

Particle spectrograph

Wave operator and propagator

Quadratic (free) Lagrangian density

$$\mathcal{B}^\alpha \mathcal{J}_\alpha + \beta \partial_\alpha \mathcal{B}^\alpha \partial_\beta \mathcal{B}^\beta + \alpha \partial_\beta \mathcal{B}_\alpha \partial^\beta \mathcal{B}^\alpha$$

$$\mathcal{B}_{0+}^{\#1}$$

$$\mathcal{B}_{0+}^{\#1} \dagger \boxed{(\alpha + \beta) k^2}$$

$$\mathcal{J}_{0+}^{\#1}$$

$$\boxed{\frac{1}{(\alpha + \beta) k^2}} \mathcal{J}_{0+}^{\#1}$$

$$\mathcal{B}_{1-}^{\#1}$$

$$\mathcal{B}_{1-}^{\#1} \dagger \boxed{\alpha k^2}$$

$$\mathcal{J}_{1-}^{\#1} \alpha$$

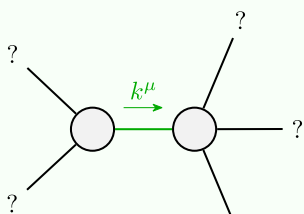
$$\mathcal{J}_{1-}^{\#1} \dagger \alpha \boxed{\frac{1}{\alpha k^2}}$$

(No source constraints)

Massive and massless spectra

Quartic pole

Pole residue:	$0 < -\frac{\beta}{\alpha(\alpha+\beta)} \&\& -\frac{\beta}{\alpha(\alpha+\beta)} > 0$
Polarisations:	1

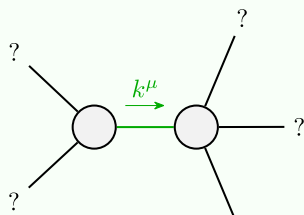


Quadratic pole

Pole residue:	$-\frac{1}{\alpha} > 0$
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Polarisations:	2
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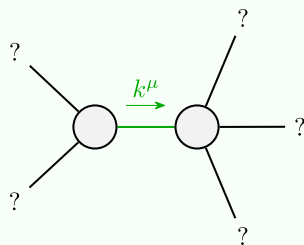
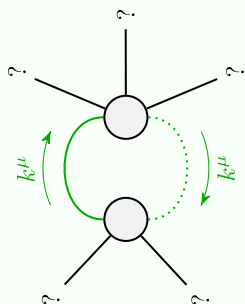
(No massive particles)



Quadratic pole

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

Pole residue:	$\frac{1}{\alpha} + \frac{1}{\alpha+\beta} > 0$
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Polarisations:	1
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Unitarity conditions

(Unitarity is demonstrably impossible)