Particle spectrograph

Wave operator and propagator

Quadratic (free) action

$$S == \int\int\int\int (\mathcal{B}^{\alpha}\ \mathcal{T}_{\alpha} + \beta\,\partial_{\alpha}\mathcal{B}^{\alpha}\,\partial_{\beta}\mathcal{B}^{\beta} + \alpha\,\partial_{\beta}\mathcal{B}_{\alpha}\,\partial^{\beta}\mathcal{B}^{\alpha})[t, x, y, z]\,dz\,dy\,dx\,dt$$

(No source constraints)

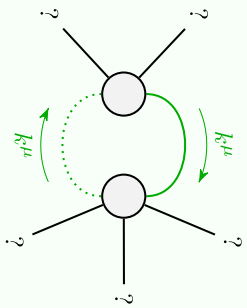
$$\mathcal{T}^{\#1}_{0^+} \dagger \boxed{\frac{1}{(\alpha+\beta)\,k^2}} \mathcal{T}^{\#1}_{0^+}$$

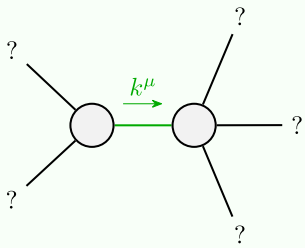
$$\mathcal{T}^{\#1}_{1^-} \dagger^{\alpha} \boxed{\frac{1}{\alpha k^2}} \mathcal{T}^{\#1}_{1^-\,\alpha}$$

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

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

Massive and massless spectra

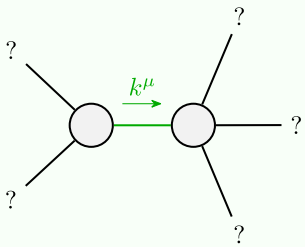




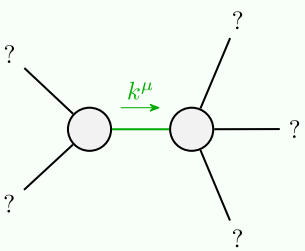
Quadratic pole	
Pole residue:	$\frac{1}{\alpha} + \frac{1}{\alpha+\beta} > 0$
Polarisations:	1

(No massive particles)

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



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



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

Unitarity conditions

(Unitarity is demonstrably impossible)