

# Particle spectrograph

## Wave operator and propagator

Spin-parity form		Covariant form		Multiplicities	
$\begin{smallmatrix} \#1 \\ 0^+ \end{smallmatrix}$	$\tau = 0$	$\partial_\beta \partial_\alpha \tau^{\alpha\beta} = 0$		$\begin{smallmatrix} \#1 \\ 0^+ \end{smallmatrix}$	$f \uparrow$
$\begin{smallmatrix} \#1 \\ 0^+ \end{smallmatrix}$	$\tau = 0$	$\partial_\beta \partial_\alpha \tau^{\alpha\beta} = \partial_\beta \partial^\beta \tau^\alpha_\alpha$		$\begin{smallmatrix} \#1 \\ 0^+ \end{smallmatrix}$	$f \uparrow$
$\begin{smallmatrix} \#1 \\ 1^- \end{smallmatrix}$	$\tau = 0$	$\partial_\chi \partial_\beta \partial^\alpha \tau^{\beta\chi} = \partial_\chi \partial^\alpha \partial_\beta \tau^{\beta\alpha}$		$\begin{smallmatrix} \#1 \\ 0^+ \end{smallmatrix}$	$\tau \uparrow$
$\begin{smallmatrix} \#1 \\ 1^+ \end{smallmatrix}$	$\alpha\beta = 0$	$\partial_\chi \partial^\alpha \tau^{\beta\chi} + \partial_\alpha \partial^\beta \tau^{\chi\alpha} = \partial_\chi \partial^\alpha \tau^{\alpha\chi} + \partial_\alpha \partial^\beta \tau^{\beta\alpha}$		$\begin{smallmatrix} \#2 \\ 0^+ \end{smallmatrix}$	$\tau \uparrow$
Total expected gauge generators:				$\begin{smallmatrix} \#1 \\ 2^+ \end{smallmatrix}$	$f \uparrow$

$\begin{smallmatrix} \#1 \\ 2^+ \end{smallmatrix}$  $f \alpha\beta$

$4 c_1 k^2$