 - r_4)}$	0	0	0
$\sigma_{1+}^{\#2} \dagger^{\alpha\beta}$	$-\frac{\sqrt{2}}{k^2 (1 + k^2) (2 r_3 - r_4)}$	$\frac{k^2 (6 r_3 - 3 r_4) + 2 t_2}{(k + k^2)^2 (2 r_3 - r_4) t_2}$	$\frac{i (k^2 (6 r_3 - 3 r_4) + 2 t_2)}{k (1 + k^2)^2 (2 r_3 - r_4) t_2}$	0	0	0
$\tau_{1+}^{\#1} \dagger^{\alpha\beta}$	$\frac{i \sqrt{2}}{k (1 + k^2) (2 r_3 - r_4)}$	$-\frac{i (k^2 (6 r_3 - 3 r_4) + 2 t_2)}{k (1 + k^2)^2 (2 r_3 - r_4) t_2}$	$\frac{1}{r_3 - 2} + \frac{3 k^2}{t_2 (1 + k^2)^2}$	0	0	0
$\sigma_{1-}^{\#1} \dagger^{\alpha}$	0	0	0	0	0	0
$\sigma_{1-}^{\#2} \dagger^{\alpha}$	0	0	0	0	0	0
$\tau_{1-}^{\#1} \dagger^{\alpha}$	0	0	0	0	0	0
$\tau_{1-}^{\#2} \dagger^{\alpha}$	0	0	0	0	0	0

Lagrangian density

$$\frac{2}{3} t_2 \omega_{\lambda'}^{\kappa\lambda} \omega_{\kappa\lambda}^{'} + \frac{1}{3} t_2 \omega_{\kappa\lambda}^{'} \omega_{\lambda'}^{\kappa\lambda} + f^{\alpha\beta} \tau_{\alpha\beta} + \omega^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} +$$

$$\frac{2}{3} r_2 \partial^\beta \omega_{\kappa}^{\theta\alpha} \partial_\theta \omega_{\alpha\beta}^{ \kappa} - \frac{1}{3} r_2 \partial_\theta \omega_{\alpha\beta}^{ \kappa} \partial_\kappa \omega^{\alpha\beta\theta} - \frac{2}{3} r_2 \partial_\theta \omega_{\alpha\beta}^{ \kappa} \partial_\kappa \omega^{\theta\alpha\beta} +$$

$$2 r_4 \partial_\alpha \omega_{\lambda}^{\alpha} \partial_\kappa \omega_{\theta}^{\theta\kappa\lambda} - 2 r_4 \partial_\theta \omega_{\lambda}^{\alpha} \partial_\alpha \omega_{\theta}^{\theta\kappa\lambda} + \frac{1}{6} t_2 \partial^\alpha f_{\theta\kappa}^{ \alpha} \partial_\kappa f_{\alpha}^{ \theta} - \frac{1}{6} t_2 \partial^\alpha f_{\kappa}^{ \theta} \partial_\theta f_{\alpha}^{ \theta} +$$

$$\frac{1}{6} t_2 \partial^\alpha f_{\kappa}^{ \alpha} \partial_\alpha f_{\lambda}^{ \theta} + \frac{1}{3} t_2 \omega_{\lambda\theta\kappa} \partial^\kappa f^{\lambda\theta} - \frac{2}{3} t_2 \omega_{\lambda\theta\kappa} \partial^\kappa f^{\lambda\theta} - \frac{1}{3} t_2 \omega_{\theta\lambda\kappa} \partial^\kappa f^{\lambda\theta} +$$

$$\frac{2}{3} t_2 \omega_{\theta\kappa\lambda} \partial^\kappa f^{\lambda\theta} - \frac{1}{6} t_2 \partial^\alpha f_{\kappa}^{ \alpha} \partial_\kappa f_{\lambda}^{ \theta} - \frac{1}{6} t_2 \partial_\kappa f_{\theta}^{\lambda} \partial^\lambda f_{\lambda}^{ \theta} + \frac{1}{6} t_2 \partial_\kappa f_{\theta}^{\lambda} \partial^\kappa f_{\lambda}^{ \theta} +$$

$$\frac{1}{3} r_2 \partial_\kappa \omega^{\alpha\beta\theta} \partial^\kappa \omega_{\alpha\beta\theta} + \frac{2}{3} r_2 \partial_\kappa \omega^{\theta\alpha\beta} \partial^\kappa \omega_{\alpha\beta\theta} - \frac{2}{3} r_2 \partial^\beta \omega_{\lambda}^{\alpha\lambda} \partial_\lambda \omega_{\alpha\beta}^{ '}, +$$

