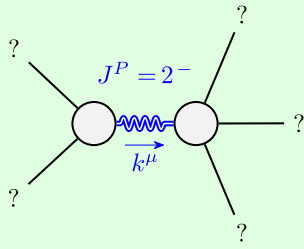


Massive particle

Pole residue:	$-\frac{3(-2t_1t_3(t_1+t_3)+r_1(t_1^2+2t_3^2)+r_5(t_1^2+2t_3^2))}{2(r_1+r_5)(t_1+t_3)(-3t_1t_3+r_1(t_1+t_3)+r_5(t_1+t_3))} > 0$
Polarisations:	3
Square mass:	$-\frac{3t_1t_3}{2(r_1+r_5)(t_1+t_3)} > 0$
Spin:	1
Parity:	Odd

(No massless particles)



Massive particle

Pole residue:	$-\frac{1}{r_1} > 0$
Polarisations:	5
Square mass:	$-\frac{t_1}{2r_1} > 0$
Spin:	2
Parity:	Odd

Unitarity conditions

$$r_1 < 0 \ \&\& \ r_5 < -r_1 \ \&\& \ t_1 > 0 \ \&\& \ t_3 < -t_1 || t_3 > 0$$

$\sigma_{1^+}^{\#1} \uparrow^{\alpha\beta}$	$\sigma_{1^+}^{\#2} \uparrow^{\alpha\beta}$	$\tau_{1^+}^{\#1} \uparrow^{\alpha\beta}$	$\sigma_{1^+}^{\#1} \alpha$	$\sigma_{1^+}^{\#2} \alpha$	$\tau_{1^+}^{\#1} \alpha$	$\tau_{1^+}^{\#2} \alpha$
$\sigma_{1^+}^{\#1} \uparrow^{\alpha\beta}$	0	$-\frac{i\sqrt{2}k}{t_1+k^2t_1}$	0	0	0	0
$\sigma_{1^+}^{\#2} \uparrow^{\alpha\beta}$	$-\frac{\sqrt{2}}{t_1+k^2t_1}$	$\frac{-2ik^3(2r_1+r_5)+ikt_1}{(1+k^2)^2t_1^2}$	0	0	0	0
$\tau_{1^+}^{\#1} \uparrow^{\alpha\beta}$	$\frac{i\sqrt{2}k}{t_1+k^2t_1}$	$\frac{i(2k^3(2r_1+r_5)-kt_1)}{(1+k^2)^2t_1^2}$	0	0	0	0
$\sigma_{1^+}^{\#1} \alpha$	0	0	$\frac{2(t_1+t_3)}{3t_1t_3+2k^2(r_1+r_5)(t_1+t_3)}$	$-\frac{\sqrt{2}(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	0	$-\frac{2ik(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$
$\sigma_{1^+}^{\#2} \alpha$	0	0	$-\frac{\sqrt{2}(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	$\frac{6k^2(r_1+r_5)+t_1+4t_3}{(1+2k^2)^2(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	0	$\frac{i\sqrt{2}k(6k^2(r_1+r_5)+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$
$\tau_{1^+}^{\#1} \alpha$	0	0	0	0	0	0
$\tau_{1^+}^{\#2} \alpha$	0	0	$-\frac{2ik(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	$-\frac{i\sqrt{2}k(6k^2(r_1+r_5)+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$	0	$\frac{2k^2(6k^2(r_1+r_5)+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2(r_1+r_5)(t_1+t_3))}$

