

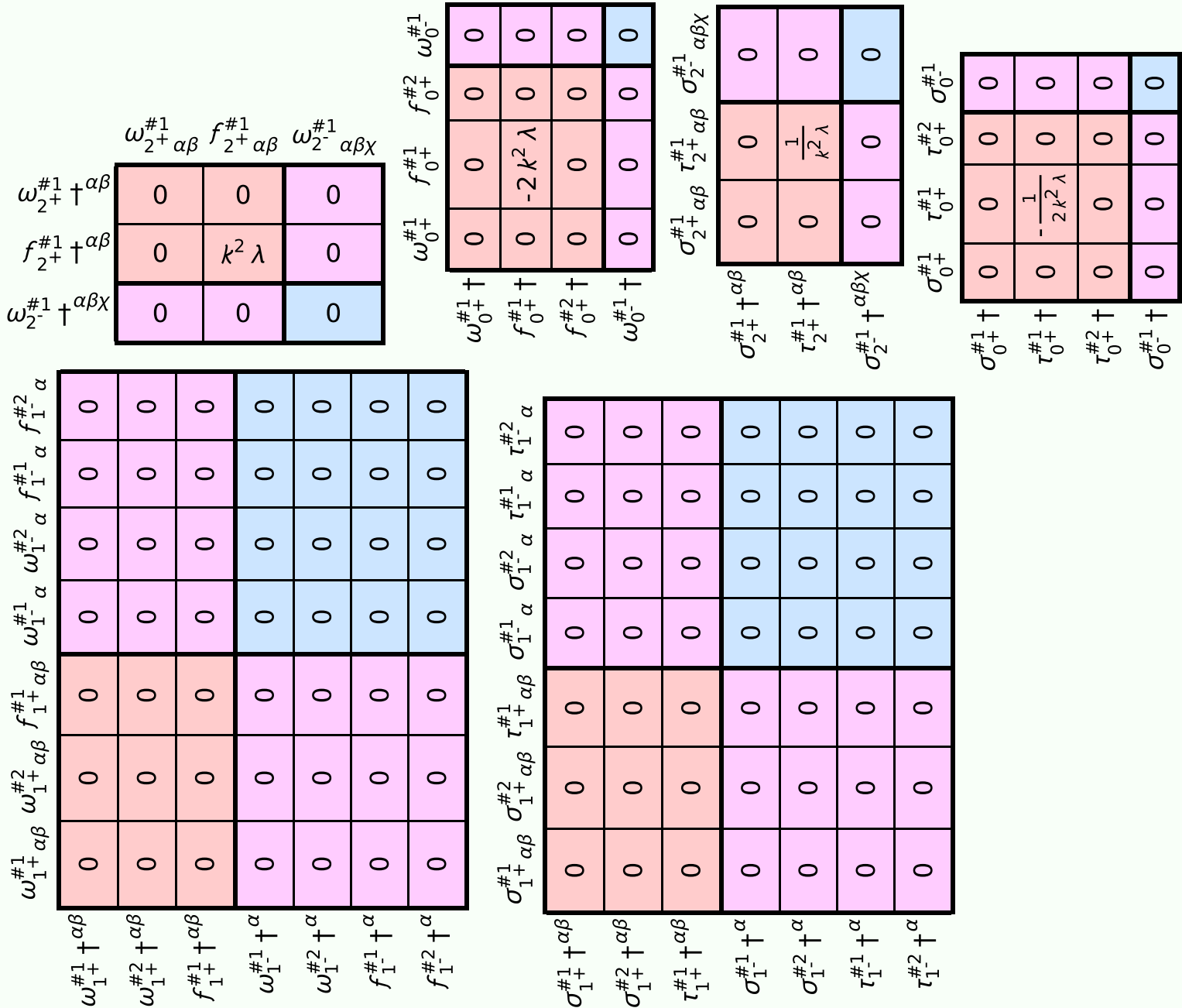
Particle spectrograph

Wave operator and propagator

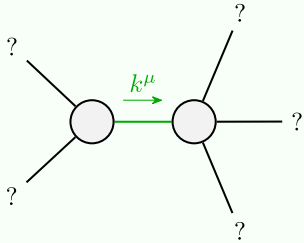
Source constraints/gauge generators	
SO(3) irreps	Multiplicities
$\sigma_0^{#1} == 0$	1
$\tau_0^{#2} == 0$	1
$\sigma_0^{#1} == 0$	1
$\tau_1^{#2\alpha} == 0$	3
$\tau_1^{#1\alpha} == 0$	3
$\sigma_1^{#2\alpha} == 0$	3
$\sigma_1^{#1\alpha} == 0$	3
$\tau_1^{#1\alpha\beta} == 0$	3
$\sigma_1^{#2\alpha\beta} == 0$	3
$\sigma_1^{#1\alpha\beta} == 0$	3
$\sigma_2^{#1\alpha\beta\chi} == 0$	5
$\sigma_2^{#1\alpha\beta} == 0$	5
Total constraints:	34

Quadratic (free) action

$$S = \iiint \left(f^{\alpha\beta} \tau_{\alpha\beta} + \omega^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} + \frac{1}{2} \lambda (-4 \omega_{\alpha}^{\theta} \partial_{\theta} f^{\alpha\iota} + 4 \partial_{\iota} \omega^{\alpha} + 4 \omega_{\iota}^{\theta} \partial_{\theta} f^{\alpha} - 2 \partial_{\iota} f^{\theta} \partial^{\theta} f^{\alpha} - 2 \partial_{\theta} f^{\alpha\iota} \partial_{\theta} f^{\alpha\iota} - 4 f^{\alpha} \partial_{\theta} \omega^{\iota\theta} + 4 \omega_{\alpha\theta\iota} \partial^{\theta} f^{\alpha\iota} - 2 \partial_{\alpha} f_{\iota\theta} \partial^{\theta} f^{\alpha\iota} - \partial_{\alpha} f_{\theta\iota} \partial^{\theta} f^{\alpha\iota}) \right) [t, x, y, z] dz dy dx dt$$



Massive and massless spectra



Quadratic pole	
Pole residue:	$\frac{1}{\lambda} > 0$
Polarisations:	2

(No massive particles)

Unitarity conditions

$\lambda > 0$