



Quadratic pole	
Pole residue:	$-\frac{1}{r_3(2r_3+r_5)(r_3+2r_5)p^2} > 0$
Polarisations:	2

(No massive particles)

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

$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#2} \dagger^{\alpha\beta}$	$\tau_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#1} \dagger^{\alpha}$	$\sigma_{1+}^{\#2} \dagger^{\alpha}$	$\tau_{1+}^{\#1} \dagger^{\alpha}$	$\tau_{1+}^{\#2} \dagger^{\alpha}$
$\frac{1}{k^2(2r_3+r_5)}$	$-\frac{\sqrt{2}}{k^2(1+k^2)(2r_3+r_5)}$	$-\frac{i\sqrt{2}}{k(1+k^2)(2r_3+r_5)}$	0	0	0	0
$-\frac{\sqrt{2}}{k^2(1+k^2)(2r_3+r_5)}$	$\frac{3k^2(2r_3+r_5)+2t_2}{(k+k^3)^2(2r_3+r_5)t_2}$	$\frac{i(3k^2(2r_3+r_5)+2t_2)}{k(1+k^2)^2(2r_3+r_5)t_2}$	0	0	0	0
$-\frac{i\sqrt{2}}{k(1+k^2)(2r_3+r_5)}$	$-\frac{i(3k^2(2r_3+r_5)+2t_2)}{k(1+k^2)^2(2r_3+r_5)t_2}$	$\frac{3k^2(2r_3+r_5)+2t_2}{(1+k^2)^2(2r_3+r_5)t_2}$	0	0	0	0
0	0	0	$\frac{2}{k^2(r_3+2r_5)}$	$\frac{2\sqrt{2}}{k^2(1+2k^2)(r_3+2r_5)}$	0	$\frac{4i}{k(1+2k^2)(r_3+2r_5)}$
0	0	0	$\frac{2\sqrt{2}}{k^2(1+2k^2)(r_3+2r_5)}$	$\frac{3k^2(r_3+2r_5)+4t_3}{(k+2k^3)^2(r_3+2r_5)t_3}$	0	$\frac{i\sqrt{2}(3k^2(r_3+2r_5)+4t_3)}{k(1+2k^2)^2(r_3+2r_5)t_3}$
0	0	0	0	0	0	0
0	0	0	$-\frac{4i}{k(1+2k^2)(r_3+2r_5)}$	$-\frac{i\sqrt{2}(3k^2(r_3+2r_5)+4t_3)}{k(1+2k^2)^2(r_3+2r_5)t_3}$	0	$\frac{6k^2(r_3+2r_5)+8t_3}{(1+2k^2)^2(r_3+2r_5)t_3}$

$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#2} \dagger^{\alpha\beta}$	$f_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#1} \dagger^{\alpha}$	$\omega_{1+}^{\#2} \dagger^{\alpha}$	$f_{1+}^{\#1} \dagger^{\alpha}$	$f_{1+}^{\#2} \dagger^{\alpha}$
$k^2(2r_3+r_5) + \frac{2t_2}{3}$	$\frac{\sqrt{2}t_2}{3}$	$\frac{1}{3}i\sqrt{2}kt_2$	0	0	0	0
$\frac{\sqrt{2}t_2}{3}$	$\frac{t_2}{3}$	$\frac{ikt_2}{3}$	0	0	0	0
$-\frac{1}{3}i\sqrt{2}kt_2$	$-\frac{1}{3}ikt_2$	$\frac{k^2t_2}{3}$	0	0	0	0
0	0	0	$k^2(\frac{r_3}{2}+r_5) + \frac{2t_3}{3}$	$-\frac{\sqrt{2}t_3}{3}$	0	$-\frac{2}{3}ikt_3$
0	0	0	$-\frac{\sqrt{2}t_3}{3}$	$\frac{t_3}{3}$	0	$\frac{1}{3}i\sqrt{2}kt_3$
0	0	0	0	0	0	0
0	0	0	$\frac{2ikt_3}{3}$	$-\frac{1}{3}i\sqrt{2}kt_3$	0	$\frac{2k^2t_3}{3}$

Source constraints	#
$\tau_{0+}^{\#2} == 0$	1
$\tau_{0+}^{\#1} - 2ik\sigma_{0+}^{\#1} == 0$	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
$\sigma_2^{\#1\alpha\beta\chi} == 0$	5
$\tau_{2+}^{\#1\alpha\beta} == 0$	5
Total #:	21

	$\sigma_{0+}^{\#1}$	$\tau_{0+}^{\#1}$	$\tau_{0+}^{\#2}$	$\sigma_{0+}^{\#1}$
$\sigma_{0+}^{\#1} \dagger$	$\frac{1}{(1+2k^2)^2t_3}$	$-\frac{i\sqrt{2}k}{(1+2k^2)^2t_3}$	0	0
$\tau_{0+}^{\#1} \dagger$	$\frac{i\sqrt{2}k}{(1+2k^2)^2t_3}$	$\frac{2k^2}{(1+2k^2)^2t_3}$	0	0
$\tau_{0+}^{\#2} \dagger$	0	0	0	0
$\sigma_{0+}^{\#1} \dagger$	0	0	0	$\frac{1}{t_2}$

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

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

	$\omega_{0+}^{\#1}$	$f_{0+}^{\#1}$	$f_{0+}^{\#2}$	$\omega_{0+}^{\#1}$
$\omega_{0+}^{\#1} \dagger$	t_3	$-i\sqrt{2}kt_3$	0	0
$f_{0+}^{\#1} \dagger$	$i\sqrt{2}kt_3$	$2k^2t_3$	0	0
$f_{0+}^{\#2} \dagger$	0	0	0	0
$\omega_{0+}^{\#1} \dagger$	0	0	0	t_2

