Tables

0^+ / 0^- sector (inverse propagator)

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

2^+ / 2^- sector (inverse propagator)

	$\omega_{2^+\,\alpha\beta}^{\#1}$	$f_{2^+\,\alpha\beta}^{\#1}$	$\omega_{2^-\,\alpha\beta\chi}^{\#1}$
$\omega_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\dfrac{t_1}{2}$	$-\dfrac{i k t_1}{\sqrt{2}}$	0
$f_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\dfrac{i k t_1}{\sqrt{2}}$	$k^2 t_1$	0
$\omega_{2^-}^{\#1}\dagger^{\alpha\beta\chi}$	0	0	$k^2 r_1 + \dfrac{t_1}{2}$

Source constraints

Source constraints	#
SO(3) irreps	
$\sigma_{0^+}^{\#1} == 0$	1
$\tau_{0^+}^{\#2} == 0$	1
$\tau_{0^+}^{\#1} - 2 i k\,\sigma_{0^+}^{\#1} == 0$	1
$\tau_{1^-}^{\#2\alpha} + 2 i k\,\sigma_{1^-}^{\#2\alpha} == 0$	3
$\tau_{1^-}^{\#1\alpha} == 0$	3
$\tau_{1^+}^{\#1\alpha\beta} - 2 i k\,\sigma_{1^+}^{\#1\alpha\beta} == 0$	3
$2\,\sigma_{1^+}^{\#1\alpha\beta} + \sigma_{1^+}^{\#2\alpha\beta} == 0$	3
$\tau_{2^+}^{\#1\alpha\beta} - 2 i k\,\sigma_{2^+}^{\#1\alpha\beta} == 0$	5
Total #:	20

2^+ / 2^- sector (propagator / saturated)

	$\sigma_{2^+\,\alpha\beta}^{\#1}$	$\tau_{2^+\,\alpha\beta}^{\#1}$	$\sigma_{2^-\,\alpha\beta\chi}^{\#1}$
$\sigma_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\dfrac{2}{(1+2k^2)^2 t_1}$	$-\dfrac{2 i \sqrt{2}\,k}{(1+2k^2)^2 t_1}$	0
$\tau_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\dfrac{2 i \sqrt{2}\,k}{(1+2k^2)^2 t_1}$	$\dfrac{4 k^2}{(1+2k^2)^2 t_1}$	0
$\sigma_{2^-}^{\#1}\dagger^{\alpha\beta\chi}$	0	0	$\dfrac{2}{2 k^2 r_1 + t_1}$

1^+ / 1^- sector (propagator / saturated) — large left table

	$\sigma_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\sigma_{1^+}^{\#2}\dagger^{\alpha\beta}$	$\tau_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\sigma_{1^-}^{\#1}\dagger^{\alpha}$	$\sigma_{1^-}^{\#2}\dagger^{\alpha}$	$\tau_{1^-}^{\#1}\dagger^{\alpha}$	$\tau_{1^-}^{\#2}\dagger^{\alpha}$
$\tau_{1^-}^{\#2}{}_{\alpha}$	0	0	0	$\dfrac{2 i k}{t_1+2k^2 t_1}$	$\dfrac{i\sqrt{2}\,k(2k^2 r_1+t_1)}{(t_1+2k^2 t_1)^2}$	0	$\dfrac{2k^2(2k^2 r_1+t_1)}{(t_1+2k^2 t_1)^2}$
$\tau_{1^-}^{\#1}{}_{\alpha}$	0	0	0	0	0	0	0
$\sigma_{1^-}^{\#2}{}_{\alpha}$	0	0	0	$\dfrac{\sqrt{2}}{t_1+2k^2 t_1}$	$\dfrac{2k^2 r_1+t_1}{(t_1+2k^2 t_1)^2}$	0	$-\dfrac{i\sqrt{2}\,k(2k^2 r_1+t_1)}{(t_1+2k^2 t_1)^2}$
$\sigma_{1^-}^{\#1}{}_{\alpha}$	0	0	0	0	$\dfrac{\sqrt{2}}{t_1+2k^2 t_1}$	0	$-\dfrac{2 i k}{t_1+2k^2 t_1}$
$\tau_{1^+}^{\#1}{}_{\alpha\beta}$	$-\dfrac{6 i\sqrt{2}\,k}{(3+2k^2)^2 t_1}$	$\dfrac{12 i k}{(3+2k^2)^2 t_1}$	$\dfrac{12 k^2}{(3+2k^2)^2 t_1}$	0	0	0	0
$\sigma_{1^+}^{\#2}{}_{\alpha\beta}$	$-\dfrac{6\sqrt{2}}{(3+2k^2)^2 t_1}$	$\dfrac{12}{(3+2k^2)^2 t_1}$	$\dfrac{12 i k}{(3+2k^2)^2 t_1}$	0	0	0	0
$\sigma_{1^+}^{\#1}{}_{\alpha\beta}$	$\dfrac{6}{(3+2k^2)^2 t_1}$	$-\dfrac{6\sqrt{2}}{(3+2k^2)^2 t_1}$	$\dfrac{6 i\sqrt{2}\,k}{(3+2k^2)^2 t_1}$	0	0	0	0

