Particle spectrograph

Wave operator and propagator

Quadratic (free) action

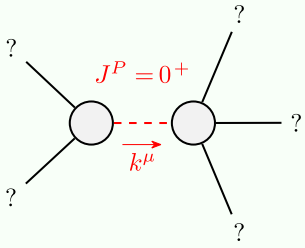
$$S_F == \int\int\int\int (\gamma\, \mathcal{B}_\alpha\, \mathcal{B}^\alpha + \mathcal{B}^\alpha\, \mathcal{T}_\alpha + \beta\, \partial_\alpha \mathcal{B}^\alpha\, \partial_\beta \mathcal{B}^\beta)[t, x, y, z]\, dz\, dy\, dx\, dt$$

(No source constraints)

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

$$\mathcal{T}_{1^-}^{\#1} \dagger^{\alpha} \boxed{\frac{1}{\gamma}} \mathcal{T}_{1^-}^{\#1\,\alpha} \qquad \mathcal{T}_{0^+}^{\#1} \dagger \boxed{\frac{1}{\gamma + \beta k^2}} \mathcal{T}_{0^+}^{\#1} \qquad \mathcal{B}_{1^-}^{\#1} \dagger^{\alpha} \boxed{\gamma} \mathcal{B}_{1^-}^{\#1\,\alpha}$$

Massive and massless spectra



Massive particle	
Pole residue:	$\frac{1}{\beta} > 0$
Polarisations:	1
Square mass:	$-\frac{\gamma}{\beta} > 0$
Spin:	0
Parity:	Even

(No massless particles)

Unitarity conditions

$\beta > 0$ && $\gamma < 0$