Lagrangian density

$$\begin{aligned} & \frac{2}{3}t_3\omega_{\prime}^{\alpha\prime}\omega_{\kappa\alpha}^{\prime\kappa} + \frac{2}{3}t_2\omega_{\prime}^{\kappa\lambda}\omega_{\kappa\lambda}^{\prime} + \frac{1}{3}t_2\omega_{\kappa\lambda}^{\prime}\omega^{\kappa\lambda}_{\prime} + f^{\alpha\beta}\tau_{\alpha\beta} + \\ & \omega^{\alpha\beta\chi}\sigma_{\alpha\beta\chi} - \frac{1}{2}r_3\partial_{\prime}\omega^{\kappa\lambda}_{\kappa}\partial^{\prime}\omega_{\lambda\alpha}^{\alpha} - r_5\partial_{\prime}\omega^{\kappa\lambda}_{\kappa}\partial^{\prime}\omega_{\lambda\alpha}^{\alpha} + \frac{1}{2}r_3\partial_{\alpha}\omega_{\lambda\theta}^{\alpha}\partial_{\kappa}\omega^{\theta\kappa\lambda} - \\ & r_5\partial_{\alpha}\omega_{\lambda\theta}^{\alpha}\partial_{\kappa}\omega^{\theta\kappa\lambda} - \frac{1}{2}r_3\partial_{\theta}\omega_{\lambda\alpha}^{\alpha}\partial_{\kappa}\omega^{\theta\kappa\lambda} + r_5\partial_{\theta}\omega_{\lambda\alpha}^{\alpha}\partial_{\kappa}\omega^{\theta\kappa\lambda} - \frac{1}{2}r_3\partial_{\alpha}\omega_{\lambda\theta}^{\alpha}\partial_{\kappa}\omega^{\kappa\lambda\theta} - \\ & r_5\partial_{\alpha}\omega_{\lambda\theta}^{\alpha}\partial_{\kappa}\omega^{\kappa\lambda\theta} + r_3\partial_{\theta}\omega_{\lambda\alpha}^{\alpha}\partial_{\kappa}\omega^{\kappa\lambda\theta} + 2r_5\partial_{\theta}\omega_{\lambda\alpha}^{\alpha}\partial_{\kappa}\omega^{\kappa\lambda\theta} + \\ & \frac{1}{6}t_2\partial^{\alpha}f_{\theta\kappa}\partial^{\kappa}f_{\alpha}^{\theta} - \frac{1}{6}t_2\partial^{\alpha}f_{\kappa\theta}\partial^{\kappa}f_{\alpha}^{\theta} + \frac{1}{6}t_2\partial^{\alpha}f_{\kappa}^{\lambda}\partial^{\kappa}f_{\alpha\lambda}^{\theta} - \frac{2}{3}t_3\omega_{\kappa\alpha}^{\alpha}\partial^{\kappa}f_{\prime}^{\prime} - \\ & \frac{2}{3}t_3\omega_{\kappa\lambda}^{\lambda}\partial^{\kappa}f_{\prime}^{\prime} - \frac{4}{3}t_3\partial^{\alpha}f_{\kappa\alpha}\partial^{\kappa}f_{\prime}^{\prime} + \frac{2}{3}t_3\partial_{\kappa}f_{\lambda}^{\lambda}\partial^{\kappa}f_{\prime}^{\prime} + \frac{1}{3}t_2\omega_{\prime\theta\kappa}\partial^{\kappa}f^{\prime\theta} - \\ & \frac{2}{3}t_2\omega_{\prime\kappa\theta}\partial^{\kappa}f^{\prime\theta} - \frac{1}{3}t_2\omega_{\theta\prime\kappa}\partial^{\kappa}f^{\prime\theta} + \frac{2}{3}t_2\omega_{\theta\kappa\prime}\partial^{\kappa}f^{\prime\theta} + \frac{2}{3}t_3\omega_{\prime\alpha}^{\alpha}\partial^{\kappa}f_{\kappa}^{\prime} + \\ & \frac{2}{3}t_3\omega_{\prime\lambda}^{\lambda}\partial^{\kappa}f_{\kappa}^{\prime} - \frac{1}{6}t_2\partial^{\alpha}f_{\kappa}^{\lambda}\partial^{\kappa}f_{\lambda\alpha}^{\theta} - \frac{1}{6}t_2\partial_{\kappa}f_{\theta}^{\lambda}\partial^{\kappa}f_{\lambda}^{\theta} + \frac{1}{6}t_2\partial_{\kappa}f_{\theta}^{\lambda}\partial^{\kappa}f_{\lambda}^{\theta} + \\ & \frac{2}{3}t_3\partial^{\alpha}f_{\alpha}^{\lambda}\partial^{\kappa}f_{\lambda\kappa}^{\prime} - 4r_3\partial^{\beta}\omega_{\prime}^{\lambda\alpha}\partial_{\lambda}\omega_{\alpha\beta}^{\prime} - \frac{1}{2}r_3\partial_{\alpha}\omega_{\lambda\theta}^{\alpha}\partial^{\lambda}\omega^{\theta\kappa}_{\kappa} + \\ & r_5\partial_{\alpha}\omega_{\lambda\theta}^{\alpha}\partial^{\lambda}\omega^{\theta\kappa}_{\kappa} + \frac{1}{2}r_3\partial_{\theta}\omega_{\lambda\alpha}^{\alpha}\partial^{\lambda}\omega^{\theta\kappa}_{\kappa} - r_5\partial_{\theta}\omega_{\lambda\alpha}^{\alpha}\partial^{\lambda}\omega^{\theta\kappa}_{\kappa} \end{aligned}$$