1^+ / 1^- sector (inverse propagator) — centre-right table

	$\omega_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\omega_{1^+}^{\#2}\dagger^{\alpha\beta}$	$f_{1^+}^{\#1}\dagger^{\alpha\beta}$	$\omega_{1^-}^{\#1}\dagger^{\alpha}$	$\omega_{1^-}^{\#2}\dagger^{\alpha}$	$f_{1^-}^{\#1}\dagger^{\alpha}$	$f_{1^-}^{\#2}\dagger^{\alpha}$
$f_{1^-}^{\#2}{}_{\alpha}$	0	0	0	$i k t_1$	0	0	0
$f_{1^-}^{\#1}{}_{\alpha}$	0	0	0	0	0	0	0
$\omega_{1^-}^{\#2}{}_{\alpha}$	0	0	0	$\dfrac{t_1}{\sqrt{2}}$	0	0	0
$\omega_{1^-}^{\#1}{}_{\alpha}$	0	0	0	$-k^2 r_1 - \dfrac{t_1}{2}$	$\dfrac{t_1}{\sqrt{2}}$	0	$-i k t_1$
$f_{1^+}^{\#1}{}_{\alpha\beta}$	$-\dfrac{i k t_1}{3\sqrt{2}}$	$\dfrac{i k t_1}{3}$	$\dfrac{k^2 t_1}{3}$	0	0	0	0
$\omega_{1^+}^{\#2}{}_{\alpha\beta}$	$-\dfrac{t_1}{3\sqrt{2}}$	$\dfrac{t_1}{3}$	$-\dfrac{1}{3} i k t_1$	0	0	0	0
$\omega_{1^+}^{\#1}{}_{\alpha\beta}$	$\dfrac{t_1}{6}$	$-\dfrac{t_1}{3\sqrt{2}}$	$\dfrac{i k t_1}{3\sqrt{2}}$	0	0	0	0

0^+ / 0^- sector (propagator / saturated) — bottom-right 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
$\tau_{0^+}^{\#1}\dagger$	$\dfrac{i\sqrt{2}\,k}{(1+2k^2)^2 t_1}$	$-\dfrac{2 k^2}{(1+2k^2)^2 t_1}$	0	0
$\tau_{0^+}^{\#2}\dagger$	0	0	0	0
$\sigma_{0^-}^{\#1}\dagger$	0	0	0	0

