

Lagrangian density

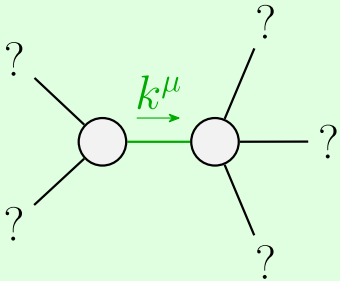
$$-2\beta_1^2\omega_{\alpha\chi\beta}\omega^{\alpha\beta\chi}-2\beta_1^2\omega_{\chi}^{\delta}\omega_{\alpha}^{\chi\delta}\omega_{\chi\delta}^{\alpha}-2\beta_1^2\omega_{\alpha}^{\chi}\omega_{\chi}^{\alpha}\partial_{\beta}f^{\alpha\beta}-$$
$$2\beta_1^2\omega_{\alpha}^{\delta}\partial_{\delta}\omega_{\beta}f^{\alpha\beta}-4\beta_1^2f^{\alpha\beta}\partial_{\beta}\omega_{\alpha}^{\chi}+4\beta_1^2\partial_{\beta}\omega_{\alpha}^{\beta}+$$
$$\frac{2}{3}\partial^{\alpha}\omega_{\chi}^{\beta\zeta}\partial_{\beta}\omega_{\zeta\alpha}^{\chi}+2\beta_1^2\omega_{\beta}^{\chi}\omega_{\chi}^{\beta}f_{\alpha}^{\alpha}+2\beta_1^2\omega_{\beta}^{\delta}\omega_{\delta}^{\beta}f_{\alpha}^{\alpha}-$$
$$2\beta_1^2\partial_{\beta}f^{\chi}\partial_{\chi}f_{\alpha}^{\beta}+4\beta_1^2f^{\alpha\beta}\partial_{\chi}\omega_{\alpha}^{\chi}-4\beta_1^2f_{\alpha}^{\alpha}\partial_{\chi}\omega_{\chi}^{\beta}-$$
$$\frac{2}{3}\partial_{\beta}\omega_{\zeta\alpha}^{\chi}\partial_{\chi}\omega_{\alpha}^{\beta\zeta}-\frac{1}{3}\partial_{\beta}\omega_{\zeta\alpha}^{\chi}\partial_{\chi}\omega_{\alpha}^{\zeta\beta}+4\beta_1^2\omega_{\alpha\chi\beta}\partial^{\chi}f^{\alpha\beta}+$$
$$\beta_1^2\partial_{\chi}f_{\beta}^{\delta}\partial^{\chi}f_{\delta}^{\beta}+\beta_1^2\partial_{\chi}f_{\delta}^{\delta}\partial^{\chi}f_{\beta}^{\beta}+\frac{2}{3}\partial_{\chi}\omega_{\beta}^{\beta\zeta\alpha}\partial^{\chi}\omega_{\zeta\alpha\beta}^{\alpha}+$$
$$\frac{1}{3}\partial_{\chi}\omega_{\alpha}^{\zeta\alpha\beta}\partial^{\chi}\omega_{\zeta\alpha\beta}^{\alpha}+4\beta_1^2\partial_{\beta}f_{\alpha}^{\alpha}\partial_{\delta}f_{\beta}^{\delta}-2\beta_1^2\partial_{\beta}f_{\chi}^{\beta}\partial_{\delta}f^{\chi\delta}+$$
$$\frac{2}{3}\partial^{\beta}\omega_{\alpha}^{\delta\zeta}\partial_{\delta}\omega_{\zeta\beta}^{\alpha}-\frac{2}{3}\partial^{\beta}\omega_{\alpha}^{\zeta\delta}\partial_{\delta}\omega_{\zeta\beta}^{\alpha}-\beta_1^2\partial^{\chi}f_{\zeta}^{\beta}\partial^{\zeta}f_{\beta\chi}^{\alpha}-$$
$$\beta_1^2\partial^{\chi}f_{\zeta}^{\beta}\partial^{\zeta}f_{\chi\beta}^{\alpha}+\beta_1^2\partial^{\chi}f_{\delta\zeta}\partial^{\zeta}f_{\chi}^{\delta}-\beta_1^2\partial^{\chi}f_{\zeta\delta}\partial^{\zeta}f_{\chi}^{\delta}$$

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

$\beta_1 < 0 \parallel \beta_1 > 0$

Unitarity conditions

(No massive particles)



