Lagrangian density

$$\begin{aligned}
\mathcal{L} =\;& -t_1\,\omega_\iota{}^{\alpha\iota}\,\omega_{\kappa\alpha}{}^{\kappa} - t_1\,\omega_\iota{}^{\kappa\iota}\,\omega_{\kappa\lambda}{}^{\iota} + f^{\alpha\beta}\,\tau_{\alpha\beta} + \omega^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi} \\
& + \tfrac{2}{3}r_2\,\partial^\beta\omega_\theta{}^{\theta\alpha}\,\partial_\kappa\omega_{\alpha\beta}{}^{\kappa} - \tfrac{1}{3}r_2\,\partial_\theta\omega_{\alpha\beta}{}^{\theta}\,\partial_\kappa\omega^{\kappa\alpha\beta} - \tfrac{2}{3}r_2\,\partial_\theta\omega_\lambda{}^{\alpha}{}_\alpha\,\partial_\kappa\omega^{\kappa\lambda\theta} \\
& - r_5\,\partial_\alpha\omega_\lambda{}^{\alpha}{}_\theta\,\partial_\kappa\omega^{\theta\kappa\lambda} + r_5\,\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} \\
& + \tfrac{1}{2}t_1\,\partial^{\alpha}f_\theta{}^{\theta}\,\partial^\kappa f_\alpha{}^{\theta} - \tfrac{1}{2}t_1\,\partial^{\alpha}f_{\kappa\theta}\,\partial^\kappa f_\alpha{}^{\theta} - \tfrac{1}{2}t_1\,\partial^{\alpha}f^{\lambda}{}_\kappa\,\partial^\kappa f_{\alpha\lambda} + t_1\,\omega_{\kappa\alpha}{}^{\alpha}\,\partial^\kappa f^{\iota}{}_{\iota} + \\
& + t_1\,\omega_{\kappa\lambda}{}^{\lambda}\,\partial^\kappa f^{\iota}{}_{\iota} + 2t_1\,\partial^{\alpha}f_{\kappa\alpha}\,\partial^\kappa f^{\iota}{}_{\iota} - t_1\,\partial_\kappa f^{\lambda}{}_\lambda\,\partial^\kappa f^{\iota}{}_{\iota} + 2t_1\,\omega_{\iota\kappa\theta}\,\partial^{\iota}f^{\iota\theta} - \\
& + t_1\,\omega_{\iota\alpha}{}^{\alpha}\,\partial^\kappa f^{\iota}{}_{\iota} - t_1\,\omega_{\iota\lambda}{}^{\lambda}\,\partial^\kappa f_{\iota\kappa} + \tfrac{1}{2}t_1\,\partial^{\alpha}f^{\lambda}{}_\kappa\,\partial^\kappa f_{\lambda\alpha} + 2t_1\,\partial_\theta f^{\lambda}{}_\lambda\,\partial^\kappa f_\lambda{}^{\theta} + \\
& + \tfrac{1}{2}t_1\,\partial_\kappa f^{\lambda}{}_\theta\,\partial^\kappa f_\lambda{}^{\theta} - t_1\,\partial_\kappa f^{\lambda}{}_\lambda\,\partial^\kappa f^{\iota}{}_{\iota} + \tfrac{1}{2}t_1\,\partial^{\alpha}f^{\lambda}{}_\kappa\,\partial^\kappa f_{\lambda\kappa} + \tfrac{1}{2}r_2\,\partial_\kappa\omega^{\theta\alpha\beta}\,\partial^\kappa\omega_{\alpha\beta\theta} - \\
& + \tfrac{1}{3}t_1\,\partial_\kappa f^{\lambda}{}_\theta\,\partial^\kappa f_{\lambda\kappa} + \tfrac{1}{3}r_2\,\partial_\kappa\omega^{\theta\alpha\beta}\,\partial^\kappa f_{\lambda\kappa} + \tfrac{1}{3}r_2\,\partial_\kappa\omega^{\theta\alpha\beta}\,\partial^\kappa\omega_{\alpha\beta\theta} + \tfrac{2}{3}r_2\,\partial_\kappa\omega^{\theta\alpha\beta}\,\partial^\kappa\omega_{\alpha\beta\theta} - \\
& + \tfrac{2}{3}r_2\,\partial^\beta\omega_\iota{}^{\alpha\lambda}\,\partial_\lambda\omega_{\alpha\beta}{}^{\iota} + \tfrac{2}{3}r_2\,\partial^\beta\omega_\iota{}^{\lambda\alpha}\,\partial_\lambda\omega_{\alpha\beta}{}^{\iota} + r_5\,\partial_\alpha\omega_\lambda{}^{\alpha}{}_\theta\,\partial^{\lambda}\omega^{\theta\beta}{}_\kappa
\end{aligned}$$