$\omega_{1^+}^{\#1} \uparrow^{\alpha\beta}$	$\omega_{1^+}^{\#2} \uparrow^{\alpha\beta}$	$f_{1^+}^{\#1} \uparrow^{\alpha\beta}$	$\omega_{1^+}^{\#1} \alpha$	$\omega_{1^+}^{\#2} \alpha$	$f_{1^+}^{\#1} \alpha$	$f_{1^+}^{\#2} \alpha$
$\omega_{1^+}^{\#1} \uparrow^{\alpha\beta}$	$k^2(2r_1+r_5)-\frac{t_1}{2}$	$-\frac{t_1}{\sqrt{2}}$	0	0	0	0
$\omega_{1^+}^{\#2} \uparrow^{\alpha\beta}$	$-\frac{t_1}{\sqrt{2}}$	0	0	0	0	0
$f_{1^+}^{\#1} \uparrow^{\alpha\beta}$	$\frac{ikt_1}{\sqrt{2}}$	0	0	0	0	0
$\omega_{1^+}^{\#1} \alpha$	0	0	$\frac{1}{6}(6k^2(r_1+r_5)+t_1+4t_3)$	$\frac{t_1-2t_3}{3\sqrt{2}}$	0	$\frac{1}{3}ik(t_1-2t_3)$
$\omega_{1^+}^{\#2} \alpha$	0	0	$\frac{t_1-2t_3}{3\sqrt{2}}$	$\frac{t_1+t_3}{3}$	0	$\frac{1}{3}i\sqrt{2}k(t_1+t_3)$
$f_{1^+}^{\#1} \alpha$	0	0	0	0	0	0
$f_{1^+}^{\#2} \alpha$	0	0	$-\frac{1}{3}ik(t_1-2t_3)$	$-\frac{1}{3}i\sqrt{2}k(t_1+t_3)$	0	$\frac{2}{3}k^2(t_1+t_3)$

Lagrangian density

$$-\frac{1}{3}t_1\omega_{\kappa\alpha}^{\alpha i}\omega_{\kappa\alpha}^{\alpha i}+\frac{2}{3}t_3\omega_{\kappa\alpha}^{\alpha i}\omega_{\kappa\alpha}^{\alpha i}-t_1\omega_{\kappa\lambda}^{\kappa\lambda}\omega_{\kappa\lambda}^{\kappa\lambda}+f^{\alpha\beta}\tau_{\alpha\beta}+\omega^{\alpha\beta\chi}\sigma_{\alpha\beta\chi}-r_5\partial_i\omega_{\alpha\beta}^{\kappa}\partial^\kappa\omega_{\lambda}^{\alpha\beta}\partial'_\kappa\omega_{\lambda}^{\alpha}-\frac{2}{3}r_1\partial^\beta\omega_{\alpha}^{\theta\alpha}\partial_\theta\omega_{\alpha\beta}^{\kappa}-\frac{2}{3}r_1\partial_\theta\omega_{\alpha}^{\kappa\lambda}\partial_\kappa\omega_{\lambda}^{\theta\alpha}-r_5\partial_\theta\omega_{\lambda}^{\alpha}\partial_\kappa\omega_{\lambda}^{\theta\kappa}-r_5\partial_\alpha\omega_{\lambda}^{\alpha}\partial_\kappa\omega_{\lambda}^{\kappa\theta}+\frac{2}{3}r_5\partial_\theta\omega_{\lambda}^{\alpha}\partial_\kappa\omega_{\lambda}^{\kappa\theta}-\frac{1}{2}t_1\partial^\alpha f_{\theta\kappa}\partial^\kappa f_{\alpha}^{\theta}-\frac{1}{2}t_1\partial^\alpha f_{\kappa\theta}\partial^\kappa f_{\alpha}^{\theta}-\frac{1}{2}t_1\partial^\alpha f_{\lambda}^{\kappa}\partial^\kappa f_{\alpha}^{\lambda}-\frac{1}{3}t_1\omega_{\kappa\alpha}^{\alpha}\partial^\kappa f_{\kappa}^{\alpha}-\frac{2}{3}t_3\omega_{\kappa\alpha}^{\alpha}\partial^\kappa f_{\kappa}^{\alpha}+\frac{1}{3}t_1\omega_{\kappa\lambda}^{\kappa\lambda}\partial^\kappa f_{\kappa}^{\lambda}+\frac{2}{3}t_1\partial^\alpha f_{\kappa\alpha}\partial^\kappa f_{\kappa}^{\alpha}-\frac{4}{3}t_3\partial^\alpha f_{\kappa\alpha}\partial^\kappa f_{\kappa}^{\alpha}-\frac{1}{3}t_1\partial_\kappa f_{\lambda}^{\kappa}\partial^\kappa f_{\lambda}^{\lambda}+\frac{2}{3}t_3\partial_\kappa f_{\lambda}^{\kappa}\partial^\kappa f_{\lambda}^{\lambda}+2t_1\omega_{\kappa\theta}^{\kappa}\partial^\kappa f_{\theta}^{\kappa}-\frac{1}{3}t_1\omega_{\kappa\alpha}^{\alpha}\partial^\kappa f_{\kappa}^{\alpha}+\frac{2}{3}t_3\omega_{\kappa\alpha}^{\alpha}\partial^\kappa f_{\kappa}^{\alpha}-\frac{1}{3}t_1\omega_{\kappa\lambda}^{\kappa\lambda}\partial^\kappa f_{\kappa}^{\lambda}+\frac{2}{3}t_3\omega_{\kappa\lambda}^{\kappa\lambda}\partial^\kappa f_{\kappa}^{\lambda}+\frac{1}{2}t_1\partial^\alpha f_{\kappa}^{\lambda}\partial^\kappa f_{\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}^{\theta}\partial^\kappa f_{\theta}^{\lambda}-\frac{1}{3}t_1\partial^\alpha f_{\alpha}^{\kappa}\partial^\kappa f_{\lambda\kappa}+\frac{2}{3}t_3\partial^\alpha f_{\alpha}^{\kappa}\partial^\kappa f_{\lambda\kappa}+\frac{2}{3}r_1\partial_\kappa\omega_{\alpha\beta}^{\theta\kappa}\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_1\partial^\beta\omega_{\alpha}^{\lambda}\partial_\lambda\omega_{\alpha\beta}^{\kappa}-\frac{8}{3}r_1\partial^\beta\omega_{\alpha}^{\lambda}\partial_\lambda\omega_{\alpha\beta}^{\kappa}+r_5\partial_\alpha\omega_{\lambda}^{\alpha}\partial^\lambda\omega_{\lambda}^{\theta\kappa}-r_5\partial_\theta\omega_{\lambda}^{\alpha}\partial^\lambda\omega_{\lambda}^{\theta\kappa}$$

