

$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	$\sigma_{1+}^{\#2} \alpha\beta$	$\tau_{1+}^{\#1} \alpha\beta$	$\sigma_{1-}^{\#1} \alpha$	$\sigma_{1-}^{\#2} \alpha$	$\tau_{1-}^{\#1} \alpha$	$\tau_{1-}^{\#2} \alpha$
$\sigma_{1+}^{\#1} \dagger^{\alpha\beta}$	0	$\frac{2\sqrt{2}}{(\alpha_0-4\beta_1)(1+k^2)}$	0	0	0	0
$\sigma_{1+}^{\#2} \dagger^{\alpha\beta}$	$\frac{2\sqrt{2}}{(\alpha_0-4\beta_1)(1+k^2)}$	$-\frac{2ik}{(\alpha_0-4\beta_1)(1+k^2)^2}$	0	0	0	0
$\tau_{1+}^{\#1} \dagger^{\alpha\beta}$	$-\frac{2i\sqrt{2}k}{(\alpha_0-4\beta_1)(1+k^2)}$	$-\frac{2k^2}{(\alpha_0-4\beta_1)(1+k^2)^2}$	0	0	0	0
$\sigma_{1-}^{\#1} \dagger^\alpha$	0	0	0	$-\frac{2\sqrt{2}}{(\alpha_0-4\beta_1)(1+2k^2)}$	0	$-\frac{4ik}{(\alpha_0-4\beta_1)(1+2k^2)}$
$\sigma_{1-}^{\#2} \dagger^\alpha$	0	0	$-\frac{2\sqrt{2}}{(\alpha_0-4\beta_1)(1+2k^2)}$	0	0	$-\frac{2i\sqrt{2}k}{(\alpha_0-4\beta_1)(1+2k^2)^2}$
$\tau_{1-}^{\#1} \dagger^\alpha$	0	0	0	0	0	0
$\tau_{1-}^{\#2} \dagger^\alpha$	0	0	$\frac{4ik}{(\alpha_0-4\beta_1)(1+2k^2)}$	$\frac{2i\sqrt{2}k}{(\alpha_0-4\beta_1)(1+2k^2)^2}$	0	$-\frac{4k^2}{(\alpha_0-4\beta_1)(1+2k^2)^2}$

$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\omega_{1+}^{\#2} \alpha\beta$	$f_{1+}^{\#1} \alpha\beta$	$\omega_{1-}^{\#1} \alpha$	$\omega_{1-}^{\#2} \alpha$	$f_{1-}^{\#2} \alpha$
$\omega_{1+}^{\#1} \dagger^{\alpha\beta}$	$\frac{1}{4}(\alpha_0-4\beta_1)$	$\frac{\alpha_0-4\beta_1}{2\sqrt{2}}$	0	0	0
$\omega_{1+}^{\#2} \dagger^{\alpha\beta}$	$\frac{\alpha_0-4\beta_1}{2\sqrt{2}}$	0	0	0	0
$f_{1+}^{\#1} \dagger^{\alpha\beta}$	$-\frac{i(\alpha_0-4\beta_1)k}{2\sqrt{2}}$	0	0	0	0
$\omega_{1-}^{\#1} \dagger^\alpha$	0	0	$\frac{1}{4}(\alpha_0-4\beta_1)$	$-\frac{\alpha_0-4\beta_1}{2\sqrt{2}}$	$-\frac{1}{2}i(\alpha_0-4\beta_1)k$
$\omega_{1-}^{\#2} \dagger^\alpha$	0	0	$-\frac{\alpha_0-4\beta_1}{2\sqrt{2}}$	0	0
$f_{1-}^{\#1} \dagger^\alpha$	0	0	0	0	0
$f_{1-}^{\#2} \dagger^\alpha$	0	0	$\frac{1}{2}i(\alpha_0-4\beta_1)k$	0	0

$\omega_0^{\#1} \dagger$	$f_0^{\#1} \dagger$	$f_0^{\#2} \dagger$	$\omega_0^{\#1} \alpha$
$\omega_0^{\#1} \dagger$	$\frac{\alpha_0}{2}-2\beta_1+\alpha_6k^2$	$-\frac{i(\alpha_0-4\beta_1)k}{\sqrt{2}}$	0
$f_0^{\#1} \dagger$	$\frac{i(\alpha_0-4\beta_1)k}{\sqrt{2}}$	$-4\beta_1k^2$	0
$f_0^{\#2} \dagger$	0	0	0
$\omega_0^{\#1} \alpha$	0	0	$\frac{1}{2}(\alpha_0-4\beta_1)$

