Top-right matrix ($J=1$ sector)

	$\omega_{1^+\alpha\beta}^{\#1}$	$\omega_{1^+\alpha\beta}^{\#2}$	$f_{1^+\alpha\beta}^{\#1}$	$\omega_{1^-\alpha}^{\#1}$	$\omega_{1^-\alpha}^{\#2}$	$f_{1^-\alpha}^{\#1}$	$f_{1^-\alpha}^{\#2}$
$\omega_{1^+}^{\#1}\dagger^{\alpha\beta}$	$k^2 r_5-\frac{t_1}{2}$	$-\frac{t_1}{\sqrt2}$	$-\frac{ikt_1}{\sqrt2}$	0	0	0	0
$\omega_{1^+}^{\#2}\dagger^{\alpha\beta}$	$-\frac{t_1}{\sqrt2}$	0	0	0	0	0	0
$f_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{ikt_1}{\sqrt2}$	0	0	0	0	0	0
$\omega_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	$\frac16(6k^2r_5+t_1+4t_3)$	$\frac{t_1-2t_3}{3\sqrt2}$	0	$\frac13 ik(t_1-2t_3)$
$\omega_{1^-}^{\#2}\dagger^{\alpha}$	0	0	0	$\frac{t_1-2t_3}{3\sqrt2}$	$\frac{t_1+t_3}{3}$	0	$\frac13 i\sqrt2\,k(t_1+t_3)$
$f_{1^-}^{\#1}\dagger^{\alpha}$	0	0	0	0	0	0	0
$f_{1^-}^{\#2}\dagger^{\alpha}$	0	0	0	$-\frac13 ik(t_1-2t_3)$	$-\frac13 i\sqrt2\,k(t_1+t_3)$	0	$\frac23 k^2(t_1+t_3)$

$J=0$ (right) matrix

	$\omega_{0^+}^{\#1}\dagger$	$f_{0^+}^{\#1}\dagger$	$f_{0^+}^{\#2}\dagger$	$\omega_{0^-}^{\#1}\dagger$
$\omega_{0^+}^{\#1}$	0	0	0	$k^2 r_2-t_1$
$f_{0^+}^{\#2}$	0	0	0	0
$f_{0^+}^{\#1}$	$-i\sqrt2\,kt_3$	$2k^2 t_3$	0	0
$\omega_{0^-}^{\#1}$	t_3	$i\sqrt2\,kt_3$	0	0

ω_{2} matrix

	$\omega_{2^+}^{\#1}\dagger^{\alpha\beta}$	$f_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\omega_{2^-}^{\#1}\dagger^{\alpha\beta\chi}$
$\omega_{2^+\alpha\beta}^{\#1}$	0	0	$\frac{t_1}{2}$
$f_{2^+\alpha\beta}^{\#1}$	$-\frac{ikt_1}{\sqrt2}$	$k^2 t_1$	0
$\omega_{2^-\alpha\beta\chi}^{\#1}$	$\frac{t_1}{2}$	$\frac{ikt_1}{\sqrt2}$	0

σ_2 matrix

	$\sigma_{2^+\alpha\beta}^{\#1}$	$\tau_{2^+\alpha\beta}^{\#1}$	$\sigma_{2^-\alpha\beta\chi}^{\#1}$
$\sigma_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{2}{(1+2k^2)t_1}$	$-\frac{2i\sqrt2\,k}{(1+2k^2)^2 t_1}$	0
$\tau_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\frac{2i\sqrt2\,k}{(1+2k^2)^2 t_1}$	$\frac{4k^2}{(1+2k^2)^2 t_1}$	0
$\sigma_{2^-}^{\#1}\dagger^{\alpha\beta\chi}$	0	0	$\frac{2}{t_1}$

σ_0 matrix

	$\sigma_{0^+}^{\#1}\dagger$	$\tau_{0^+}^{\#1}\dagger$	$\tau_{0^+}^{\#2}\dagger$	$\sigma_{0^-}^{\#1}\dagger$
$\sigma_{0^-}^{\#1}$	0	0	0	$\frac{1}{k^2 r_2-t_1}$
$\tau_{0^+}^{\#2}$	0	0	0	0
$\tau_{0^+}^{\#1}$	$-\frac{i\sqrt2\,k}{(1+2k^2)^2 t_3}$	$\frac{2k^2}{(1+2k^2)^2 t_3}$	0	0
$\sigma_{0^+}^{\#1}$	$\frac{1}{(1+2k^2)^2 t_3}$	$\frac{i\sqrt2\,k}{(1+2k^2)^2 t_3}$	0	0

