Lagrangian density

$$
\begin{aligned}
&-t_1\,\omega_{\iota}^{\alpha\prime}\,\omega_{\kappa\alpha}^{\ \ \kappa}-\tfrac{1}{3}t_1\,\omega_{\iota}^{\kappa\lambda}\,\omega_{\kappa\lambda}^{\ \ \prime}+\tfrac{2}{3}t_2\,\omega_{\iota}^{\kappa\lambda}\,\omega_{\kappa\lambda}^{\ \ \prime}\\
&\tfrac{1}{3}t_1\,\omega_{\kappa\lambda}^{\ \ \prime}\,\omega^{\kappa\lambda}{}_{\iota}+\tfrac{1}{3}t_2\,\omega_{\kappa\lambda}^{\ \ \prime}\,\omega^{\kappa\lambda}{}_{\iota}+f^{\alpha\beta}\,\tau_{\alpha\beta}+\omega^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi}+\\
&2\,r_1\,\partial_{\iota}\omega^{\kappa\lambda}\,\partial^{\prime}\omega_{\lambda\ \alpha}^{\ \ \alpha}-\tfrac{2}{3}r_1\,\partial^{\beta}\omega^{\alpha\ \ \kappa}_{\ \beta}\,\partial_{\theta}\omega_{\kappa}^{\ \ \theta}+\tfrac{2}{3}r_2\,\partial^{\beta}\omega^{\alpha\ \ \kappa}_{\ \beta}\,\partial_{\theta}\omega_{\kappa}^{\ \ \theta}-\\
&\tfrac{2}{3}r_1\,\partial_{\theta}\omega_{\alpha\beta}^{\ \ \kappa}\,\partial_{\kappa}\omega^{\alpha\beta\theta}-\tfrac{1}{3}r_2\,\partial_{\theta}\omega_{\alpha\beta}^{\ \ \kappa}\,\partial_{\kappa}\omega^{\alpha\beta\theta}+\\
&\tfrac{2}{3}r_1\,\partial_{\theta}\omega_{\alpha\beta}^{\ \ \kappa}\,\partial_{\kappa}\omega^{\theta\alpha\beta}+2\,r_1\,\partial_{\alpha}\omega_{\lambda\ \theta}^{\ \ \alpha}\,\partial_{\kappa}\omega^{\theta\kappa\lambda}-2\,r_1\,\partial_{\theta}\omega_{\lambda\ \alpha}^{\ \ \alpha}\,\partial_{\kappa}\omega^{\theta\kappa\lambda}+\\
&\tfrac{2}{3}r_2\,\partial_{\theta}\omega_{\alpha\beta}^{\ \ \kappa}\,\partial_{\kappa}\omega^{\theta\alpha\beta}+2\,r_1\,\partial_{\alpha}\omega_{\lambda\ \theta}^{\ \ \alpha}\,\partial_{\kappa}\omega^{\kappa\lambda\theta}-4\,r_1\,\partial_{\theta}\omega_{\lambda\ \alpha}^{\ \ \alpha}\,\partial_{\kappa}\omega^{\kappa\lambda\theta}-\tfrac{1}{3}t_1\,\partial^{\alpha}f_{\theta\kappa}\,\partial^{\kappa}f_{\alpha}^{\ \ \theta}+\\
&\tfrac{1}{6}t_2\,\partial^{\alpha}f_{\theta\kappa}\,\partial^{\kappa}f_{\alpha}^{\ \ \theta}-\tfrac{1}{6}t_2\,\partial^{\alpha}f_{\kappa\theta}\,\partial^{\kappa}f_{\alpha}^{\ \ \theta}-\tfrac{1}{3}t_1\,\partial^{\alpha}f^{\lambda}{}_{\kappa}\,\partial^{\kappa}f_{\alpha\lambda}+\\
&\tfrac{1}{6}t_2\,\partial^{\alpha}f^{\lambda}{}_{\kappa}\,\partial^{\kappa}f^{\prime}{}_{\iota}+t_1\,\omega_{\kappa\lambda}^{\ \ \lambda}\,\partial^{\kappa}f^{\prime}{}_{\iota}+2\,t_1\,\partial^{\alpha}f_{\iota\kappa}\,\partial^{\kappa}f^{\prime}{}_{\iota}-\\