Lagrangian density

$$\begin{aligned}
&-\frac{1}{2}\alpha_0\omega_{\alpha\chi\beta}\omega^{\alpha\beta\chi}-\frac{1}{2}\alpha_0\omega_{\alpha}^{\alpha\beta}\omega_{\beta}^{\chi\chi}+2\beta_1\omega_{\alpha}^{\alpha\beta}\omega_{\beta}^{\chi\chi}- \\
&2\beta_1\omega_{\alpha}^{\chi\delta}\omega_{\chi\delta}^{\alpha}-2\beta_1\omega_{\alpha}^{\chi}\omega_{\chi}^{\alpha}\partial_{\beta}f^{\alpha\beta}-2\beta_1\omega_{\alpha}^{\delta}\omega_{\delta}^{\alpha}\partial_{\beta}f^{\alpha\beta}- \\
&\alpha_0f^{\alpha\beta}\partial_{\beta}\omega_{\alpha}^{\chi\chi}+\alpha_0\partial_{\beta}\omega_{\alpha}^{\alpha\beta}+2\beta_1\omega_{\beta}^{\chi\chi}\omega_{\chi}^{\alpha}\partial^{\beta}f_{\alpha}^{\alpha}+2\beta_1\omega_{\beta}^{\delta}\omega_{\delta}^{\alpha}\partial^{\beta}f_{\alpha}^{\alpha}- \\
&2\beta_1\partial_{\beta}f_{\chi}^{\chi}\partial^{\beta}f_{\alpha}^{\alpha}+\alpha_0f^{\alpha\beta}\partial_{\chi}\omega_{\alpha}^{\chi\chi}-\alpha_0f_{\alpha}^{\alpha}\partial_{\chi}\omega^{\beta\chi}_{\beta}+ \\
&4\beta_1\omega_{\alpha\chi\beta}\partial^{\chi}f^{\alpha\beta}_{\alpha}+\beta_1\partial_{\chi}f_{\beta}^{\delta}\partial^{\chi}f_{\delta}^{\beta}+\beta_1\partial_{\chi}f_{\beta}^{\delta}\partial^{\chi}f_{\delta}^{\beta}+ \\
&4\beta_1\partial^{\beta}f_{\alpha}^{\alpha}\partial_{\delta}f_{\beta}^{\delta}-2\beta_1\partial_{\beta}f_{\chi}^{\beta}\partial_{\delta}f_{\chi}^{\delta}+\frac{2}{3}\alpha_6\partial_{\beta}\omega_{\alpha}^{\alpha\beta}\partial_{\delta}\omega^{\chi\delta}_{\chi}- \\
&\beta_1\partial^{\chi}f_{\zeta}^{\beta}\partial^{\zeta}f_{\beta\chi}^{\beta}-\beta_1\partial^{\chi}f_{\zeta}^{\beta}\partial^{\zeta}f_{\chi\beta}^{\beta}+\beta_1\partial^{\chi}f_{\delta\zeta}^{\delta}\partial^{\zeta}f_{\chi}^{\delta}-\beta_1\partial^{\chi}f_{\zeta\delta}^{\delta}\partial^{\zeta}f_{\chi}^{\delta}
\end{aligned}$$

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

Source constraints

SO(3) irreps	#
$\tau_{0+}^{\#2} == 0$	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
Total #:	10

$\omega_{2^{+}}^{\#1}{}_{\alpha\beta}$	$f_{2^{+}}^{\#1}{}_{\alpha\beta}$	$\omega_{2^{-}}^{\#1}{}_{\alpha\beta\chi}$
$-\frac{\alpha_0}{4}+\beta_1$	$\frac{i(\alpha_0-4\beta_1)k}{2\sqrt{2}}$	0
$-\frac{i(\alpha_0-4\beta_1)k}{2\sqrt{2}}$	$2\beta_1k^2$	0
0	0	$-\frac{\alpha_0}{4}+\beta_1$

	$\sigma_{2^{+}}^{\#1}$	$\tau_{2^{+}}^{\#1}$	$\sigma_{2^{-}}^{\#1}$
$\sigma_{2^{+}}^{\#1} \dagger^{\alpha\beta}$	$-\frac{16\beta_1}{\alpha_0^2-4\alpha_0\beta_1}$	$\frac{2i\sqrt{2}}{\alpha_0k}$	0
$\tau_{2^{+}}^{\#1} \dagger^{\alpha\beta}$	$-\frac{2i\sqrt{2}}{\alpha_0k}$	$\frac{2}{\alpha_0k^2}$	0
$\sigma_{2^{-}}^{\#1} \dagger^{\alpha\beta\chi}$	0	0	$\frac{1}{-\frac{\alpha_0}{4}+\beta_1}$

$\sigma_{0+}^{\#1} \dagger$	$\tau_{0+}^{\#1}$	$\tau_{0+}^{\#2}$	$\sigma_0^{\#1}$
$\sigma_{0+}^{\#1} \dagger$	$\frac{8\beta_1}{\alpha_0^2-4\alpha_0\beta_1+8\alpha_6\beta_1k^2}$	$-\frac{i\sqrt{2}(\alpha_0-4\beta_1)}{\alpha_0(\alpha_0-4\beta_1)k+8\alpha_6\beta_1k^3}$	0
$\tau_{0+}^{\#1} \dagger$	$\frac{i\sqrt{2}(\alpha_0-4\beta_1)}{\alpha_0(\alpha_0-4\beta_1)k+8\alpha_6\beta_1k^3}$	$-\frac{\alpha_0-4\beta_1+2\alpha_6k^2}{k^2(\alpha_0^2-4\alpha_0\beta_1+8\alpha_6\beta_1k^2)}$	0
$\tau_{0+}^{\#2} \dagger$	0	0	0
$\sigma_0^{\#1} \dagger$	0	0	$\frac{2}{\alpha_0-4\beta_1}$