

Wave operator and propagator

$$\begin{aligned} \text{Quadratic (free) action} \\ S = & \iiint (f^{\alpha\beta} \tau_{\alpha\beta} + \omega^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} + \\ & \frac{1}{2} t_1 (2 \omega_{\alpha}^{\omega} \omega_{\theta}^{\omega} - 4 \omega_{\alpha}^{\omega} \omega_{\theta}^{\omega} \partial_{\theta} f^{\alpha\omega} + 4 \omega_{\theta}^{\omega} \omega_{\alpha}^{\omega} \partial_{\theta} f^{\alpha\omega} - \\ & 2 \partial_{\theta} f^{\theta} \partial_{\theta} f^{\alpha\omega} - 2 \partial_{\theta} f^{\alpha\omega} \partial_{\theta} f^{\theta\omega} + 4 \partial_{\theta} f^{\alpha\omega} \partial_{\theta} f^{\theta\omega} - 2 \partial_{\theta} f^{\alpha\omega} \partial_{\theta} f^{\alpha\omega} + \\ & \partial_{\theta} f^{\alpha\omega} \partial_{\theta} f^{\alpha\omega} + \partial_{\theta} f^{\alpha\omega} \partial_{\theta} f^{\alpha\omega} + \partial_{\theta} f^{\alpha\omega} \partial_{\theta} f^{\alpha\omega} + \\ & \partial_{\theta} f^{\alpha\omega} \partial_{\theta} f^{\alpha\omega} + 2 \omega_{\alpha\theta} (\omega^{\alpha\theta} + 2 \partial_{\theta} f^{\alpha\omega})) + \\ & \frac{1}{3} r_2 (4 \partial_{\theta} \omega_{\alpha\theta} - 2 \partial_{\theta} \omega_{\alpha\theta} + 2 \partial_{\theta} \omega_{\alpha\theta} - \partial_{\theta} \omega_{\alpha\theta} + \\ & \partial_{\theta} \omega_{\alpha\beta} - 2 \partial_{\theta} \omega_{\alpha\beta}) \partial^{\theta} \omega^{\alpha\beta} + \\ & r_5 (\partial_{\theta} \omega_{\theta}^{\kappa} \partial^{\theta} \omega_{\theta}^{\omega} - \partial_{\theta} \omega_{\theta}^{\kappa} \partial^{\theta} \omega_{\theta}^{\omega} - (\partial_{\alpha} \omega^{\alpha\theta} - 2 \partial^{\theta} \omega^{\alpha\omega}) \\ & (\partial_{\kappa} \omega_{\theta}^{\kappa} - \partial_{\kappa} \omega_{\theta}^{\omega})) [t, x, y, z] dz dy dx dt \end{aligned}$$

Massive particle	
Pole residue:	$-\frac{1}{r_2} > 0$
Polarisations:	1
Square mass:	$\frac{t_1}{r_2} > 0$
Spin:	0
Parity:	Odd

(No massless particles)

$$r_2 < 0 \ \&\& \ t_1 < 0$$
[illegible]