

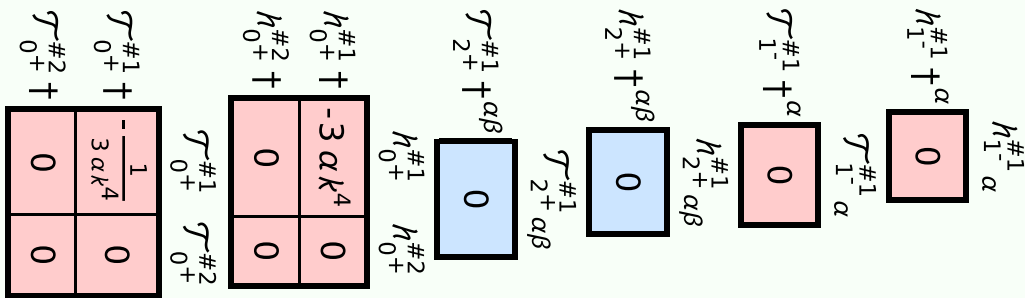
# Particle spectrograph

# Wave operator and propagator

Source constraints		
SO(3) irreps	Fundamental fields	Multiplicities
$\mathcal{T}_{0^+}^{\#2} == 0$	$\partial_\beta \partial_\alpha \mathcal{T}^{\alpha\beta} == 0$	1
$\mathcal{T}_1^{\#1\alpha} == 0$	$\partial_\chi \partial_\beta \partial^\alpha \mathcal{T}^{\beta\chi} == \partial_\chi \partial^\chi \partial_\beta \mathcal{T}^{\alpha\beta}$	3
$\mathcal{T}_{2^+}^{\#1\alpha\beta} == 0$	$2 \partial_\delta \partial_\chi \partial^\beta \partial^\alpha \mathcal{T}^{\chi\delta} + \partial_\delta \partial^\delta \partial^\beta \partial^\alpha \mathcal{T}^\chi_\chi + 3 \partial_\delta \partial^\delta \partial_\chi \partial^\chi \mathcal{T}^{\alpha\beta} +$ $\eta^{\alpha\beta} \partial_\epsilon \partial^\epsilon \partial_\delta \partial_\chi \mathcal{T}^{\chi\delta} == 3 \partial_\delta \partial^\delta \partial_\chi \partial^\alpha \mathcal{T}^{\beta\chi} +$ $3 \partial_\delta \partial^\delta \partial_\chi \partial^\beta \mathcal{T}^{\alpha\chi} + \eta^{\alpha\beta} \partial_\epsilon \partial^\epsilon \partial_\delta \partial^\delta \mathcal{T}^\chi_\chi$	5
Total constraints/gauge generators:		9

## Quadratic (free) action

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



# Massive and massless spectra

(No massless particles)

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## Unitarity conditions

True