

Wave operator and propagator

Spin-parity form	Covariant form	Multiplicities
$0^+ \tau = 0$	$\partial_\beta \partial_\alpha \tau^{\alpha\beta} = 0$	1
$1^- \tau^\alpha = 0$	$\partial_\chi \partial_\beta \partial^\alpha \tau^{\beta\chi} = \partial_\chi \partial^\chi \partial_\beta \tau^{\alpha\beta}$	3
$1^- \tau^\alpha = 0$	$\partial_\chi \partial_\beta \partial^\alpha \tau^{\beta\chi} = \partial_\chi \partial^\chi \partial_\beta \tau^{\alpha\beta}$	3
$1^+ \tau^{\alpha\beta} = 0$	$\partial_\chi \partial^\alpha \tau^{\beta\chi} + \partial_\chi \partial^\beta \tau^{\chi\alpha} + \partial_\chi \partial^\chi \tau^{\alpha\beta} = \partial_\chi \partial^\alpha \tau^{\chi\beta} + \partial_\chi \partial^\beta \tau^{\alpha\chi} + \partial_\chi \partial^\chi \tau^{\beta\alpha}$	3
Total expected gauge generators:		10

The diagram illustrates the decomposition of the tensor product of two adjoint representations of $SU(3)$ into irreducible representations. The central part shows the product of two adjoint representations (labeled with Dynkin indices 2^+ and $\alpha\beta$) as a sum of irreducible representations: a singlet (1^+ , 0), an octet (1^+ , 1), and a 27-plet (1^+ , 2). The left-hand part shows the decomposition of the singlet into a singlet and an octet. The right-hand part shows the decomposition of the octet into an octet and a 27-plet. The 27-plet is further decomposed into a singlet, an octet, and a 27-plet. The diagram uses color-coding: pink for singlets, light blue for octets, and light green for 27-plets.

$$S = \iiint (\beta \mathcal{B}_{\alpha\beta} \mathcal{B}^{\alpha\beta} + f^{\alpha\beta} \tau_{\alpha\beta} + \mathcal{B}^{\alpha\beta} \mathcal{J}_{\alpha\beta} - \frac{1}{3} \alpha (2 \partial_\beta \mathcal{B}_{\alpha\chi} - \partial_\chi \mathcal{B}_{\alpha\beta}) \partial^{\chi} \mathcal{B}^{\alpha\beta} + \\ \frac{1}{2} t_1 (2 \partial_\beta f^{\chi}{}_{\chi} \partial^\beta f^{\alpha}{}_{\alpha} - 4 \partial^\beta f^{\alpha}{}_{\alpha} \partial_\chi f^{\chi}{}_{\beta} + 2 \partial_\beta f^{\alpha\beta} (\partial_\chi f^{\chi}{}_{\alpha} + 2 \partial_\chi \mathcal{B}_{\beta}{}^{\chi}) - 2 \partial_\alpha \mathcal{B}^{\alpha\beta} \partial_\chi \mathcal{B}_{\beta}{}^{\chi} - \\ 4 \partial^\beta f^{\alpha}{}_{\alpha} \partial_\chi \mathcal{B}_{\beta}{}^{\chi} + 2 \partial_\alpha f_{\beta\chi} \partial^{\chi} f^{\alpha\beta} + \partial_\alpha f_{\chi\beta} \partial^{\chi} f^{\alpha\beta} - \partial_\beta f_{\alpha\chi} \partial^{\chi} f^{\alpha\beta} - 4 \partial_\beta \mathcal{B}_{\alpha\chi} \partial^{\chi} f^{\alpha\beta} - \\ \partial_\chi f_{\alpha\beta} \partial^{\chi} f^{\alpha\beta} - \partial_\chi f_{\beta\alpha} \partial^{\chi} f^{\alpha\beta} - 2 \partial_\beta \mathcal{B}_{\alpha\chi} \partial^{\chi} \mathcal{B}^{\alpha\beta})) [t, x, y, z] d z d y d x d t$$

Massive and massless spectra

Massless particle

Pole residue:	$-\frac{1}{\epsilon_1} > 0$
Polarisations:	2

Massive particle

Pole residue:	$\frac{3}{a} > 0$
Square mass:	$\frac{3b}{a} > 0$
Spin:	1
Parity:	Even

Unitarity conditions