&t_1\,\partial_{\kappa}f^{\lambda}{}_{\iota}\,\partial^{\kappa}f^{\prime}{}_{\iota}+\tfrac{1}{3}t_1\,\omega_{\iota\theta\kappa}\,\partial^{\kappa}f^{\prime\theta}-\tfrac{1}{3}t_1\,\omega_{\theta\iota\kappa}\,\partial^{\kappa}f^{\prime\theta}+\\
&\tfrac{2}{3}t_2\,\omega_{\iota\kappa\theta}\,\partial^{\kappa}f^{\prime\theta}-\tfrac{1}{3}t_1\,\omega_{\theta\kappa\iota}\,\partial^{\kappa}f^{\prime\theta}+\\
&\tfrac{2}{3}t_2\,\omega_{\theta\kappa\iota}\,\partial^{\kappa}f^{\prime\theta}-t_1\,\omega_{\iota\alpha}^{\ \ \alpha}\,\partial^{\kappa}f^{\prime}{}_{\kappa}-t_1\,\omega_{\iota\lambda}^{\ \ \lambda}\,\partial^{\kappa}f^{\prime}{}_{\kappa}+\tfrac{1}{3}t_1\,\partial^{\kappa}f^{\lambda}{}_{\kappa}\,\partial^{\kappa}f_{\lambda\alpha}-\\
&\tfrac{1}{6}t_1\,\partial_{\kappa}f^{\lambda}{}_{\theta}\,\partial^{\kappa}f_{\lambda}^{\ \ \theta}-\tfrac{1}{6}t_2\,\partial_{\kappa}f^{\lambda}{}_{\theta}\,\partial^{\kappa}f_{\lambda}^{\ \ \theta}+\tfrac{2}{3}t_1\,\partial_{\kappa}f^{\lambda}{}_{\theta}\,\partial^{\kappa}f_{\lambda}^{\ \ \theta}+\\
&\tfrac{1}{6}t_2\,\partial_{\kappa}f^{\lambda}{}_{\theta}\,\partial^{\kappa}f_{\lambda}^{\ \ \theta}-t_1\,\partial^{\alpha}f^{\lambda}{}_{\alpha}\,\partial^{\kappa}f_{\lambda\kappa}+\tfrac{2}{3}r_1\,\partial_{\kappa}\omega^{\alpha\beta\theta}\,\partial^{\kappa}\omega_{\alpha\beta\theta}+\\
&\tfrac{1}{3}r_1\,\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_1\,\partial_{\kappa}\omega^{\alpha\beta\theta}\,\partial^{\kappa}\omega_{\alpha\beta\theta}-\tfrac{2}{3}r_1\,\partial_{\kappa}\omega^{\alpha\lambda}{}_{\iota}\,\partial_{\lambda}\omega_{\alpha\beta}^{\ \ \prime}-\tfrac{8}{3}r_1\,\partial^{\beta}\omega_{\iota}^{\lambda\alpha}\,\partial_{\lambda}\omega_{\alpha\beta}^{\ \ \prime}+\\
&\tfrac{2}{3}r_2\,\partial^{\beta}\omega_{\iota}^{\alpha\lambda}\,\partial_{\lambda}\omega_{\alpha\beta}^{\ \ \prime}-\tfrac{2}{3}r_2\,\partial^{\beta}\omega_{\iota}^{\lambda\alpha}\,\partial_{\lambda}\omega_{\alpha\beta}^{\ \ \prime}+\\
&\tfrac{2}{3}r_1\,\partial_{\alpha}\omega_{\lambda\ \theta}^{\ \ \alpha}\,\partial^{\lambda}\omega^{\theta\kappa}{}_{\kappa}+2\,r_1\,\partial_{\theta}\omega_{\lambda\ \alpha}^{\ \ \alpha}\,\partial^{\lambda}\omega^{\theta\kappa}{}_{\kappa}
\end{aligned}
$$

