Lagrangian density

$$2\beta^2\phi^2 + \alpha^2\beta^2\, h_{\alpha\mu\nu}h^{\alpha\mu\nu} - 3\alpha^2\beta^2\, h^\alpha{}_\alpha{}^\mu h_{\alpha\mu}{}^\nu{}_\nu +$$
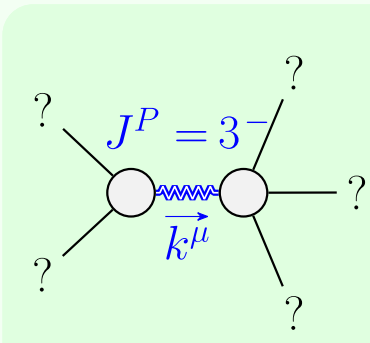$$\tfrac{1}{2}\phi\,\partial_\alpha\partial^\alpha\phi + \alpha\beta\, h_\alpha{}^\mu{}_\mu\,\partial^\alpha\phi - \tfrac{3}{2}\alpha^2\, h^\alpha{}_\alpha{}^\mu\,\partial_\rho\partial_\mu h^\nu{}_\nu{}^\rho -$$
$$3\alpha^2\, h^{\alpha\mu\nu}\,\partial_\rho\partial_\nu h_{\alpha\mu}{}^\rho + 6\alpha^2\, h^\alpha{}_\alpha{}^\mu\,\partial_\rho\partial_\mu h^{\nu\rho}{}_\nu +$$
$$\alpha^2\, h^{\alpha\mu\nu}\,\partial_\rho\partial^\rho h_{\alpha\mu\nu} - 3\alpha^2\, h^\alpha{}_\alpha{}^\mu\,\partial_\rho\partial^\rho h^\nu{}_{\mu\nu}$$

Added source term: $\phi\rho + h^{\alpha\beta\chi}\mathcal{F}_{\alpha\beta\chi}$

(No source constraints)

0^+ sector — $\mathcal{F}/\rho$

	$\mathcal{F}_{0^+}^{\#1}\dagger$	$\mathcal{F}_{0^+}^{\#2}\dagger$	$\rho_{0^+}^{\#1}\dagger$
$\mathcal{F}_{0^+}^{\#1}$	$\dfrac{16\beta^4-39\beta^2k^2+9k^4}{40\alpha^2\beta^6}$	$-\dfrac{24\beta^4-17\beta^2k^2+3k^4}{40\alpha^2\beta^6}$	$-\dfrac{ik(\beta^2+3k^2)}{20\alpha\beta^5}$
$\mathcal{F}_{0^+}^{\#2}$	$-\dfrac{24\beta^4-17\beta^2k^2+3k^4}{40\alpha^2\beta^6}$	$\dfrac{16\beta^4-7\beta^2k^2+k^4}{40\alpha^2\beta^6}$	$\dfrac{ik(-\beta^2+k^2)}{20\alpha\beta^5}$
$\rho_{0^+}^{\#1}$	$\dfrac{ik(\beta^2+3k^2)}{20\alpha\beta^5}$	$\dfrac{i(\beta-k)k(\beta+k)}{20\alpha\beta^5}$	$\dfrac{5\beta^2+k^2}{10\beta^4}$

0^+ sector — ϕ/h

	$\phi_{0^+}^{\#1}\dagger$	$h_{0^+}^{\#2}\dagger$	$h_{0^+}^{\#1}\dagger$
$h_{0^+}^{\#1}$	$-\tfrac{1}{2}i\alpha\beta k$	$\tfrac{3}{2}\alpha^2(-2\beta^2+k^2)$	$\tfrac{1}{2}\alpha^2(-4\beta^2+k^2)$
$h_{0^+}^{\#2}$	$-\tfrac{1}{2}i\alpha\beta k$	$\tfrac{1}{2}\alpha^2(-4\beta^2+9k^2)$	$\tfrac{3}{2}\alpha^2(-2\beta^2+k^2)$
$\phi_{0^+}^{\#1}$	$2\beta^2-\dfrac{k^2}{2}$	$\tfrac{1}{2}i\alpha\beta k$	$\tfrac{1}{2}i\alpha\beta k$

1^- sector — h

	$h_{1^-}^{\#1}{}_\alpha$	$h_{1^-}^{\#2}{}_\alpha$
$h_{1^-}^{\#1}\dagger^\alpha$	0	$-\sqrt{5}\,\alpha^2\beta^2$
$h_{1^-}^{\#2}\dagger^\alpha$	$-\sqrt{5}\,\alpha^2\beta^2$	$4\alpha^2(-\beta^2+k^2)$

1^- sector — $\mathcal{F}$

	$\mathcal{F}_{1^-}^{\#1}{}_\alpha$	$\mathcal{F}_{1^-}^{\#2}{}_\alpha$
$\mathcal{F}_{1^-}^{\#1}\dagger^\alpha$	$\dfrac{4(\beta-k)(\beta+k)}{5\alpha^2\beta^4}$	$-\dfrac{1}{\sqrt{5}\,\alpha^2\beta^2}$
$\mathcal{F}_{1^-}^{\#2}\dagger^\alpha$	$-\dfrac{1}{\sqrt{5}\,\alpha^2\beta^2}$	0

3^- sector

	$h_{3^-}^{\#1}{}_{\alpha\beta\chi}$
$h_{3^-}^{\#1}\dagger^{\alpha\beta\chi}$	$\alpha^2(\beta-k)(\beta+k)$

	$\mathcal{F}_{3^-}^{\#1}{}_{\alpha\beta\chi}$
$\mathcal{F}_{3^-}^{\#1}\dagger^{\alpha\beta\chi}$	$\dfrac{1}{\alpha^2(\beta^2-k^2)}$

2^+ sector

	$\mathcal{F}_{2^+}^{\#1}{}_{\alpha\beta}$
$\mathcal{F}_{2^+}^{\#1}\dagger^{\alpha\beta}$	$\dfrac{1}{\alpha^2\beta^2}$

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

(No massless particles)

Unitarity conditions

$$\alpha<0\;||\;\alpha>0\;\&\&\;\beta<0\;||\;\beta>0$$

$J^P = 3^-$, $\vec{k}^\mu$

Massive particle

Pole residue:	$\dfrac{1}{\alpha^2}>0$
Polarisations:	7
Square mass:	$\beta^2>0$
Spin:	3
Parity:	Odd