Particle spectrograph

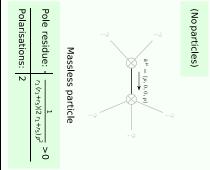
Wave operator and propagator

Spin-parity form Covariant form	dvariant form	Multiplicities	
#1 0	$\epsilon n_{\alpha\beta\chi\delta}$ $\partial^{\delta}\sigma^{\alpha\beta\chi}$ == 0	1	
#5 0+ r ==0	$\partial_{\beta}\partial_{\alpha}t^{\alpha\beta}=0$	1	•
$^{#1}_{0^+} \tau_{-2} i k0^+ \sigma == 0$	$\partial_{\beta}\partial_{\alpha}\tau^{\alpha\beta} = \beta\partial^{\beta}\tau^{\alpha}_{\alpha} + 2\partial_{\chi}\partial^{\lambda}\partial_{\beta}\sigma^{\alpha\beta}_{\alpha}$	1	
${1 \over 1} {1 \over r} + 2 i k {+2 \over 1} {\alpha \over \sigma} == 0$	$\frac{\#^2}{1 \cdot \tau} + 2 \ \hat{i} \ k \frac{\#^2}{1 \cdot \sigma} \alpha == 0 \ \frac{\partial_{\lambda} \partial_{\beta} \partial^{\alpha} t^{\beta \chi}}{\partial x^{\beta \gamma}} == \ \hat{Q} \partial^{\lambda} \partial_{\beta} t^{\alpha \beta} + 2 \ \partial_{\sigma} \partial^{\sigma} \partial_{\chi} \partial_{\beta} \sigma^{\alpha \beta \chi}$	3	
$_{1-\tau }^{\#1} {}_{\sigma }^{\alpha }==0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}t^{eta\chi} == \partial_{\alpha}\partial^{\lambda}\partial_{\beta}t^{eta\alpha}$	8	
$1 + \frac{\pi 1}{\tau} \alpha \beta = 0$	$\partial_\chi \partial^\alpha t^{\beta\chi} + \partial_\chi \partial^\beta t^{\chi\alpha} + \partial_\chi \partial^\chi t^{\alpha\beta} == \tilde{q} \partial^\alpha t^{\chi\beta} + \partial_\chi \partial^\beta t^{\alpha\chi} + \partial_\chi \partial^\chi t^{\beta\alpha}$	9	
$1^{+2} \sigma^{\beta} = 0$	$\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\beta\chi\delta}+\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\beta\chi}==\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\alpha\chi\delta}$	3	•
$2^{+1}_{1} \alpha^{\beta} = 0 \qquad 4$	$\partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\tau^{\chi\delta} + 2\ \partial_{\delta}\partial^{\delta}\partial^{\beta}\sigma^{\alpha}\tau^{\chi}_{\chi} + 3\ \partial_{\sigma}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau^{\alpha\beta} + 3\ \partial_{\sigma}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau^{\beta\alpha} +$	5	
	$2\ \eta^{\alpha\beta}\ \partial_e\partial^e\partial_{\delta}\partial_{\lambda}\tau^{\chi\delta} = 3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau^{\beta\chi} + 3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau^{\chi\beta} +$		•
	$3 \partial_o \partial^o \partial_\chi \partial^b \tau^{a\chi} + 3 \partial_o \partial^o \partial_\chi \partial^b \tau^{\chi a} + 2 \eta^{a\beta} \partial_e \partial^e \partial_o \partial^o \tau^\chi_{\chi}$		
$_{2}^{\#1}\sigma^{\alpha\beta}=0\qquad 3$	$\partial_\delta \partial_\chi \partial^\alpha \sigma^{\beta \chi \delta} + 3 \ \partial_\delta \partial_\chi \partial^\beta \sigma^{\alpha \chi \delta} + 2 \ \eta^{\alpha \beta} \ \partial_\epsilon \partial^\epsilon \partial_\delta \sigma^{\chi \delta}_{\chi} = =$	5	
	$2\partial_{\delta}\partial^{\beta}\partial^{\alpha}\sigma^{\chi\delta}_{\delta} + 3(\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\chi\beta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\beta\chi\alpha})$		
Total expected gauge generators:	generators:	25	
$\begin{matrix} \#1 & \#2 & \#1 \\ 1^+\sigma\alpha\beta & 1^+\sigma\alpha\beta & 1^+\tau\alpha\beta \end{matrix}$	$^{\ \#1}_{\alpha\beta} \ ^{\ \#1}_{1} \ ^{\ \#1}_{1} \ ^{\ \#2}_{1} \ ^{\ \#2}_{1} \ ^{\ \#2}_{1} \ ^{\ \#2}_{1}$		

