

Lagrangian density

$$\begin{aligned} & -\frac{1}{3}t_1\omega_{\lambda'}^{\alpha'}\omega_{\kappa\alpha}^{\kappa}-t_1\omega_{\lambda'}^{\kappa\lambda}\omega_{\kappa\lambda}^{\lambda}-r_5\partial_\lambda\omega_{\kappa}^{\kappa\lambda}\partial^\lambda\omega_{\lambda\alpha}^{\alpha}-r_5\partial_\alpha\omega_{\lambda\theta}^{\alpha}\partial_\kappa\omega^{\theta\kappa\lambda}+ \\ & r_5\partial_\theta\omega_{\lambda\alpha}^{\alpha}\partial_\kappa\omega^{\theta\kappa\lambda}-r_5\partial_\alpha\omega_{\lambda\theta}^{\alpha}\partial_\kappa\omega^{\kappa\lambda\theta}+2r_5\partial_\theta\omega_{\lambda\alpha}^{\alpha}\partial_\kappa\omega^{\kappa\lambda\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_{\lambda}^{\prime}+\frac{1}{3}t_1\omega_{\kappa\lambda}^{\lambda}\partial^\kappa f_{\lambda}^{\prime}+\frac{2}{3}t_1\partial^\alpha f_{\kappa\alpha}\partial^\kappa f_{\lambda}^{\prime}- \\ & \frac{1}{3}t_1\partial_\kappa f_{\lambda}^{\kappa}\partial^\kappa f_{\lambda}^{\prime}+2t_1\omega_{\lambda\kappa\theta}\partial^\kappa f_{\lambda}^{\theta}-\frac{1}{3}t_1\omega_{\lambda\alpha}^{\alpha}\partial^\kappa f_{\kappa}^{\prime}-\frac{1}{3}t_1\omega_{\lambda\lambda}^{\lambda}\partial^\kappa f_{\kappa}^{\prime}+ \\ & \frac{1}{2}t_1\partial^\alpha f_{\lambda}^{\kappa}\partial^\kappa f_{\lambda\alpha}+\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_{\lambda}^{\theta}- \\ & \frac{1}{3}t_1\partial^\alpha f_{\lambda}^{\kappa}\partial^\kappa f_{\lambda\kappa}+r_5\partial_\alpha\omega_{\lambda\theta}^{\alpha}\partial^\lambda\omega^{\theta\kappa}_{\kappa}-r_5\partial_\theta\omega_{\lambda\alpha}^{\alpha}\partial^\lambda\omega^{\theta\kappa}_{\kappa} \end{aligned}$$

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

Source constraints

SO(3) irreps	#
$\sigma_{0+}^{\#1}==0$	1
$\tau_{0+}^{\#1}==0$	1
$\tau_{0+}^{\#2}==0$	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 #:	17

$\sigma_{0+}^{\#1}$	0	0	0	$-\frac{1}{t_1}$
$\tau_{0+}^{\#1}$	0	0	0	0
$\tau_{0+}^{\#2}$	0	0	0	0
$\sigma_{0+}^{\#1}+$	0	0	0	0

$\omega_{0+}^{\#1}$	0	0	0	$-t_1$
$f_{0+}^{\#1}$	0	0	0	0
$f_{0+}^{\#2}$	0	0	0	0
$\omega_{0+}^{\#1}+$	0	0	0	0

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

$\omega_{1+}^{\#1\alpha\beta}$	$k^2r_5-\frac{t_1}{2}$	$-\frac{t_1}{\sqrt{2}}$	$-\frac{ikt_1}{\sqrt{2}}$	0	0	0
$\omega_{1+}^{\#2\alpha\beta}$	$-\frac{t_1}{\sqrt{2}}$	0	0	0	0	0
$f_{1+}^{\#1\alpha\beta}$	$\frac{ikt_1}{\sqrt{2}}$	0	0	0	0	0
$\omega_{1-}^{\#1\alpha}$	0	0	$k^2r_5+\frac{t_1}{6}$	$\frac{t_1}{3\sqrt{2}}$	0	$\frac{ikt_1}{3}$
$\omega_{1-}^{\#2\alpha}$	0	0	0	$\frac{t_1}{3}$	0	$\frac{1}{3}i\sqrt{2}kt_1$
$f_{1-}^{\#1\alpha}$	0	0	0	0	0	0
$f_{1-}^{\#2\alpha}$	0	0	$-\frac{1}{3}ik t_1$	$-\frac{1}{3}i\sqrt{2}kt_1$	0	$\frac{2k^2t_1}{3}$

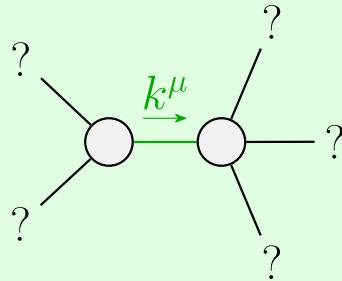
$\sigma_{2+}^{\#1\alpha\beta\chi}$	0	$\frac{2}{t_1}$
$\sigma_{2+}^{\#1\alpha\beta}$	$\frac{2}{(1+2k^2)^2t_1}$	$-\frac{2i\sqrt{2}k}{(1+2k^2)^2t_1}$
$\tau_{2+}^{\#1\alpha\beta}$	$\frac{2i\sqrt{2}k}{(1+2k^2)^2t_1}$	$\frac{4k^2}{(1+2k^2)^2t_1}$
$\sigma_{2-}^{\#1\alpha\beta\chi}$	0	0

Unitarity conditions

$$r_5 < 0 \ \&\& \ t_1 < 0 \ || \ t_1 > 0$$

(No massive particles)

$\sigma_{1+}^{\#1\alpha\beta}$	0	$-\frac{\sqrt{2}}{t_1+k^2t_1}$	$-\frac{i\sqrt{2}k}{t_1+k^2t_1}$	0	0	0
$\sigma_{1+}^{\#2\alpha\beta}$	$-\frac{\sqrt{2}}{t_1+k^2t_1}$	$\frac{-2k^2r_5+t_1}{(1+k^2)^2t_1^2}$	$-\frac{i(2k^3r_5-kt_1)}{(1+k^2)^2t_1^2}$	0	0	0
$\tau_{1+}^{\#1\alpha\beta}$	$\frac{i\sqrt{2}k}{t_1+k^2t_1}$	$\frac{i(2k^3r_5-kt_1)}{(1+k^2)^2t_1^2}$	$\frac{-2k^4r_5+k^2t_1}{(1+k^2)^2t_1^2}$	0	0	0
$\sigma_{1-}^{\#1\alpha}$	0	0	0	$\frac{1}{k^2r_5}$	$-\frac{1}{\sqrt{2}(k^2r_5+2k^4r_5)}$	$-\frac{i}{kr_5+2k^3r_5}$
$\sigma_{1-}^{\#2\alpha}$	0	0	0	$-\frac{1}{\sqrt{2}(k^2r_5+2k^4r_5)}$	$\frac{6k^2r_5+t_1}{2(k+2k^3)^2r_5t_1}$	$-\frac{i(6k^2r_5+t_1)}{\sqrt{2}k(1+2k^2)^2r_5t_1}$
$\tau_{1-}^{\#1\alpha}$	0	0	0	0	0	0
$\tau_{1-}^{\#1\alpha}$	0	0	0	0	0	0
$\tau_{1-}^{\#2\alpha}$	0	0	0	0	0	0



Quadratic pole

Pole residue:	$-\frac{1}{r_5t_1^2} > 0$
Polarisations:	2