Source constraints

SO(3) irreps	#
$\tau_{0^+}^{\#2} == 0$	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
$\tau_{2^+}^{\#1\alpha\beta} - 2ik\,\sigma_{2^+}^{\#1\alpha\beta} == 0$	5
Total #:	16

0^+ / 0^- source table

	$\sigma_{0^+}^{\#1}$	$\tau_{0^+}^{\#1}$	$\tau_{0^+}^{\#2}$	$\sigma_{0^-}^{\#1}$
$\sigma_{0^+}^{\#1}\dagger$	$-\dfrac{1}{(1+2k^2)^2 t_1}$	$\dfrac{i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	0	0
$\tau_{0^+}^{\#1}\dagger$	$-\dfrac{i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	$-\dfrac{2k^2}{(1+2k^2)^2 t_1}$	0	0
$\tau_{0^+}^{\#2}\dagger$	0	0	0	0
$\sigma_{0^-}^{\#1}\dagger$	0	0	0	$\dfrac{1}{k^2 r_2 - t_1}$

0^+ / 0^- field table

	$\omega_{0^+}^{\#1}$	$f_{0^+}^{\#1}$	$f_{0^+}^{\#2}$	$\omega_{0^-}^{\#1}$
$\omega_{0^+}^{\#1}\dagger$	$-t_1$	$\sqrt{2}\,k t_1$	0	0
$f_{0^+}^{\#1}\dagger$	$-i\sqrt{2}\,k t_1$	$-2k^2 t_1$	0	0
$f_{0^+}^{\#2}\dagger$	0	0	0	0
$\omega_{0^-}^{\#1}\dagger$	0	0	0	$k^2 r_2 - t_1$

$1^\pm$ source table

	$\sigma_{1^+}^{\#1\alpha\beta}$	$\sigma_{1^+}^{\#2\alpha\beta}$	$\tau_{1^+}^{\#1\alpha\beta}$	$\sigma_{1^-}^{\#1\alpha}$	$\sigma_{1^-}^{\#2\alpha}$	$\tau_{1^-}^{\#1\alpha}$	$\tau_{1^-}^{\#2\alpha}$
$\tau_{1^-}^{\#2}\dagger\alpha$	0	0	0	$\dfrac{2ik}{t_1+2k^2 t_1}$	$-\dfrac{i\sqrt{2}\,k(2k^2 r_5-t_1)}{(t_1+2k^2 t_1)^2}$	0	$-\dfrac{4k^4 r_5+2k^2 t_1}{(t_1+2k^2 t_1)^2}$
$\tau_{1^-}^{\#1}\dagger\alpha$	0	0	0	0	0	0	0
$\sigma_{1^-}^{\#2}\dagger\alpha$	0	0	0	$\dfrac{\sqrt{2}}{t_1+2k^2 t_1}$	$-\dfrac{2k^2 r_5+t_1}{(t_1+2k^2 t_1)^2}$	0	$\dfrac{i\sqrt{2}\,k(2k^2 r_5-t_1)}{(t_1+2k^2 t_1)^2}$
$\sigma_{1^-}^{\#1}\dagger\alpha$	0	0	0	0	$\dfrac{\sqrt{2}}{t_1+2k^2 t_1}$	0	$-\dfrac{2ik}{t_1+2k^2 t_1}$
$\tau_{1^+}^{\#1}\dagger\alpha\beta$	$-\dfrac{i\sqrt{2}\,k}{t_1+k^2 t_1}$	$-\dfrac{i(2k^3 r_5-kt_1)}{(1+k^2)^2 t_1^2}$	$-\dfrac{2k^4 r_5+k^2 t_1}{(1+k^2)^2 t_1^2}$	0	0	0	0
$\sigma_{1^+}^{\#2}\dagger\alpha\beta$	$-\dfrac{\sqrt{2}}{t_1+k^2 t_1}$	$-\dfrac{2k^2 r_5+t_1}{(1+k^2)^2 t_1^2}$	$\dfrac{i(2k^3 r_5-kt_1)}{(1+k^2)^2 t_1^2}$	0	0	0	0
$\sigma_{1^+}^{\#1}\dagger\alpha\beta$	0	$-\dfrac{\sqrt{2}}{t_1+k^2 t_1}$	$\dfrac{i\sqrt{2}\,k}{t_1+k^2 t_1}$	0	0	0	0