Lagrangian density

$$
\begin{aligned}
&-t_1\,\omega_i{}^{\alpha}{}_\kappa\,\omega_{\kappa\alpha}{}^{\kappa} - \tfrac{1}{3}t_1\,\omega_i{}^{\kappa\lambda}\,\omega_{\kappa\lambda}{}^{i} + \tfrac{1}{3}t_1\,\omega_{\kappa\lambda}{}^{i}\,\omega^{\kappa\lambda}{}_i + \gamma_{\kappa\lambda}\,\omega^{\kappa\lambda}{}_i +\\
&2r_1\,\partial_i\omega^{\kappa\lambda}{}_\kappa\,\partial^l\omega_{\lambda}{}^{\alpha}{}_\alpha - \tfrac{2}{3}r_1\,\partial^\beta\omega_{\theta}{}^{\theta\alpha}\,\partial_\kappa\omega_{\alpha\beta}{}^{\kappa} +\\
&\tfrac{2}{3}r_1\,\partial_\theta\omega_{\alpha\beta}{}^{\kappa}\,\partial_\kappa\omega^{\theta\alpha\beta} + 2r_1\,\partial_\alpha\omega_{\lambda\theta}{}^{\alpha}\,\partial_\kappa\omega^{\theta\kappa\lambda} +\\
&2r_1\,\partial_\alpha\omega_{\lambda}{}^{\alpha}{}_\theta\,\partial_\kappa\omega^{\kappa\lambda\theta} - 4r_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^{\theta}{}_\alpha -\\
&\tfrac{2}{3}t_1\,\partial^\alpha f_{\kappa\theta}\,\partial^\kappa f^{\theta}{}_\alpha - \tfrac{1}{3}t_1\,\partial^\alpha f_{\kappa\theta}\,\partial^\kappa f^{\theta}{}_\alpha + t_1\,\omega_{\kappa\alpha}{}^{\lambda}\,\partial^\kappa f^{\alpha}{}_\lambda + t_1\,\omega_{\theta\kappa}{}^{i}\,\partial^\kappa f^{i\theta} +\\
&t_1\,\omega_{\iota\alpha}{}^{\alpha}\,\partial^\kappa f^{i}{}_\kappa - t_1\,\omega_{i\lambda}{}^{\lambda}\,\partial^\kappa f^{i}{}_\kappa + \tfrac{1}{3}t_1\,\partial^\alpha f^{\lambda}{}_\lambda\,\partial^\kappa f_{\lambda\kappa} +\\
&-\tfrac{4}{3}t_1\,\omega_{i\kappa\theta}{}^{\alpha}\,\partial^\kappa f^{i\theta} - \tfrac{1}{3}t_1\,\omega_{\theta i\kappa}\,\partial^\kappa f^{i\theta} + \tfrac{2}{3}t_1\,\partial_\alpha f_{\lambda}{}^{\theta}\,\partial^\kappa f_{\lambda\alpha} +\\
&t_1\,\omega_{\iota\alpha}{}^{\alpha}\,\partial^\kappa f^{i}{}_\kappa - t_1\,\partial_\kappa f^{\lambda}{}_\lambda\,\partial^\kappa f^{i}{}_\iota + \tfrac{1}{3}t_1\,\partial^\alpha f^{\lambda}{}_\lambda\,\partial^\kappa f_{\lambda\kappa} +\\
&\tfrac{1}{3}t_1\,\partial_\kappa f^{\lambda}{}_\theta\,\partial^\kappa f_{\lambda}{}^{\theta} + \tfrac{2}{3}t_1\,\partial_\kappa f^{\lambda}{}_\theta\,\partial^\kappa f^{\theta}{}_\lambda - t_1\,\partial^\alpha f^{\lambda}{}_\lambda\,\partial^\kappa f_{\lambda\kappa} +\\
&\tfrac{2}{3}r_1\,\partial_\kappa\omega^{\alpha\beta\theta}\,\partial^\kappa\omega_{\alpha\beta\theta} - \tfrac{2}{3}r_1\,\partial_\alpha\omega_{\lambda\beta\theta}\,\partial^\lambda\omega^{\theta k}{}_\kappa + 2r_1\,\partial_\alpha\omega_{\lambda}{}^{\alpha}{}_\theta\,\partial^\lambda\omega^{\theta k}{}_\kappa +\\
&\tfrac{8}{3}r_1\,\partial^\beta\omega_i{}^{\lambda\alpha}\,\partial_\lambda\omega_{\alpha\beta}{}^{\iota} - 2r_1\,\partial_\alpha\omega_{\lambda}{}^{\alpha}{}_\theta\,\partial^\lambda\omega^{\theta k}{}_\kappa
\end{aligned}
$$

Added source term: $f^{\alpha\beta}\,\tau_{\alpha\beta} + \omega^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi}$

Massive particle

$J^P = 2^-$, k^μ

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

Unitarity conditions: $r_1 < 0 \;\&\&\; t_1 > 0$

(No massless particles)