$\sigma_1^{\#2}{}_{\alpha\beta}$

$\frac{\sqrt{2}\,(t_1-2t_2)}{3(1+k^2)t_1t_2}$	$\frac{i\sqrt{2}\,k(t_1-2t_2)}{3(1+k^2)t_1t_2}$	$\frac{i\sqrt{2}\,k(t_1-2t_2)}{3(1+k^2)t_1t_2}$	$\frac{2(t_1+t_2)}{3t_1t_2}$
$\frac{t_1+4t_2}{3(1+k^2)t_1t_2}$	$\frac{ik(t_1+4t_2)}{3(1+k^2)t_1t_2}$	$\frac{\sqrt{2}\,(t_1-2t_2)}{3(1+k^2)t_1t_2}$	$\frac{\sqrt{2}\,(t_1-2t_2)}{3t_1t_2}$
$-\frac{ik(t_1+4t_2)}{3(1+k^2)t_1t_2}$	$\frac{k^2(t_1+4t_2)}{3(1+k^2)t_1t_2}$	$-\frac{i\sqrt{2}\,k(t_1-2t_2)}{3(1+k^2)t_1t_2}$	0
0	0	0	0

$\tau_1^{\#2}{}_{\alpha}$

0
0
0
$\frac{2ik}{t_1+2k^2t_1}$
$\frac{i\sqrt{2}\,k(2k^2r_1+t_1)}{(t_1+2k^2t_1)^2}$
0
$\frac{2k^2(2k^2r_1+t_1)}{(t_1+2k^2t_1)^2}$

$\sigma_1^{\#1}{}_{\alpha}$

0
0
0
0
$\frac{\sqrt{2}}{t_1+2k^2t_1}$
$\frac{2k^2r_1+t_1}{(t_1+2k^2t_1)^2}$
$-\frac{2ik}{t_1+2k^2t_1}$

$\tau_1^{\#1}{}_{\alpha}$

0
0
0
0
0
0
$-\frac{i\sqrt{2}\,k(2k^2r_1+t_1)}{(t_1+2k^2t_1)^2}$

$\sigma_1^{\#1}{}_{\alpha\beta}$

$\frac{i\sqrt{2}\,k(t_1-2t_2)}{3(1+k^2)t_1t_2}$	$\frac{ik(t_1+4t_2)}{3(1+k^2)t_1t_2}$	$\frac{k^2(t_1+4t_2)}{3(1+k^2)t_1t_2}$	0
0	0	0	0
0	0	0	0
0	0	0	0

$\tau_1^{\#1}{}_{\alpha\beta}$

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

$\sigma_1^{\#2}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$ | $\sigma_1^{\#2}{}_{\alpha\beta}$

$\sigma_1^{\#1}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$ | $\tau_1^{\#1}{}_{\alpha\beta}$

$\sigma_1^{\#1}{}_{\alpha}\,\dagger^{\alpha}$ | $\sigma_1^{\#2}{}_{\alpha}\,\dagger^{\alpha}$ | $\tau_1^{\#1}{}_{\alpha}\,\dagger^{\alpha}$ | $\tau_1^{\#2}{}_{\alpha}\,\dagger^{\alpha}$

$\omega_1^{\#1}{}_{\alpha}$

0
0
0
$-k^2r_1-\frac{t_1}{2}$
$\frac{t_1}{\sqrt{2}}$
0
$\frac{t_1}{\sqrt{2}}$

$\omega_1^{\#2}{}_{\alpha}$

0
0
0
$\frac{t_1}{\sqrt{2}}$
0
0
0

$f_1^{\#1}{}_{\alpha}$

0
0
0
0
0
0
0

$f_1^{\#2}{}_{\alpha}$

0
0
0
$ik t_1$
0
0
0

$f_1^{\#1}{}_{\alpha\beta}$

$-\frac{i k(t_1-2t_2)}{3\sqrt{2}}$	$\frac{1}{3}ik(t_1+t_2)$	$\frac{1}{3}k^2(t_1+t_2)$
$\frac{t_1-2t_2}{3\sqrt{2}}$	$\frac{t_1+t_2}{3}$	$-\frac{1}{3}ik(t_1+t_2)$
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

$\omega_1^{\#2}{}_{\alpha\beta}$

$-\frac{t_1-2t_2}{3\sqrt{2}}$	$\frac{t_1+t_2}{3}$	$-\frac{1}{3}ik(t_1+t_2)$
$\frac{t_1+4t_2}{6}$	$-\frac{t_1-2t_2}{3\sqrt{2}}$	$\frac{ik(t_1-2t_2)}{3\sqrt{2}}$
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

$\omega_1^{\#1}{}_{\alpha\beta}$

0	0	0
0	0	0
0	0	0
$-k^2r_1-\frac{t_1}{2}$	$\frac{t_1}{\sqrt{2}}$	$-ik t_1$
$\frac{t_1}{\sqrt{2}}$	0	0
0	0	0
$-ik t_1$	0	0