Left large matrix

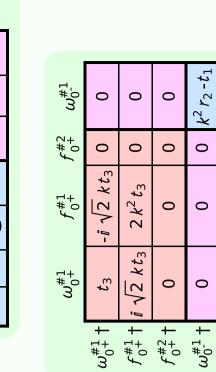|	$\sigma_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\sigma_{1^+}^{\#2}\dagger^{\alpha\beta}$	$\tau_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\sigma_{1^-}^{\#1}\dagger^{\alpha}$	$\sigma_{1^-}^{\#2}\dagger^{\alpha}$	$\tau_{1^-}^{\#1}\dagger^{\alpha}$	$\tau_{1^-}^{\#2}\dagger^{\alpha}$
$\tau_{1^-}^{\#2}{}_{\alpha}$	0	0	0	$-\frac{2ik(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2r_5(t_1+t_3))}$	$\frac{i\sqrt2\,k(6k^2r_5+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2r_5(t_1+t_3))}$	0	$\frac{2k^2(6k^2r_5+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2r_5(t_1+t_3))}$
$\tau_{1^-}^{\#1}{}_{\alpha}$	0	0	0	0	0	0	0
$\sigma_{1^-}^{\#2}{}_{\alpha}$	0	0	0	$-\frac{\sqrt2(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2r_5(t_1+t_3))}$	$\frac{6k^2r_5+t_1+4t_3}{(1+2k^2)^2(3t_1t_3+2k^2r_5(t_1+t_3))}$	0	$-\frac{i\sqrt2\,k(6k^2r_5+t_1+4t_3)}{(1+2k^2)^2(3t_1t_3+2k^2r_5(t_1+t_3))}$
$\sigma_{1^-}^{\#1}{}_{\alpha}$	0	0	0	$\frac{2(t_1+t_3)}{3t_1t_3+2k^2r_5(t_1+t_3)}$	$\frac{\sqrt2(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2r_5(t_1+t_3))}$	0	$\frac{2ik(t_1-2t_3)}{(1+2k^2)(3t_1t_3+2k^2r_5(t_1+t_3))}$
$\tau_{1^+}^{\#1}{}_{\alpha\beta}$	$-\frac{i\sqrt2\,k}{t_1+k^2t_1}$	$\frac{i(2k^3r_5-kt_1)}{(1+k^2)^2 t_1}$	$-\frac{2k^4r_5+k^2t_1}{(1+k^2)^2 t_1^2}$	0	0	0	0
$\sigma_{1^+}^{\#2}{}_{\alpha\beta}$	$-\frac{\sqrt2}{t_1+k^2t_1}$	$-\frac{2k^2r_5+t_1}{(1+k^2)^2 t_1^2}$	$\frac{i(2k^3r_5-kt_1)}{(1+k^2)^2 t_1^2}$	0	0	0	0
$\sigma_{1^+}^{\#1}{}_{\alpha\beta}$	0	$-\frac{\sqrt2}{t_1+k^2t_1}$	$\frac{i\sqrt2\,k}{t_1+k^2t_1}$	0	0	0	0