$1^\pm$ field table

	$\omega_{1^+}^{\#1\alpha\beta}$	$\omega_{1^+}^{\#2\alpha\beta}$	$f_{1^+}^{\#1\alpha\beta}$	$\omega_{1^-}^{\#1\alpha}$	$\omega_{1^-}^{\#2\alpha}$	$f_{1^-}^{\#1\alpha}$	$f_{1^-}^{\#2\alpha}$
$f_{1^-}^{\#2}\dagger\alpha$	0	0	0	ikt_1	0	0	0
$f_{1^-}^{\#1}\dagger\alpha$	0	0	0	$-ikt_1$	0	0	0
$\omega_{1^-}^{\#2}\dagger\alpha$	0	0	0	$\dfrac{t_1}{\sqrt{2}}$	0	0	0
$\omega_{1^-}^{\#1}\dagger\alpha$	0	0	0	$k^2 r_5 - \dfrac{t_1}{2}$	$\dfrac{t_1}{\sqrt{2}}$	$-ikt_1$	ikt_1
$f_{1^+}^{\#1}\dagger\alpha\beta$	$\dfrac{ikt_1}{\sqrt{2}}$	0	0	0	0	0	0
$\omega_{1^+}^{\#2}\dagger\alpha\beta$	$-\dfrac{t_1}{\sqrt{2}}$	0	0	0	0	0	0
$\omega_{1^+}^{\#1}\dagger\alpha\beta$	$k^2 r_5 - \dfrac{t_1}{2}$	$-\dfrac{t_1}{\sqrt{2}}$	$\dfrac{ikt_1}{\sqrt{2}}$	0	0	0	0

2^+ / 2^- field table

	$\omega_{2^+}^{\#1\alpha\beta}$	$f_{2^+}^{\#1\alpha\beta}$	$\omega_{2^-}^{\#1\alpha\beta\chi}$
$\omega_{2^+}^{\#1}\dagger\alpha\beta$	$\dfrac{t_1}{2}$	$-\dfrac{ikt_1}{\sqrt{2}}$	0
$f_{2^+}^{\#1}\dagger\alpha\beta$	$\dfrac{ikt_1}{\sqrt{2}}$	$k^2 t_1$	0
$\omega_{2^-}^{\#1}\dagger\alpha\beta\chi$	0	0	$\dfrac{t_1}{2}$

2^+ / 2^- source table

	$\tau_{2^+}^{\#1\alpha\beta}$	$\sigma_{2^+}^{\#1\alpha\beta}$	$\sigma_{2^-}^{\#1\alpha\beta\chi}$
$\sigma_{2^+}^{\#1}\dagger\alpha\beta$	$-\dfrac{2i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	$\dfrac{2}{(1+2k^2)^2 t_1}$	0
$\tau_{2^+}^{\#1}\dagger\alpha\beta$	$\dfrac{4k^2}{(1+2k^2)^2 t_1}$	$\dfrac{2i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	0
$\sigma_{2^-}^{\#1}\dagger\alpha\beta\chi$	0	0	$\dfrac{2}{t_1}$

Massive particle

$J^P = 0^-$, k^μ

Pole residue:	$-\dfrac{1}{r_2} > 0$
Polarisations:	1
Square mass:	$\dfrac{t_1}{r_2} > 0$
Spin:	0
Parity:	Odd

Unitarity conditions

$r_2 < 0$ && $t_1 < 0$

(No massless particles)