$\omega_1^{\#1}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$ | $\omega_1^{\#2}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$ | $f_1^{\#1}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$

$\omega_1^{\#1}{}_{\alpha}\,\dagger^{\alpha}$ | $\omega_1^{\#2}{}_{\alpha}\,\dagger^{\alpha}$ | $f_1^{\#1}{}_{\alpha}\,\dagger^{\alpha}$ | $f_1^{\#2}{}_{\alpha}\,\dagger^{\alpha}$

$\omega_{2^+}^{\#1}{}_{\alpha\beta}$

$\frac{t_1}{2}$
$\frac{ikt_1}{\sqrt{2}}$
0

$f_{2^+}^{\#1}{}_{\alpha\beta}$

$-\frac{ikt_1}{\sqrt{2}}$
k^2t_1
0

$\omega_{2^-}^{\#1}{}_{\alpha\beta\chi}$

0
0
$k^2r_1+\frac{t_1}{2}$

$\omega_{2^+}^{\#1}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$ | $f_{2^+}^{\#1}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$

$\omega_{2^-}^{\#1}{}_{\alpha\beta\chi}\,\dagger^{\alpha\beta\chi}$

$\sigma_{2^+}^{\#1}{}_{\alpha\beta}$

$\frac{2}{(1+2k^2)^2t_1}$
$\frac{2i\sqrt{2}\,k}{(1+2k^2)^2t_1}$
0

$\tau_{2^+}^{\#1}{}_{\alpha\beta}$

$-\frac{2i\sqrt{2}\,k}{(1+2k^2)^2t_1}$
$\frac{4k^2}{(1+2k^2)^2t_1}$
0

$\sigma_{2^-}^{\#1}{}_{\alpha\beta\chi}$

0
0
$\frac{2}{2k^2r_1+t_1}$

$\sigma_{2^+}^{\#1}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$ | $\tau_{2^+}^{\#1}{}_{\alpha\beta}\,\dagger^{\alpha\beta}$

$\sigma_{2^-}^{\#1}{}_{\alpha\beta\chi}\,\dagger^{\alpha\beta\chi}$

$\sigma_{0^+}^{\#1}$

$-\frac{1}{(1+2k^2)^2t_1}$
$-\frac{i\sqrt{2}\,k}{(1+2k^2)^2t_1}$
0
0

$\tau_{0^+}^{\#1}$

$\frac{i\sqrt{2}\,k}{(1+2k^2)^2t_1}$
$-\frac{2k^2}{(1+2k^2)^2t_1}$
0
0

$\tau_{0^+}^{\#2}$

0
0
0
0

$\sigma_{0^-}^{\#1}$

0
0
0
$\frac{1}{k^2r_2+t_2}$

$\sigma_{0^+}^{\#1}\,\dagger$ | $\tau_{0^+}^{\#1}\,\dagger$ | $\tau_{0^+}^{\#2}\,\dagger$ | $\sigma_{0^-}^{\#1}\,\dagger$

$\omega_{0^+}^{\#1}$

$-t_1$
$-i\sqrt{2}\,kt_1$
0
0

$f_{0^+}^{\#1}$

$i\sqrt{2}\,kt_1$
$-2k^2t_1$
0
0

$f_{0^+}^{\#2}$

0
0
0
0

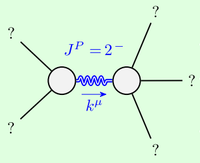
$\omega_{0^+}^{\#1}$

0
0
0
$k^2r_2+t_2$

$\omega_{0^+}^{\#1}\,\dagger$ | $f_{0^+}^{\#1}\,\dagger$ | $f_{0^+}^{\#2}\,\dagger$ | $\omega_{0^+}^{\#1}\,\dagger$

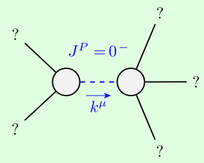
Source constraints

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



Massive particle

Pole residue:	$-\frac{1}{r_1}>0$
Polarisations:	5
Square mass:	$-\frac{t_1}{2r_1}>0$
Spin:	2
Parity:	Odd



Massive particle

Pole residue:	$-\frac{1}{r_2}>0$
Polarisations:	1
Square mass:	$-\frac{t_2}{r_2}>0$
Spin:	0
Parity:	Odd

(No massless particles)

Unitarity conditions

$r_1<0\ \&\&\ r_2<0\ \&\&\ t_1>0\ \&\&\ t_2>0$