Particle spectrograph

Wave operator and propagator

Quadratic (free) action

$\mathcal{S}==$

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

$$\begin{array}{c|cc} & h^{\#1}_{0^+} & h^{\#2}_{0^+} \\ \hline h^{\#1}_{0^+}\dagger & -2\beta+\alpha k^2 & -\sqrt{3}\,\beta \\ h^{\#2}_{0^+}\dagger & -\sqrt{3}\,\beta & 0 \end{array}$$

(No source constraints)

$$\begin{array}{c|c} & \mathcal{T}^{\#1}_{2^+}{}_{\alpha\beta} \\ \hline \mathcal{T}^{\#1}_{2^+}\dagger^{\alpha\beta} & \frac{1}{\beta-\frac{\alpha k^2}{2}} \end{array}$$

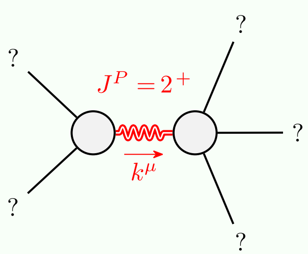
$$\begin{array}{c|c} & h^{\#1}_{2^+}{}_{\alpha\beta} \\ \hline h^{\#1}_{2^+}\dagger^{\alpha\beta} & \beta-\frac{\alpha k^2}{2} \end{array}$$

$$\begin{array}{c|c} & \mathcal{T}^{\#1}_{1^-}{}_{\alpha} \\ \hline \mathcal{T}^{\#1}_{1^-}\dagger^{\alpha} & \frac{1}{\beta} \end{array}$$

$$\begin{array}{c|c} & h^{\#1}_{1^-}{}_{\alpha} \\ \hline h^{\#1}_{1^-}\dagger^{\alpha} & \beta \end{array}$$

$$\begin{array}{c|cc} & \mathcal{T}^{\#1}_{0^+} & \mathcal{T}^{\#2}_{0^+} \\ \hline \mathcal{T}^{\#1}_{0^+}\dagger & 0 & -\frac{1}{\sqrt{3}\,\beta} \\ \mathcal{T}^{\#2}_{0^+}\dagger & -\frac{1}{\sqrt{3}\,\beta} & \frac{2\beta-\alpha k^2}{3\beta^2} \end{array}$$

Massive and massless spectra



Massive particle	
Pole residue:	$-\frac{2}{\alpha}>0$
Polarisations:	5
Square mass:	$\frac{2\beta}{\alpha}>0$
Spin:	2
Parity:	Even

(No massless particles)

Unitarity conditions

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