$$\frac{2}{3} r_2 \partial^\beta \omega_{\lambda}^{\lambda\alpha} \partial_\lambda \omega_{\alpha\beta}^{ '}, - 4 r_3 \partial^\beta \omega_{\lambda}^{\lambda\alpha} \partial_\lambda \omega_{\alpha\beta}^{ '}, - 2 r_4 \partial_\alpha \omega_{\lambda}^{\alpha} \partial^\lambda \omega_{\theta}^{\theta\kappa} + 2 r_4 \partial_\theta \omega_{\lambda}^{\alpha} \partial^\lambda \omega_{\alpha}^{ \theta\kappa}$$

$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#2} \alpha\beta$	$f_{1+}^{\#1} \alpha\beta$	$\omega_{1-}^{\#1} \alpha$	$\omega_{1-}^{\#2} \alpha$	$f_{1-}^{\#1} \alpha$	$f_{1-}^{\#2} \alpha$
$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$k^2 (2 r_3 - r_4) + \frac{2 t_2}{3}$	$\frac{\sqrt{2} t_2}{3}$	$\frac{1}{3} i \sqrt{2} k t_2$	0	0	0
$\omega_{1+}^{\#2} \dagger^{\alpha\beta}$	$\frac{\sqrt{2} t_2}{3}$	$\frac{t_2}{3}$	$\frac{i k t_2}{3}$	0	0	0
$f_{1+}^{\#1} \dagger^{\alpha\beta}$	$-\frac{1}{3} i \sqrt{2} k t_2$	$-\frac{1}{3} i k t_2$	$\frac{k^2 t_2}{3}$	0	0	0
$\omega_{1-}^{\#1} \dagger^{\alpha}$	0	0	0	0	0	0
$\omega_{1-}^{\#2} \dagger^{\alpha}$	0	0	0	0	0	0
$f_{1-}^{\#1} \dagger^{\alpha}$	0	0	0	0	0	0
$f_{1-}^{\#2} \dagger^{\alpha}$	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
$\sigma_{1-}^{\#1\alpha} == 0$	3
$\tau_{1+}^{\#1\alpha\beta} + i k \sigma_{1+}^{\#2\alpha\beta} == 0$	3
$\sigma_{2-}^{\#1\alpha\beta\chi} == 0$	5
$\tau_{2+}^{\#1\alpha\beta} == 0$	5
Total #:	27

$\omega_{0+}^{\#1} \dagger^{\alpha\beta}$	$f_{0+}^{\#1} \alpha\beta$	$f_{0+}^{\#2} \alpha\beta$	$\omega_0^{\#1} \alpha\beta$
$\omega_{0+}^{\#1} \dagger^{\alpha\beta}$	$-2 k^2 (r_3 - 2 r_4)$	0	0
$f_{0+}^{\#1} \dagger^{\alpha\beta}$	0	0	0
$f_{0+}^{\#2} \dagger^{\alpha\beta}$	0	0	0
$\omega_{0-}^{\#1} \dagger^{\alpha\beta\chi}$	0	0	$k^2 r_2 + t_2$

$\omega_{2+}^{\#1} \dagger^{\alpha\beta}$	$f_{2+}^{\#1} \alpha\beta$	$\omega_{2-}^{\#1} \alpha\beta\chi$
$\omega_{2+}^{\#1} \dagger^{\alpha\beta}$	$k^2 (-2 r_3 + r_4)$	0
$f_{2+}^{\#1} \dagger^{\alpha\beta}$	0	0
$\omega_{2-}^{\#1} \dagger^{\alpha\beta\chi}$	0	0

$\sigma_{2+}^{\#1} \dagger^{\alpha\beta}$	$\tau_{2+}^{\#1} \alpha\beta$	$\sigma_{2-}^{\#1} \alpha\beta\chi$
$\sigma_{2+}^{\#1} \dagger^{\alpha\beta}$	$\frac{1}{k^2 (-2 r_3 + r_4)}$	0
$\tau_{2+}^{\#1} \dagger^{\alpha\beta}$	0	0
$\sigma_{2-}^{\#1} \dagger^{\alpha\beta\chi}$	0	0