

Particle spectrograph

Wave operator and propagator

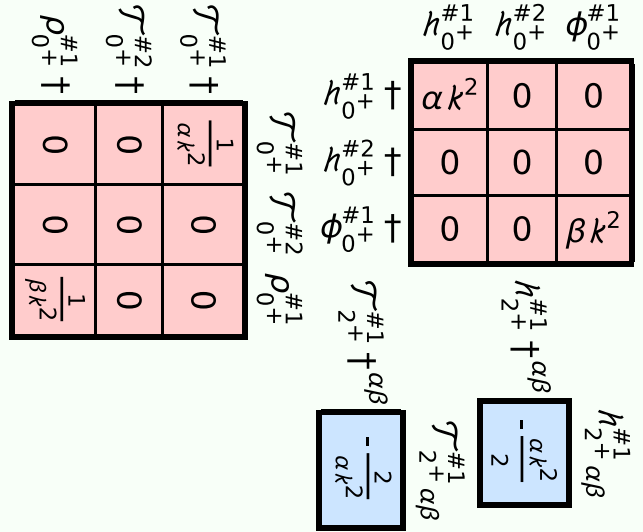
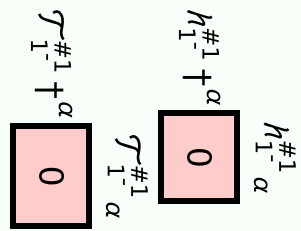
Quadratic (free) action

$$S \equiv$$

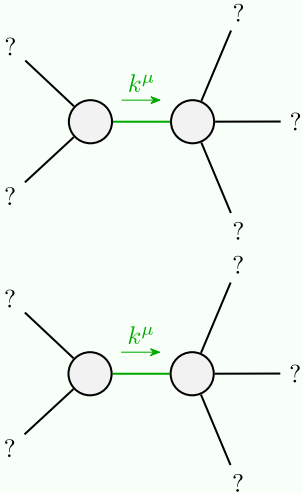
$$\iiint (\phi \rho + h^{\alpha\beta} \mathcal{T}_{\alpha\beta} + \beta \partial_\alpha \phi \partial^\alpha \phi + \frac{1}{2} \alpha (\partial_\beta h^\chi{}_\chi \partial^\beta h^\alpha{}_\alpha + 2 \partial_\alpha h^{\alpha\beta} \partial_\chi h^\chi{}_\beta - 2 \partial^\beta h^\alpha{}_\alpha \partial_\chi h^\chi{}_\beta - \partial_\chi h^\chi{}_\beta \partial^\chi h^{\alpha\beta})) [t, x, y, z] dz dy dx dt$$

Source constraints/gauge generators

SO(3) irreps	Multiplicities
$\mathcal{T}_{0+}^{\#2} == 0$	1
$\mathcal{T}_{1-}^{\#1\alpha} == 0$	3
Total constraints:	4

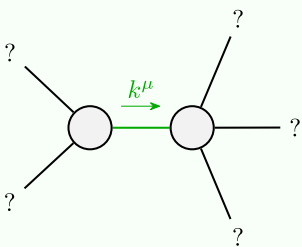


Massive and massless spectra



Quadratic pole

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



Quadratic pole

Pole residue:	$\frac{1}{\beta} > 0$
Polarisations:	1

(No massive particles)

Unitarity conditions

$$\alpha < 0 \ \&\& \ \beta > 0$$