

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

(No source constraints)

$\mathcal{T}_{0+}^{\#1} + \mathcal{T}_{0+}^{\#2} +$

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

$\mathcal{T}_{0+}^{\#1}$
 $\mathcal{T}_{0+}^{\#2}$

$h_{0+}^{\#1} + h_{0+}^{\#2} +$

| | |
|--------------|----------------------|
| αk^2 | 0 |
| 0 | $(-\alpha+\beta)k^2$ |

$h_{0+}^{\#1}$
 $h_{0+}^{\#2}$

$h_{1-}^{\#1} + \alpha$

| |
|---------------------------------|
| $\frac{1}{2}(-\alpha+\beta)k^2$ |
|---------------------------------|

$h_{1-}^{\#1}$
 α

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

| |
|-------------------------|
| $-\frac{2}{\alpha k^2}$ |
|-------------------------|

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

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

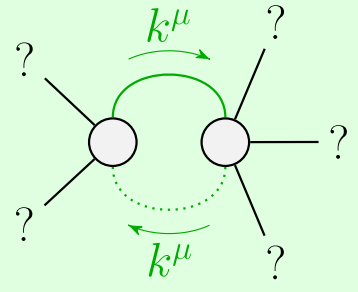
| |
|--------------------------------|
| $-\frac{2}{(\alpha-\beta)k^2}$ |
|--------------------------------|

$\mathcal{T}_{1-}^{\#1}$
 α

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

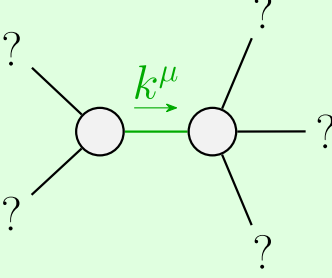
| |
|-------------------------|
| $-\frac{\alpha k^2}{2}$ |
|-------------------------|

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



Quartic pole

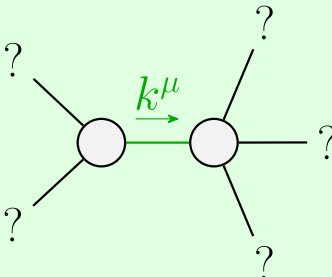
| | |
|----------------|---|
| Pole residue: | $0 < \frac{6\alpha+3\beta-\sqrt{3}}{\alpha(\alpha-\beta)} \frac{\sqrt{12\alpha^2+12\alpha\beta+19\beta^2+64(\alpha-\beta)^2p^2}}{\alpha(\alpha-\beta)} \&\&$ $\frac{6\alpha+3\beta-\sqrt{3}}{\alpha(\alpha-\beta)} \frac{\sqrt{12\alpha^2+12\alpha\beta+19\beta^2+64(\alpha-\beta)^2p^2}}{\alpha(\alpha-\beta)} > 0$ |
| Polarisations: | 1 |



Quadratic pole

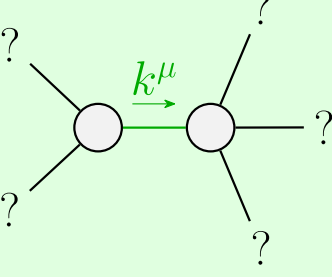
| | |
|----------------|---|
| Pole residue: | $\frac{1}{\alpha} + \frac{1}{\alpha-\beta} > 0$ |
| Polarisations: | 2 |

Unitarity conditions
(Unitarity is demonstrably impossible)



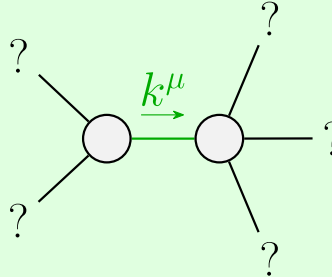
Quadratic pole

| | |
|----------------|---|
| Pole residue: | $-\frac{1}{\alpha} + \frac{1}{-\alpha+\beta} > 0$ |
| Polarisations: | 2 |



