

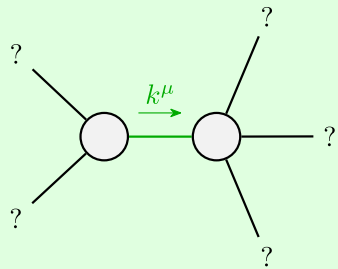
Lagrangian density

$$\begin{aligned}
& 2r_1 \partial_i \omega_{\kappa}^{\kappa\lambda} \partial' \omega_{\lambda}^{\alpha}{}_{\alpha} - 2r_3 \partial_i \omega_{\kappa}^{\kappa\lambda} \partial' \omega_{\lambda}^{\alpha}{}_{\alpha} - \\
& r_5 \partial_i \omega_{\kappa}^{\kappa\lambda} \partial' \omega_{\lambda}^{\alpha}{}_{\alpha} - \frac{2}{3} r_1 \partial^{\beta} \omega_{\kappa}^{\theta\alpha} \partial_{\theta} \omega_{\alpha\beta}^{\kappa} - \frac{2}{3} r_1 \partial_{\theta} \omega_{\alpha\beta}^{\kappa} \partial_{\kappa} \omega^{\alpha\beta\theta} + \\
& \frac{2}{3} r_1 \partial_{\theta} \omega_{\alpha\beta}^{\kappa} \partial_{\kappa} \omega^{\theta\alpha\beta} - 2r_1 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\theta} \omega^{\theta\kappa\lambda} + 2r_3 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\theta} \omega^{\theta\kappa\lambda} - \\
& r_5 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\theta} \omega^{\theta\kappa\lambda} + 2r_1 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\alpha} \omega^{\theta\kappa\lambda} - 2r_3 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\alpha} \omega^{\theta\kappa\lambda} + \\
& r_5 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\alpha} \omega^{\theta\kappa\lambda} + 2r_1 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\theta} \omega^{\kappa\lambda\theta} - 2r_3 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\theta} \omega^{\kappa\lambda\theta} - \\
& r_5 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial_{\theta} \omega^{\kappa\lambda\theta} - 4r_1 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\alpha} \omega^{\kappa\lambda\theta} + 4r_3 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\alpha} \omega^{\kappa\lambda\theta} + \\
& 2r_5 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial_{\alpha} \omega^{\kappa\lambda\theta} + \frac{2}{3} r_1 \partial_{\kappa} \omega^{\alpha\beta\theta} \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_{\lambda}^{\alpha\lambda} \partial_{\lambda} \omega_{\alpha\beta}^{\prime} + \frac{4}{3} r_1 \partial^{\beta} \omega_{\lambda}^{\lambda\alpha} \partial_{\lambda} \omega_{\alpha\beta}^{\prime} - 4r_3 \partial^{\beta} \omega_{\lambda}^{\lambda\alpha} \partial_{\lambda} \omega_{\alpha\beta}^{\prime} + \\
& 2r_1 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial^{\lambda} \omega_{\theta}^{\theta\kappa} - 2r_3 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial^{\lambda} \omega_{\theta}^{\theta\kappa} + r_5 \partial_{\alpha} \omega_{\lambda}^{\alpha} \partial^{\lambda} \omega_{\theta}^{\theta\kappa} - \\
& 2r_1 \partial_{\theta} \omega_{\lambda}^{\alpha} \partial^{\lambda} \omega_{\kappa}^{\theta\kappa} + 2r_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: $\omega^{\alpha\beta\chi} \sigma_{\alpha\beta\chi}$

Unitarity conditions

$$r_1 < 0 \&\& (r_5 < r_1 - 2r_3 \parallel r_5 > -2r_3) \parallel r_1 > 0 \&\& -2r_3 < r_5 < r_1 - 2r_3$$



Quadratic pole

Pole residue:	$\frac{1}{r_1 (r_1 - 2r_3 - r_5) (2r_3 + r_5)} > 0$
Polarisations:	2

(No massive particles)

	$\sigma_{2+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{2+}^{\#1}{}_{\alpha\beta}$	$\sigma_{2-}^{\#1}{}_{\alpha\beta\chi}$
$\sigma_{2+}^{\#1} \dagger^{\alpha\beta}$	0	0	
$\sigma_{2-}^{\#1} \dagger^{\alpha\beta\chi}$	0	$\frac{1}{k^2 r_1}$	

	$\omega_{2+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{2+}^{\#1}{}_{\alpha\beta}$	$\omega_{2-}^{\#1}{}_{\alpha\beta\chi}$
$\omega_{2+}^{\#1} \dagger^{\alpha\beta}$	0	0	
$\omega_{2-}^{\#1} \dagger^{\alpha\beta\chi}$	0	$k^2 r_1$	

	$\sigma_{0+}^{\#1} \dagger$	$\sigma_{0+}^{\#1}$	$\sigma_{0-}^{\#1}$
$\sigma_{0+}^{\#1} \dagger$	$\frac{1}{6k^2 (-r_1 + r_3)}$	0	
$\sigma_{0-}^{\#1} \dagger$	0	0	

	$\omega_{0+}^{\#1}$	$\omega_{0-}^{\#1}$
$\omega_{0+}^{\#1} \dagger$	$6k^2 (-r_1 + r_3)$	0
$\omega_{0-}^{\#1} \dagger$	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
$\sigma_{2+}^{\#1\alpha\beta} == 0$		5
Total #:		12

	$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#2}{}_{\alpha\beta}$	$\sigma_{1-}^{\#1}{}_{\alpha}$	$\sigma_{1-}^{\#2}{}_{\alpha}$
$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\frac{1}{k^2 (2r_3 + r_5)}$	0	0	0
$\sigma_{1+}^{\#2} \dagger^{\alpha\beta}$	0	0	0	0
$\sigma_{1-}^{\#1} \dagger^{\alpha}$	0	0	$\frac{1}{k^2 (-r_1 + 2r_3 + r_5)}$	0
$\sigma_{1-}^{\#2} \dagger^{\alpha}$	0	0	0	0