

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

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

Quadratic pole

Pole residue:

$-\frac{1}{r_3 (2r_3+r_5) (r_3+2r_5) p^2} > 0$

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)

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

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

Lagrangian density

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

Added source term:

$f^{\alpha \beta} \tau_{\alpha \beta} + \omega^{\alpha \beta \chi} \sigma_{\alpha \beta \chi}$

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

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