Lagrangian density

$$\mathcal{L} = -\tfrac13\,\omega_{\kappa\alpha}{}^{\alpha I}\,\omega_I{}^\kappa{}_\alpha + \tfrac23\,t_3\,\omega_I{}^{\alpha I}\,\omega_{\kappa\alpha}{}^\kappa - t_1\,\omega_I{}^{\kappa\lambda}\,\omega_{\kappa\lambda}{}^I + f^{\alpha\beta}\,\tau_{\alpha\beta} + \omega^{\alpha\beta\chi}\sigma_{\alpha\beta\chi} - r_5\,\partial_I\omega^{\kappa\lambda}{}_\kappa\,\partial^I\omega_\lambda{}^\alpha{}_\alpha + \tfrac23\,r_2\,\partial^\beta\omega_{\alpha\beta}{}^\theta{}_\theta\,\partial_\theta\omega_{\alpha\beta}{}^\kappa{}_\kappa - \tfrac13\,r_2\,\partial_\theta\omega_{\alpha\beta}{}^\kappa{}_\kappa\,\partial^\kappa\omega^{\alpha\beta\theta} + \tfrac23\,r_2\,\partial_\theta\omega_{\alpha\beta}{}^\kappa{}_\kappa\,\partial^\kappa\omega^{\theta\alpha\beta} - r_5\,\partial_\alpha\omega_\lambda{}^\theta\,\partial_\kappa\omega^{\theta\kappa\lambda\theta} + r_5\,\partial_\theta\omega_\lambda{}^\alpha{}_\alpha\,\partial_\kappa\omega^{\theta\kappa\lambda} - r_5\,\partial_\alpha\omega_\lambda{}^\theta{}_\theta\,\partial^\kappa f_{\kappa}{}^{\lambda\theta} + 2\,r_5\,\partial_\theta\omega_\lambda{}^\alpha{}_\alpha\,\partial_\kappa\omega^{\kappa\lambda\theta} - \tfrac12\,t_1\,\partial^\theta f_{\theta\kappa}\,\partial^\kappa f_\alpha{}^\theta - \tfrac12\,t_1\,\partial^\alpha f_{\kappa\theta}\,\partial^\kappa f_\alpha{}^\theta - \tfrac12\,t_1\,\partial^\alpha f^\lambda{}_\kappa\,\partial^\kappa f_{\alpha\lambda} + \tfrac13\,t_1\,\omega_\kappa{}^\alpha{}_\alpha\,\partial^\kappa f^I{}_I - \tfrac23\,t_3\,\omega_\kappa{}^\alpha{}_\alpha\,\partial^\kappa f^I{}_I - \tfrac13\,t_1\,\omega_{\kappa\lambda}{}^\lambda\,\partial^\kappa f^I{}_I + \tfrac21\,t_1\,\partial^\theta f_{\kappa\alpha}\,\partial^\kappa f^I{}_I - \tfrac13\,t_1\,\partial_\kappa f^\lambda{}_\lambda\,\partial^\kappa f^I{}_I + \tfrac23\,t_3\,\omega_{I\kappa}{}^\lambda\,\partial^\kappa f^I{}_\lambda + \tfrac23\,t_3\,\omega_{I\alpha}{}^\alpha\,\partial^\kappa f^I{}_\kappa - \tfrac13\,t_1\,\omega_{I\alpha}{}^\alpha\,\partial^\kappa f^I{}_\kappa + \tfrac23\,t_3\,\omega_{I\lambda}{}^\lambda\,\partial^\alpha f^I{}_\alpha + \tfrac12\,t_1\,\partial^\alpha f^\lambda{}_\alpha\,\partial^\kappa f_{\lambda\kappa} + \tfrac23\,t_3\,\partial^\alpha f^\lambda{}_\alpha\,\partial^\kappa f_{\lambda\kappa} - \tfrac13\,t_1\,\partial^\alpha f^\lambda{}_\alpha\,\partial^\kappa f_{\lambda\kappa} + \tfrac12\,t_1\,\partial_\lambda f_\kappa{}^\lambda\,\partial^\kappa f_I{}^\theta{}_\theta - \tfrac12\,t_1\,\partial_\kappa f^\lambda{}_\lambda\,\partial^\kappa f^\theta{}_\theta - \tfrac23\,r_2\,\partial^\beta\omega_{I}{}^{\lambda\alpha}\partial_\lambda\omega_{I\alpha}{}^\beta + \tfrac23\,r_2\,\partial^\beta\omega_I{}^{\alpha\lambda}\partial_\lambda\omega_{I\alpha}{}^\beta + r_5\,\partial_\alpha\omega_\lambda{}^\alpha{}_\theta\,\partial^\lambda\omega^{\theta\kappa}{}_\kappa - r_5\,\partial_\theta\omega_\lambda{}^\alpha{}_\alpha\,\partial^\lambda\omega^{\theta\kappa}{}_\kappa$$

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

Massive particle

Massive particle	
	$J^P=1^-$
Pole residue:	$\frac{6t_1t_3(t_1+t_3)-3r_5(t_1^2+2t_3^2)}{2r_5(t_1+t_3)(-3t_1t_3+r_5(t_1+t_3))}>0$
Polarisations:	3
Square mass:	$-\frac{3t_1t_3}{2r_5t_1+2r_5t_3}>0$
Spin:	1
Parity:	Odd

Massive particle

Massive particle	
	$J^P=0^-$
Pole residue:	$-\frac{1}{r_2}>0$
Polarisations:	1
Square mass:	$\frac{t_1}{r_2}>0$
Spin:	0
Parity:	Odd

(No massless particles)

Unitarity conditions

$r_2<0$ && $r_5<0$ && $t_1<0$ && $0<t_3<-t_1$