Particle spectrograph

Wave operator and propagator

Spin-parity form	Covariant form	Multiplicities
$\overset{\#1}{0^-}\,\sigma == 0$	$\epsilon\eta_{\alpha\beta\chi\delta}\ \partial^{\delta}\sigma^{\alpha\beta\chi} == 0$	1
$\overset{\#1}{0^+}\,\sigma == 0$	$\partial_{\beta}\sigma^{\alpha\beta}{}_{\alpha} == 0$	1
$\overset{\#2}{1^-}\,\sigma^{\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\sigma^{\alpha\beta\chi} == 0$	3
$\overset{\#2}{1^+}\,\sigma^{\alpha\beta} == 0$	$\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\beta\chi\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\beta\chi} == \partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\alpha\chi\delta}$	3
$\overset{\#1}{2^+}\,\sigma^{\alpha\beta} == 0$ 3	$\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\beta\chi\delta} + 3\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\alpha\chi\delta} + 2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\sigma^{\chi\delta}{}_{\chi} ==$ $2\,\partial_{\delta}\partial^{\beta}\partial^{\alpha}\sigma^{\chi\delta}{}_{\chi} + 3(\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\chi\beta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\beta\chi\alpha})$	5
Total expected gauge generators:		13

$$S == \int\int\int\int (\mathcal{R}^{\alpha\beta\chi}\ \sigma_{\alpha\beta\chi} - \tfrac{2}{3} r_1 (2\,\partial_{\beta}\mathcal{R}_{\alpha\iota\theta} - \partial_{\beta}\mathcal{R}_{\alpha\theta\iota} + 4\,\partial_{\beta}\mathcal{R}_{\iota\theta\alpha} + \partial_{\iota}\mathcal{R}_{\alpha\beta\theta} - \partial_{\theta}\mathcal{R}_{\alpha\beta\iota} - \partial_{\theta}\mathcal{R}_{\alpha\iota\beta})\,\partial^{\theta}\mathcal{R}^{\alpha\beta\iota} + r_5 (\partial_{\iota}\mathcal{R}_{\theta}{}^{\kappa}{}_{\kappa}\,\partial^{\theta}\mathcal{R}^{\alpha\iota}{}_{\alpha} - \partial_{\theta}\mathcal{R}_{\iota}{}^{\kappa}{}_{\kappa}\,\partial^{\theta}\mathcal{R}^{\alpha\iota}{}_{\alpha} - (\partial_{\alpha}\mathcal{R}^{\alpha\iota\theta} - 2\,\partial^{\theta}\mathcal{R}^{\alpha\iota}{}_{\alpha})(\partial_{\kappa}\mathcal{R}_{\iota}{}^{\kappa}{}_{\theta} - \partial_{\kappa}\mathcal{R}_{\theta}{}^{\kappa}{}_{\iota})))[t, x, y, z]\,dt\,dz\,dy\,dx\,dt$$

$\overset{\#1}{1^+}\mathcal{R}^{\alpha\beta}$ $\overset{\#2}{1^+}\mathcal{R}^{\alpha\beta}$ $\overset{\#1}{1^-}\mathcal{R}^{\alpha}$ $\overset{\#2}{1^-}\mathcal{R}^{\alpha}$

$k^2(2r_1+r_5)$	0	0	0
0		0	0
0	0	$k^2(r_1+r_5)$	0
0	0	0	

$\overset{\#1}{1^+}\sigma^{\alpha\beta}$ $\overset{\#2}{1^+}\sigma^{\alpha\beta}$ $\overset{\#1}{1^-}\sigma^{\alpha}$ $\overset{\#2}{1^-}\sigma^{\alpha}$

$\frac{1}{k^2(2r_1+r_5)}$	0	0	0
0	0	0	0
0	0	$\frac{1}{k^2(r_1+r_5)}$	0
0	0	0	0

$\overset{\#1}{2^+}\mathcal{R}^{\alpha\beta\chi}$ $\overset{\#1}{2^+}\mathcal{R}^{\alpha\beta}$

0	0
$k^2 r_1$	0

$\overset{\#1}{0^-}\mathcal{R}$ $\overset{\#1}{0^+}\mathcal{R}$

0	0
0	0

$\overset{\#1}{0^+}\sigma$ $\overset{\#1}{0^-}\sigma$

0	0
0	0

$\overset{\#1}{2^+}\sigma^{\alpha\beta}$ $\overset{\#1}{2^-}\sigma_{\alpha\beta\chi}$

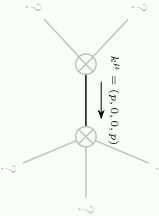
0	0
0	$\frac{1}{k^2 r_1}$

Massive and massless spectra

Massless particle

Pole residue: $\frac{1}{r_1(r_1+r_5)(2r_1+r_5)} > 0$

Polarisations: 2



(No particles)

Unitarity conditions