Particle spectrograph

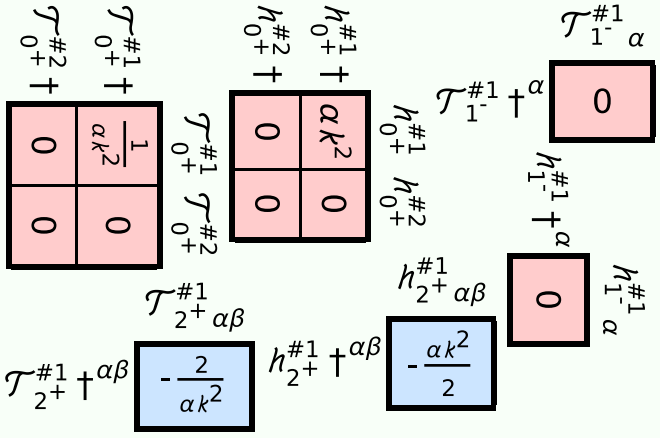
Wave operator and propagator

Quadratic (free) action

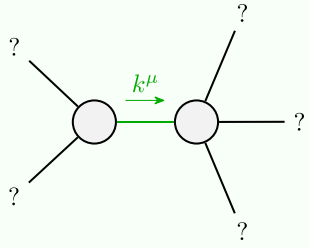
$$S == \int\int\int\int (h^{\alpha\beta}\ \mathcal{T}_{\alpha\beta} + \frac{1}{2}\ \alpha\ (\partial_\beta h^{\chi}{}_{\chi}\ \partial^\beta h^{\alpha}{}_{\alpha} + 2\ \partial_\alpha h^{\alpha\beta}\ \partial_\chi h_\beta{}^{\chi} - 2\ \partial^\beta h^{\alpha}{}_{\alpha}\ \partial_\chi h_\beta{}^{\chi}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

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

$\alpha < 0$