Lagrangian density

$$\mathcal{L} = \tfrac{2}{3}t_3\,\omega_i{}^{\alpha i}\,\omega_{\kappa\lambda}{}^{\kappa} - \tfrac{1}{2}r_3\,\partial_i\omega^{\kappa\lambda}{}_{\kappa}\,\partial^i\omega_{\lambda}{}^{\alpha} - \cdots$$

(Full rotated Lagrangian density expression shown with terms in t_3, r_3, r_5 and ω, f fields.)

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

Saturated propagator (σ₀₊ sector)

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

(ω₀ sector)

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

(σ₂ sector)

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

(ω₂ sector)

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

(σ₁ sector)

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

(ω₁ sector)

	$f_{1^-}^{\#2}\dagger^{\alpha}$	$f_{1^-}^{\#1}\dagger^{\alpha}$	$\omega_{1^-}^{\#2}\dagger^{\alpha}$	$\omega_{1^-}^{\#1}\dagger^{\alpha}$	$f_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\omega_{1^+}^{\#2}\dagger^{\alpha\beta}$	$\omega_{1^+}^{\#1}\dagger^{\alpha\beta}$
$\omega_{1^+}^{\#1}{}_{\alpha\beta}$	0	0	0	0	0	0	$k^2(2r_3+r_5)$
$\omega_{1^+}^{\#2}{}_{\alpha\beta}$	0	0	0	0	0	0	0
$f_{1^+}^{\#1}{}_{\alpha\beta}$	0	0	0	0	0	0	0
$\omega_{1^-}^{\#1}{}_{\alpha}$	$\dfrac{2ik t_3}{3}$	0	$-\dfrac{\sqrt{2}\,t_3}{3}$	$\dfrac{k^2(r_3+r_5)}{2}+\dfrac{2t_3}{3}$	0	0	0
$\omega_{1^-}^{\#2}{}_{\alpha}$	$-\dfrac{1}{3}i\sqrt{2}\,k t_3$	0	$\dfrac{t_3}{3}$	$-\dfrac{\sqrt{2}\,t_3}{3}$	0	0	0
$f_{1^-}^{\#1}{}_{\alpha}$	0	0	0	0	0	0	0
$f_{1^-}^{\#2}{}_{\alpha}$	$\dfrac{2k^2 t_3}{3}$	0	$\dfrac{1}{3}i\sqrt{2}\,k t_3$	$-\dfrac{2}{3}ik t_3$	0	0	0

Source constraints

Source constraints	SO(3) irreps	#
$\sigma_{0^-}^{\#1}==0$		1
$\tau_{0^+}^{\#2}==0$		1
$\tau_{0^+}^{\#1}==0$		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
$\tau_{1^+}^{\#1\alpha\beta}==0$		3
$\tau_{1^+}^{\#2\alpha\beta}==0$		3
$\sigma_{1^+}^{\#1\alpha\beta}==0$		3
$\sigma_{2^-}^{\#1\alpha\beta\chi}==0$		5
$\tau_{2^+}^{\#1\alpha\beta}==0$		5
Total #:		25

Quadratic pole

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

Polarisations: 2

Unitarity conditions

$$r_3 < 0 \,\&\&\, \left(r_5 < -\tfrac{r_3}{2} \,\|\, r_5 > -2r_3\right) \,\|\, r_3 > 0 \,\&\&\, -2r_3 < r_5 < -\tfrac{r_3}{2}$$

(No massive particles)