Quadratic pole	
Pole residue:	$\frac{1}{\beta_1^2} \gg 0$
Polarisations:	2

$\omega_{1+}^{\#1} \dagger$	$\omega_{1+}^{\#1} \dagger \alpha\beta$	0	0	0	0	0	0	0	0
$\omega_{1+}^{\#2} \dagger$	$\omega_{1+}^{\#2} \dagger \alpha\beta$	0	0	0	0	0	0	0	0
$f_{1+}^{\#1} \dagger$	$f_{1+}^{\#1} \dagger \alpha\beta$	0	0	0	0	0	0	0	0
$\omega_{1-}^{\#1} \dagger$	$\omega_{1-}^{\#1} \dagger \alpha$	0	0	0	0	0	0	0	0
$\omega_{1-}^{\#2} \dagger$	$\omega_{1-}^{\#2} \dagger \alpha$	0	0	0	0	0	0	0	0
$f_{1-}^{\#1} \dagger$	$f_{1-}^{\#1} \dagger \alpha$	0	0	0	0	0	0	0	0
$f_{1-}^{\#2} \dagger$	$f_{1-}^{\#2} \dagger \alpha$	0	0	0	0	0	0	0	0

Source constraints	
SO(3) irreps	#
$\tau_{0+}^{\#2} == 0$	1
$\sigma_{0+}^{\#1} == 0$	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
$\tau_{1+}^{\#1\alpha\beta} == 0$	3
$\sigma_{1+}^{\#2\alpha\beta} == 0$	3
$\sigma_{1+}^{\#1\alpha\beta} == 0$	3
$\sigma_2^{\#1\alpha\beta\chi} == 0$	5
$\sigma_{2+}^{\#1\alpha\beta} == 0$	5
Total #:	33

$\sigma_{1+}^{\#1} \dagger$	$\sigma_{1+}^{\#1} \dagger \alpha\beta$	0	0	0	0	0	0	0	0
$\sigma_{1+}^{\#2} \dagger$	$\sigma_{1+}^{\#2} \dagger \alpha\beta$	0	0	0	0	0	0	0	0
$\tau_{1+}^{\#1} \dagger$	$\tau_{1+}^{\#1} \dagger \alpha\beta$	0	0	0	0	0	0	0	0
$\sigma_{1-}^{\#1} \dagger$	$\sigma_{1-}^{\#1} \dagger \alpha$	0	0	0	0	0	0	0	0
$\sigma_{1-}^{\#2} \dagger$	$\sigma_{1-}^{\#2} \dagger \alpha$	0	0	0	0	0	0	0	0
$\tau_{1-}^{\#1} \dagger$	$\tau_{1-}^{\#1} \dagger \alpha$	0	0	0	0	0	0	0	0
$\tau_{1-}^{\#2} \dagger$	$\tau_{1-}^{\#2} \dagger \alpha$	0	0	0	0	0	0	0	0

$\omega_{2+}^{\#1} \dagger$	$f_{2+}^{\#1} \dagger \alpha\beta$	$\omega_{2-}^{\#1} \dagger \alpha\beta\chi$
$\omega_{2+}^{\#1} \dagger \alpha\beta$	0	0
$f_{2+}^{\#1} \dagger \alpha\beta$	$2\beta_1^2 k^2$	0
$\omega_{2-}^{\#1} \dagger \alpha\beta\chi$	0	0

$\sigma_{0+}^{\#1} \dagger$	$\tau_{0+}^{\#1} \dagger$	$\tau_{0+}^{\#2} \dagger$	$\sigma_{0-}^{\#1} \dagger$
$\sigma_{0+}^{\#1} \dagger$	0	0	0
$\tau_{0+}^{\#1} \dagger$	$-\frac{1}{4\beta_1^2 k^2}$	0	0
$\tau_{0+}^{\#2} \dagger$	0	0	0
$\sigma_{0-}^{\#1} \dagger$	0	0	$\frac{1}{k^2}$

$\omega_{0+}^{\#1} \dagger$	$f_{0+}^{\#1} \dagger$	$f_{0+}^{\#2} \dagger$	$\omega_{0-}^{\#1} \dagger$
$\omega_{0+}^{\#1} \dagger$	0	0	0
$f_{0+}^{\#1} \dagger$	0	$-4\beta_1^2 k^2$	0
$f_{0+}^{\#2} \dagger$	0	0	0
$\omega_{0-}^{\#1} \dagger$	0	0	$k^2$

$\sigma_{2+}^{\#1} \dagger$	$\tau_{2+}^{\#1} \dagger$	$\sigma_{2-}^{\#1} \dagger$
$\sigma_{2+}^{\#1} \dagger \alpha\beta$	0	0
$\tau_{2+}^{\#1} \dagger \alpha\beta$	0	$\frac{1}{2\beta_1^2 k^2}$
$\sigma_{2-}^{\#1} \dagger \alpha\beta\chi$	0	0