

Particle spectrograph

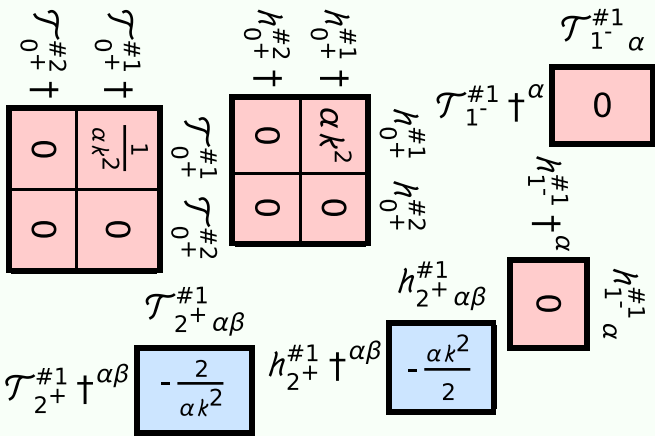
Wave operator and propagator

Quadratic (free) action

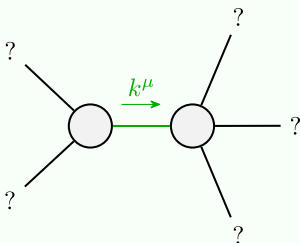
$$S == \iiint\int (h^{\alpha\beta} \mathcal{T}_{\alpha\beta} + \frac{1}{2} \alpha (\partial_\beta h^\chi_\chi \partial^\beta h^\alpha_\alpha + 2 \partial_\alpha h^{\alpha\beta} \partial_\chi h^\chi_\beta - 2 \partial^\beta h^\alpha_\alpha \partial_\chi h^\chi_\beta - \partial_\chi h_{\alpha\beta} \partial^\chi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

Source constraints/gauge generators

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



Massive and massless spectra



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

(No massive particles)

Unitarity conditions

$\alpha < 0$