Particle spectrograph

Wave operator and propagator

$$\mathcal{S} == \iiiint (f^{\alpha\beta}\ \tau_{\alpha\beta} + c_3\,(\partial_\mu f^{\nu}{}_{\nu}\,\partial^\mu f^{\alpha}{}_{\alpha} + \partial_\mu f^{\alpha\mu}\,\partial_\nu f_{\alpha}{}^{\nu} - 2\,\partial^\mu f^{\alpha}{}_{\alpha}\,\partial_\nu f_{\mu}{}^{\nu}) + 2\,c_1\,(-2\,\partial_\alpha f_{\beta\nu} - \partial_\alpha f_{\nu\beta} + \partial_\beta f_{\alpha\nu} + \partial_\nu f_{\alpha\beta} + \partial_\nu f_{\beta\alpha})\,\partial^\nu f^{\alpha\beta})[t, x, y, z]\,dl\,z\,dl\,y\,dl\,x\,dl\,t$$

Spin-parity form	Covariant form	Multiplicities
$0^+_{\#2}\ \tau == 0$	$\partial_\alpha\partial_\beta\tau^{\alpha\beta} == 0$	1
$1^-_{\#1}\ \tau^\alpha == 0$	$\partial_\chi\partial_\beta\partial^\alpha\tau^{\beta\chi} == \partial_\chi\partial^\chi\partial_\beta\tau^{\beta\alpha}$	3
$1^+_{\#1}\ \tau^{\alpha\beta} == 0$	$\partial_\alpha\partial^\alpha\tau^{\beta\chi} + \partial_\alpha\partial^\beta\tau^{\chi\alpha} + \partial_\chi\partial^\alpha\tau^{\chi\beta} == \partial_\chi\partial^\alpha\tau^{\alpha\beta} + \partial_\chi\partial^\beta\tau^{\alpha\chi} + \partial_\chi\partial^\chi\tau^{\beta\alpha}$	3
Total expected gauge generators:		7

$0^+_{\#1}\tau$ $0^+_{\#2}\tau$

$0^+_{\#1}\tau\dagger$	$\frac{1}{(4c_1+3c_3)k^2}$	0
$0^+_{\#2}\tau\dagger$	0	0

$2^+_{\#1}f_{\alpha\beta}$ $4c_1k^2$

$2^+_{\#1}\tau_{\alpha\beta}$

$2^+_{\#1}f\dagger^{\alpha\beta}$ $2^+_{\#1}\tau\dagger^{\alpha\beta}$ $\frac{1}{4c_1k^2}$

$1^+_{\#1}f_{\alpha\beta}$ $1^-_{\#1}f_\alpha$ $1^-_{\#2}f_\alpha$

$1^+_{\#1}f\dagger^{\alpha\beta}$	0	0	0
$1^-_{\#1}f\dagger^{\alpha}$	0	0	0
$1^-_{\#2}f\dagger^{\alpha}$	0	0	$(4c_1+c_3)k^2$

$1^+_{\#1}\tau_{\alpha\beta}$ $1^-_{\#1}\tau_\alpha$ $1^-_{\#2}\tau_\alpha$

$1^+_{\#1}\tau\dagger^{\alpha\beta}$	0	0	0
$1^-_{\#1}\tau\dagger^{\alpha}$	0	0	0
$1^-_{\#2}\tau\dagger^{\alpha}$	0	0	$\frac{1}{(4c_1+c_3)k^2}$

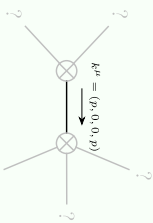
$0^+_{\#2}f$ $0^+_{\#1}f$

$0^+_{\#1}f\dagger$	$(4c_1+3c_3)k^2$	0
$0^+_{\#2}f\dagger$	0	0

Massive and massless spectra

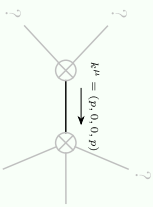
Massless particle

Polesidue:	$\frac{4+(4c_1+c_3)^2}{c_1(4c_1+c_3)(4c_1+3c_3)} < 0$
Polarisations:	1



Massless particle

Polesidue:	$\frac{1}{c_1} > 0$
Polarisations:	2



(No particles)

Unitarity conditions