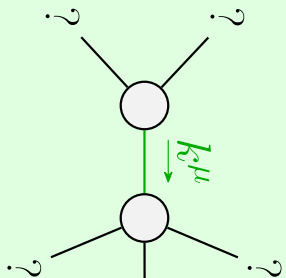
Quadratic pole

| | |
|----------------|-------------------------|
| Pole residue: | $-\frac{1}{\alpha} > 0$ |
| Polarisations: | 2 |



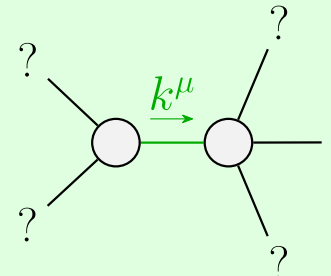
Quadratic pole

| | |
|----------------|---|
| Pole residue: | $-\frac{2\alpha-\beta+\sqrt{20\alpha^2-36\alpha\beta+17\beta^2}}{\alpha^2-\alpha\beta} > 0$ |
| Polarisations: | 1 |



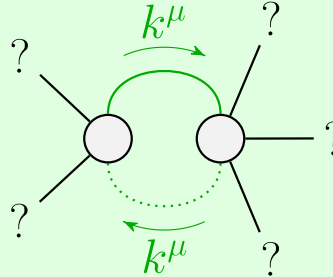
Quadratic pole

| | |
|----------------|---|
| Pole residue: | $-\frac{1}{\alpha} + \frac{5}{-\alpha+\beta} > 0$ |
| Polarisations: | 1 |



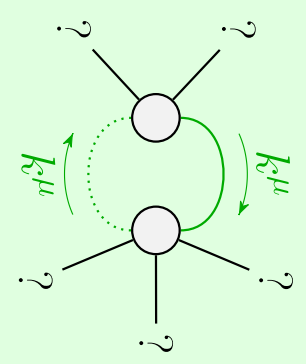
Quadratic pole

| | |
|----------------|---|
| Pole residue: | $\frac{1}{\alpha} + \frac{5}{\alpha-\beta} > 0$ |
| Polarisations: | 1 |



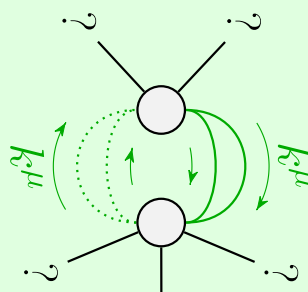
Quartic pole

| | |
|----------------|--|
| Pole residue: | $0 < \frac{\beta}{\alpha^2-\alpha\beta} \&\& \frac{\beta}{\alpha^2-\alpha\beta} > 0$ |
| Polarisations: | 2 |



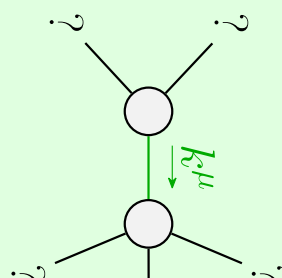
Quartic pole

| | |
|----------------|---|
| Pole residue: | $0 < \frac{6\alpha+3\beta+\sqrt{3}}{\alpha(\alpha-\beta)} \frac{\sqrt{12\alpha^2+12\alpha\beta+19\beta^2+64(\alpha-\beta)^2p^2}}{\alpha(\alpha-\beta)} \&\&$ $\frac{6\alpha+3\beta+\sqrt{3}}{\alpha(\alpha-\beta)} \frac{\sqrt{12\alpha^2+12\alpha\beta+19\beta^2+64(\alpha-\beta)^2p^2}}{\alpha(\alpha-\beta)} > 0$ |
| 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: | $-\frac{2\alpha+\beta+\sqrt{20\alpha^2-36\alpha\beta+17\beta^2}}{\alpha(\alpha-\beta)} > 0$ |
| Polarisations: | 1 |

(No massive particles)