Source constraints

SO(3) irreps	#
$\tau_{0^+}^{\#2} == 0$	1
$\tau_{0^+}^{\#1} - 2ik\sigma_{0^+}^{\#1} == 0$	1
$t_1^{\#2\alpha} + 2ik\sigma_{1^+}^{\#2\alpha} == 0$	3
$t_1^{\#1\alpha} == 0$	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

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

$\omega_{2^+}^{\#1}$	$f_{2^+}^{\#1}$	$f_{2^+}^{\#2}$	$\omega_{2^+}^{\#1}$
$\omega_{2^+}^{\#1} \uparrow^{\alpha\beta}$	$\frac{t_1}{2}$	$-\frac{ikt_1}{\sqrt{2}}$	0
$f_{2^+}^{\#1} \uparrow^{\alpha\beta}$	$\frac{ikt_1}{\sqrt{2}}$	k^2t_1	0
$\omega_{2^+}^{\#1} \uparrow^{\alpha\beta\chi}$	0	0	$k^2r_1 + \frac{t_1}{2}$

	$\sigma_{2^+}^{\#1 \alpha\beta}$	$\tau_{2^+}^{\#1 \alpha\beta}$	$\sigma_{2^+}^{\#1 \alpha\beta\chi}$
$\sigma_{2^+}^{\#1 \uparrow \alpha\beta}$	$\frac{2}{(1+2k^2)^2 t_1}$	$-\frac{2i\sqrt{2}k}{(1+2k^2)^2 t_1}$	0
$\tau_{2^+}^{\#1 \uparrow \alpha\beta}$	$\frac{2i\sqrt{2}k}{(1+2k^2)^2 t_1}$	$\frac{4k^2}{(1+2k^2)^2 t_1}$	0
$\sigma_{2^+}^{\#1 \uparrow \alpha\beta\chi}$	0	0	$\frac{2}{2k^2 r_1+t_1}$