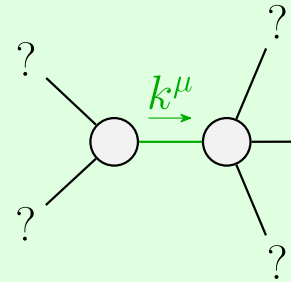


## Lagrangian density

$$\begin{aligned}
 & -\frac{1}{2} r_3 \partial_i \omega_{\kappa}^{\kappa\lambda} \partial' \omega_{\lambda}^{\alpha} - r_5 \partial_i \omega_{\kappa}^{\kappa\lambda} \partial' \omega_{\lambda}^{\alpha} + \\
 & \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} + \frac{1}{2} r_3 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\kappa} \omega^{\theta\kappa\lambda} - r_5 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\kappa} \omega^{\theta\kappa\lambda} - \\
 & \frac{1}{2} r_3 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\kappa} \omega^{\theta\kappa\lambda} + r_5 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\kappa} \omega^{\theta\kappa\lambda} - \frac{1}{2} r_3 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\kappa} \omega^{\kappa\lambda\theta} - \\
 & r_5 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\kappa} \omega^{\kappa\lambda\theta} + r_3 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\kappa} \omega^{\kappa\lambda\theta} + 2 r_5 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\kappa} \omega^{\kappa\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}^{\prime} + \\
 & \frac{2}{3} r_2 \partial^{\beta} \omega_{\lambda}^{\lambda\alpha} \partial_{\lambda} \omega_{\alpha\beta}^{\prime} - 4 r_3 \partial^{\beta} \omega_{\lambda}^{\lambda\alpha} \partial_{\lambda} \omega_{\alpha\beta}^{\prime} - \frac{1}{2} r_3 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial^{\lambda} \omega_{\kappa}^{\theta\kappa} + \\
 & r_5 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial^{\lambda} \omega_{\kappa}^{\theta\kappa} + \frac{1}{2} r_3 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial^{\lambda} \omega_{\kappa}^{\theta\kappa} - r_5 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial^{\lambda} \omega_{\kappa}^{\theta\kappa}
 \end{aligned}$$

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



Quadratic pole

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

Polarisations: 2

Unitarity conditions

$$r_3 < 0 \&\& (r_5 < -\frac{r_3}{2} \parallel r_5 > -2r_3) \parallel r_3 > 0 \&\& -2r_3 < r_5 < -\frac{r_3}{2}$$

(No massive particles)

$\sigma_{1+}^{\#1} + \alpha\beta$	$\sigma_{1+}^{\#2} + \alpha\beta$	$\sigma_{1-}^{\#1} + \alpha$	$\sigma_{1-}^{\#2} + \alpha$
$\frac{1}{k^2(2r_3+r_5)}$	0	0	0
0	0	0	0
0	0	$\frac{2}{k^2(r_3+2r_5)}$	0
0	0	0	0

$\sigma_{2+}^{\#1} + \alpha\beta$	$\sigma_{2-}^{\#1} + \alpha\beta\chi$
$-\frac{2}{3k^2 r_3}$	0
0	0

Source constraints

SO(3) irreps	#
$\sigma_{0+}^{\#1} == 0$	1
$\sigma_{1-}^{\#2\alpha} == 0$	3
$\sigma_{1+}^{\#2\alpha\beta} == 0$	3
$\sigma_{2-}^{\#1\alpha\beta\chi} == 0$	5
Total #:	12

$\omega_0^{\#1} +$	$\omega_0^{\#1} +$
0	0
0	$k^2 r_2$

$\sigma_{0+}^{\#1} +$	$\sigma_{0-}^{\#1} +$
0	0
0	$\frac{1}{k^2 r_2}$

$\omega_{2+}^{\#1} + \alpha\beta$	$\omega_{2-}^{\#1} + \alpha\beta\chi$
0	0
$-\frac{3k^2 r_3}{2}$	0