

Lagrangian density

$$\frac{1}{2} \alpha \partial_\beta h^\chi_\chi \partial^\beta h^\alpha_\alpha + \beta \partial_\alpha h^{\alpha\beta} \partial_\chi h^\chi_\beta - \alpha \partial^\beta h^\alpha_\alpha \partial_\chi h^\chi_\beta - \frac{1}{2} \alpha \partial_\chi h_{\alpha\beta} \partial^\chi h^{\alpha\beta}$$

Added source term: $h^{\alpha\beta} \mathcal{T}_{\alpha\beta}$

$$\begin{matrix} \mathcal{T}_{0+}^{\#1} + \\ \mathcal{T}_{0+}^{\#2} + \end{matrix} \begin{matrix} \frac{1}{\alpha k^2} \\ 0 \end{matrix} \begin{matrix} \mathcal{T}_{0+}^{\#1} \\ \mathcal{T}_{0+}^{\#2} \end{matrix}$$

$$\begin{matrix} \frac{1}{\alpha k^2} \\ 0 \end{matrix} \begin{matrix} \frac{1}{(-\alpha+\beta)k^2} \\ 0 \end{matrix}$$

$$\begin{matrix} h_{0+}^{\#1} + \\ h_{0+}^{\#2} + \end{matrix} \begin{matrix} \alpha k^2 \\ 0 \end{matrix} \begin{matrix} h_{0+}^{\#1} \\ h_{0+}^{\#2} \end{matrix}$$

$$\begin{matrix} h_{0+}^{\#1} \\ h_{0+}^{\#2} \end{matrix} \begin{matrix} 0 \\ (-\alpha+\beta)k^2 \end{matrix}$$

$$\begin{matrix} h_{1-}^{\#1} + \alpha \\ \frac{1}{2} (-\alpha+\beta)k^2 \end{matrix} \begin{matrix} h_{1-}^{\#1} \\ \alpha \end{matrix}$$

$$\begin{matrix} \frac{1}{2} (-\alpha+\beta)k^2 \\ \alpha \end{matrix}$$

$$\mathcal{T}_{2+}^{\#1} + \alpha\beta \begin{matrix} \mathcal{T}_{2+}^{\#1} \\ \mathcal{T}_{2+}^{\#2} \end{matrix}$$

$$\begin{matrix} -\frac{2}{\alpha k^2} \\ \alpha\beta \end{matrix}$$

$$\mathcal{T}_{1-}^{\#1} + \alpha \begin{matrix} \mathcal{T}_{1-}^{\#1} \\ \alpha \end{matrix}$$

$$\begin{matrix} -\frac{2}{(\alpha-\beta)k^2} \\ \alpha \end{matrix}$$

$$h_{2+}^{\#1} + \alpha\beta \begin{matrix} h_{2+}^{\#1} \\ h_{2+}^{\#2} \end{matrix}$$

$$\begin{matrix} -\frac{\alpha k^2}{2} \\ \alpha\beta \end{matrix}$$

(No source constraints)

Quartic pole

Pole residue:

$$0 < \frac{6 \alpha + 3 \beta - \sqrt{3} \sqrt{12 \alpha^2 + 12 \alpha \beta + 19 \beta^2 + 64 (\alpha - \beta)^2 p^2}}{\alpha (\alpha - \beta)} \&\& \frac{6 \alpha + 3 \beta - \sqrt{3} \sqrt{12 \alpha^2 + 12 \alpha \beta + 19 \beta^2 + 64 (\alpha - \beta)^2 p^2}}{\alpha (\alpha - \beta)} > 0$$

Polarisations:

1

Quartic pole

Pole residue:

$$0 < \frac{6 \alpha + 3 \beta + \sqrt{3} \sqrt{12 \alpha^2 + 12 \alpha \beta + 19 \beta^2 + 64 (\alpha - \beta)^2 p^2}}{\alpha (\alpha - \beta)} \&\& \frac{6 \alpha + 3 \beta + \sqrt{3} \sqrt{12 \alpha^2 + 12 \alpha \beta + 19 \beta^2 + 64 (\alpha - \beta)^2 p^2}}{\alpha (\alpha - \beta)} > 0$$

Polarisations:

1

Hexic pole

Pole residue:

$$0 < \frac{2 \alpha + \beta}{\alpha^2 - \alpha \beta} \&\& \frac{2 \alpha + \beta}{\alpha^2 - \alpha \beta} > 0$$

Polarisations:

1

Quadratic pole

Pole residue:

$$\frac{1}{\alpha} + \frac{1}{\alpha - \beta} > 0$$

Polarisations:

2

Quadratic pole

Pole residue:

$$-\frac{1}{\alpha} + \frac{5}{-\alpha + \beta} > 0$$

Polarisations:

1

Unitarity conditions

(Unitarity is demonstrably impossible)

Quadratic pole

Pole residue:

$$-\frac{1}{\alpha} + \frac{1}{-\alpha + \beta} > 0$$

Polarisations:

2

Quadratic pole

Pole residue:

$$-\frac{1}{\alpha} > 0$$

Polarisations:

2

Quadratic pole

Pole residue:

$$\frac{1}{\alpha} + \frac{5}{\alpha - \beta} > 0$$

Polarisations:

1

Quadratic pole

Pole residue:

$$\frac{-2 \alpha + \beta + \sqrt{20 \alpha^2 - 36 \alpha \beta + 17 \beta^2}}{\alpha (\alpha - \beta)} > 0$$

Polarisations:

1

(No massive particles)

Quadratic pole

Pole residue:

$$-\frac{2 \alpha - \beta + \sqrt{20 \alpha^2 - 36 \alpha \beta + 17 \beta^2}}{\alpha^2 - \alpha \beta} > 0$$

Polarisations:

1

Quartic pole

Pole residue:

$$0 < \frac{\beta}{\alpha^2 - \alpha \beta} \&\& \frac{\beta}{\alpha^2 - \alpha \beta} > 0$$

Polarisations:

2