									#1 2 ⁺ <i>A</i> (a	β ^{#1} 2 ⁺)	f _{αβ}	# <u>1</u> 2	x		$\overset{\#1}{2^+}\sigma_{\alpha\beta}$	#1 2 ⁺ το
							$\overset{\sharp 1}{2^{+}}\mathscr{F}$	αβ (†	0	()	0	#1 2 ⁺	$\sigma^{\alpha\beta}$	0	0
							#1 2 ⁺ f	f † αβ	0	()	0	2	¹ τ†	0	0
			-r ₅)	1+2t ₃)		5) t3	#1 2 <i>A</i>	$\dagger^{\alpha\beta\chi}$	0	0		$k^2 r_1$	# <u>1</u> 2 0	σ† ^{αβχ}	0	0
0	0	0	$\frac{2i}{k(1+2k^2)(r_1+r_5)}$	$\frac{i\sqrt{2}(3k^2(r_1+r_5)+2t_3)}{k(1+2k^2)^2(r_1+r_5)t_3}$	0	$\frac{6k^2(r_1+r_5)+4t_3}{(1+2k^2)^2(r_1+r_5)t_3}$	$\frac{*2}{1^-f_{lpha}}$	0	0	0	-2 i k \$	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0	$\frac{2k^2t_3}{3}$		
			0	0		0	${\stackrel{\#1}{1}}_f_\alpha$	0	0	0	0	0	0	0		
0 0	0 0	0 0	$\sqrt{2}$ $k^2 (1+2k^2)(r_1+r_5)$	$\frac{3k^2(r_1+r_5)+2t_3}{(k+2k^3)^2(r_1+r_5)t_3}$	0 0	$\frac{i\sqrt{2}(3 k^2 (r_1 + r_5) + 2t_3)}{k(1 + 2k^2)^2 (r_1 + r_5)t_3}$	$^{#2}_{1}$ $^{\mathcal{A}_{lpha}}$	0	0	0	$\frac{\sqrt{2}t_3}{3}$	ე ^{გე} ს თ	0	$-\frac{1}{3}i\sqrt{2}k$		
			k² (1+	,			$^{*1}_{1}{\cal A}_{lpha}$		0	0	r_5)+ $\frac{2t_3}{3}$		0	2 <i>i k</i>		
			$\frac{1}{k^2 \left(r_1 + r_5\right)}$	$\frac{\sqrt{2}}{k^2 (1+2k^2)(r_1+r_5)}$		$\frac{2i}{k(1+2k^2)(r_1+r_5)}$		0			$k^2 (r_1 + r_5) +$	اً		<u>2i</u>		
0	0	0		k ² (1	0	- k(1	$_{1}^{*1}_{f\alpha\beta}$	0								
0	0	0	0		0		$^{#2}_{1}^{\#}\mathcal{A}_{lphaeta}$ 1	0	0	0	0	0	0	0		
0	0	0	0	0	0	0			-	-	-	-	-	-		
$\frac{1}{k^2(2r_1+r_5)}$	0	0	0	0	0	0	$^{*1}_{1}$	$k^2 (2 r_1 + r_5)$	0	0	0	0	0	0		
$1^{*1} \sigma^{\dagger}$	$^{#2}_{1}^{\alpha\beta}$	1^{*1}_{τ}	$\frac{*1}{1}\sigma^{\dagger}$	$^{#2}_{1}\sigma^{\alpha}$	$\frac{#1}{1}$ τ	$\frac{#2}{1}\tau$	•	$^{#1}_{1}\mathcal{A}^{\dagger}$	$_{1}^{\#2}\mathcal{A}_{+}^{\alpha\beta}$	$_{1^{+}f+}^{\#1}\tau^{\alpha\beta}$	$\frac{*1}{1}\mathcal{A}^{\dagger}$	$^{*2}_{1}\mathcal{A}^{\dagger}$	$\frac{#1}{1}f^{\alpha}$	$\frac{#2}{1^-f}$		

5					
		#1 0 ⁺ <i>A</i> (0^{+1}	#2 0+ f	#1 0 3
	#1 0 ⁺ <i>A</i> †	t_3	-i √2 k ts	0	0
	^{#1} 0 ⁺ f†	i √2 k ts	$2k^2t_3$	0	0
	^{#2} 0 ⁺ f†	0	0	0	0
	$\overset{\#1}{0}\mathcal{A}\dagger$	0	0	0	0
	_	^{#1} σ	0^{+1} τ	$\overset{\#2}{0^+}\tau$	# <u>1</u>
	^{#1} 0 ⁺ σ†	$\frac{1}{(1+2k^2)^2t_3}$	$-\frac{i \sqrt{2} k}{(1+2k^2)^2 t_3}$	0	0
	$0^{+1} 0^{+} \tau +$	$\frac{i\sqrt{2}k}{(1+2k^2)^2t_3}$	$\frac{2k^2}{(1+2k^2)^2t_3}$	0	0
	${\stackrel{{}_{\!$	0	0 ()	0
	$\overset{\#1}{0}\sigma\dagger$	0	0 ()	0

Massive and massless spectra



Unitarity conditions