



Quadratic pole

Pole residue: $\frac{1}{\lambda} > 0$

Polarisations: 2

Unitarity conditions

$\lambda > 0$

(No massive particles)

Lagrangian density

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

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

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

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

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

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

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

Source constraints

SO(3) irreps	#
$\sigma_{0-}^{\#1} == 0$	1
$\tau_{0+}^{\#2} == 0$	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 #:	34

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