Particle spectrograph

Wave operator and propagator

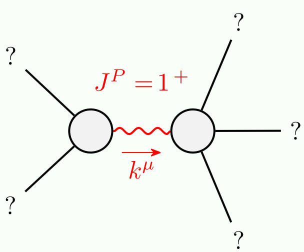
Quadratic (free) action

$$\mathcal{S} == \iiiint \left(\delta\, \mathcal{B}_{\alpha\beta}\, \mathcal{B}^{\alpha\beta} + \mathcal{B}^{\alpha\beta}\, \mathcal{J}_{\alpha\beta} + \frac{1}{3}\, \gamma \left(-2\, \partial_{\beta}\mathcal{B}_{\alpha\chi} + \partial_{\chi}\mathcal{B}_{\alpha\beta}\right) \partial^{\chi}\mathcal{B}^{\alpha\beta}\right)[t, x, y, z]\, dz\, dy\, dx\, dt$$

$$\begin{array}{c|cc} & \mathcal{J}^{\#1}_{1^{+}\,\alpha\beta} & \mathcal{J}^{\#1}_{1^{-}\,\alpha} \\ \hline \mathcal{J}^{\#1}_{1^{+}}{}^{\dagger\,\alpha\beta} & \frac{1}{\delta + \frac{\gamma k^2}{3}} & 0 \\ \mathcal{J}^{\#1}_{1^{-}}{}^{\dagger\,\alpha} & 0 & \frac{1}{\delta} \end{array}
\qquad
\begin{array}{c|cc} & \mathcal{B}^{\#1}_{1^{+}\,\alpha\beta} & \mathcal{B}^{\#1}_{1^{-}\,\alpha} \\ \hline \mathcal{B}^{\#1}_{1^{+}}{}^{\dagger\,\alpha\beta} & \delta + \frac{\gamma k^2}{3} & 0 \\ \mathcal{B}^{\#1}_{1^{-}}{}^{\dagger\,\alpha} & 0 & \delta \end{array}$$

(No source constraints)

Massive and massless spectra



Massive particle	
Pole residue:	$\frac{3}{\gamma} > 0$
Polarisations:	3
Square mass:	$-\frac{3\,\delta}{\gamma} > 0$
Spin:	1
Parity:	Even

(No massless particles)

Unitarity conditions

$\gamma > 0$ && $\delta < 0$