

# Particle spectrograph

## Wave operator and propagator

Spin-parity form	Covariant form	Multiplicities
$^{\#1}_{1^-} \mathcal{J}^{\alpha} = 0$	$\partial_{\beta} \mathcal{J}^{\alpha\beta} = 0$	3
Total expected gauge generators: 3		

$^{\#1}_{1^+} \mathcal{J}^{\alpha\beta}$	$^{\#1}_{1^+} \mathcal{J}^{\alpha}$	$^{\#1}_{1^+} \mathcal{B}^{\alpha\beta}$	$^{\#1}_{1^+} \mathcal{B}^{\alpha}$
$\frac{3}{\gamma k^2}$	0	$\frac{\gamma k^2}{3}$	0
0	0	0	0

$$S = \iiint \int (\mathcal{B}^{\alpha\beta} \mathcal{J}_{\alpha\beta} + \frac{1}{3} \gamma (-2 \partial_{\beta} \mathcal{B}_{\alpha\chi} + \partial_{\chi} \mathcal{B}_{\alpha\beta}) \partial^{\chi} \mathcal{B}^{\alpha\beta}) [t, x, y, z] d z d y d x$$

## Massive and massless spectra

(No massive particles)

Massless particle

Polesidue:  $\frac{1}{\gamma} > 0$

Polarisations: 1

## Unitarity conditions

$$\gamma > 0$$