Particle spectrograph

Wave operator and propagator

Spin-parity form	Covariant form	Multiplicities
$1^-\,{}^{\#1}\mathcal{T}^{\alpha} == 0$	$\partial_\chi\partial_\beta\partial^\alpha\mathcal{T}^{\beta\chi} == \partial_\chi\partial^\chi\partial_\beta\mathcal{T}^{\alpha\beta}$	3
Total expected gauge generators:		3

$1^-\,{}^{\#1}\mathcal{T}^{\alpha}$ | $1^-\,{}^{\#1}\mathcal{T}_{\alpha}$ | $1^-\,{}^{\#1}h^{\alpha}$ | $1^-\,{}^{\#1}h_{\alpha}$

$1^-\,{}^{\#1}\mathcal{T}^{\alpha}$	0		
$1^-\,{}^{\#1}\mathcal{T}_{\alpha}$		0	
$1^-\,{}^{\#1}h^{\alpha}$			0
$1^-\,{}^{\#1}h_{\alpha}$		0	

$2^+\,{}^{\#1}\mathcal{T}^{\alpha\beta}$ | $2^+\,{}^{\#1}\mathcal{T}_{\alpha\beta}$ | $2^+\,{}^{\#1}h^{\alpha\beta}$ | $2^+\,{}^{\#1}h_{\alpha\beta}$

$2^+\,{}^{\#1}\mathcal{T}^{\alpha\beta}$	$-\frac{2}{\alpha\, k^2}$		
$2^+\,{}^{\#1}\mathcal{T}_{\alpha\beta}$		$-\frac{2}{\alpha\, k^2}$	
$2^+\,{}^{\#1}h^{\alpha\beta}$			$-\frac{\alpha\, k^2}{2}$
$2^+\,{}^{\#1}h_{\alpha\beta}$		$-\frac{\alpha\, k^2}{2}$	

$0^+\,{}^{\#1}h$ | $0^+\,{}^{\#2}h$ | $0^+\,{}^{\#1}h^{\dagger}$ | $0^+\,{}^{\#2}h^{\dagger}$

$0^+\,{}^{\#1}h$	$\alpha\, k^2$	$\frac{1}{2}\sqrt{3}\,(\alpha-\beta)\,k^2$	
$0^+\,{}^{\#2}h$	$(\alpha-\beta)\,k^2$	$\frac{1}{2}\sqrt{3}\,(\alpha-\beta)\,k^2$	
$0^+\,{}^{\#1}h^{\dagger}$			$\frac{1}{2}\sqrt{3}\,(\alpha-\beta)\,k^2$
$0^+\,{}^{\#2}h^{\dagger}$			$\alpha\, k^2$

$0^+\,{}^{\#1}\mathcal{T}$ | $0^+\,{}^{\#2}\mathcal{T}$

$0^+\,{}^{\#1}\mathcal{T}\,\dagger$	$\frac{4}{(\alpha+3\beta)\,k^2}$	$-\frac{2\sqrt{3}}{(\alpha+3\beta)\,k^2}$
$0^+\,{}^{\#2}\mathcal{T}\,\dagger$	$-\frac{2\sqrt{3}}{(\alpha+3\beta)\,k^2}$	$\frac{4\alpha}{(\alpha-\beta)(\alpha+3\beta)\,k^2}$

$$\mathcal{S} == \iiiint \left(h^{\alpha\beta}\ \mathcal{T}_{\alpha\beta} - \beta\ \partial^{\chi} h^{\alpha}{}_{\alpha}\ \partial_{\chi} h_{\beta}{}^{\chi} + \frac{1}{2}\,\alpha\,(\partial_{\beta} h^{\chi}{}_{\chi}\ \partial^{\beta} h^{\alpha}{}_{\alpha} + 2\ \partial_{\alpha} h^{\alpha\beta}\ \partial_{\chi} h_{\beta}{}^{\chi} - \partial_{\chi} h_{\alpha\beta}\ \partial^{\chi} h^{\alpha\beta}) \right) [t, x, y, z]\, dl\ z\ dl\ y\ dl\ x$$

Massive and massless spectra

Massless particle

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

(No particles)

Massless particle

Poleresidue:	$\frac{4+(\alpha-\beta)^2}{\alpha\,(\alpha-\beta)(\alpha+3\beta)} > 0$
Polarisations:	1

Unitarity conditions