

Wave operator and propagator

$$\begin{aligned}
& \text{Quadratic (free) action} \\
& S = \\
& \int \int \int \left(\frac{1}{6} (6 t_1 \omega_{\alpha}^{\alpha} \omega_{,\theta}^{\theta} + 6 f^{\alpha\beta} \tau_{\alpha\beta} + 6 \omega^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} - 12 t_1 \omega_{\alpha}^{\theta} \partial_{\theta} f^{\alpha} + 12 t_1 \omega_{,\theta}^{\theta} \partial' f^{\alpha} - 6 t_1 \partial_{\theta} \omega_{,\beta}^{\theta} \partial' f^{\alpha} - 12 r_1 \partial_{\beta} \omega_{,\theta}^{\theta} \partial' \omega^{\alpha\beta} + \right. \\
& 12 r_1 \partial_{\theta} \omega_{,\beta}^{\theta} \partial' \omega^{\alpha\beta} - 6 t_1 \partial_{\theta} f^{\alpha} \partial_{\theta} f^{\theta} + \\
& 12 t_1 \partial' f^{\alpha} \partial_{\theta} f^{\theta} + 12 r_1 \partial_{\alpha} \omega^{\alpha\beta} \partial_{\theta} \omega_{,\beta}^{\theta} - \\
& 24 r_1 \partial' \omega_{,\beta}^{\alpha\beta} \partial_{\theta} \omega_{,\beta}^{\theta} - 12 r_1 \partial_{\alpha} \omega^{\alpha\beta} \partial_{\theta} \omega_{,\beta}^{\theta} + \\
& 24 r_1 \partial' \omega_{,\beta}^{\alpha\beta} \partial_{\theta} \omega_{,\beta}^{\theta} + 4 t_1 \omega_{,\theta\alpha}^{\theta} \partial^{\theta} f^{\alpha} + 4 t_2 \omega_{,\theta\alpha}^{\theta} \partial^{\theta} f^{\alpha} - \\
& 4 t_1 \partial_{\alpha} f_{,\theta} \partial^{\theta} f^{\alpha} + 2 t_2 \partial_{\alpha} f_{,\theta} \partial^{\theta} f^{\alpha} - 4 t_1 \partial_{\alpha} f_{,\theta} \partial^{\theta} f^{\alpha} - \\
& t_2 \partial_{\alpha} f_{,\theta} \partial^{\theta} f^{\alpha} + 2 t_1 \partial_{\theta} f_{,\alpha} \partial^{\theta} f^{\alpha} - t_2 \partial_{\theta} f_{,\alpha} \partial^{\theta} f^{\alpha} + \\
& 4 t_1 \partial_{\theta} f_{,\alpha} \partial^{\theta} f^{\alpha} + t_2 \partial_{\theta} f_{,\alpha} \partial^{\theta} f^{\alpha} + 2 t_1 \partial_{\theta} f_{,\alpha} \partial^{\theta} f^{\alpha} - \\
& t_2 \partial_{\theta} f_{,\alpha} \partial^{\theta} f^{\alpha} + 2 (t_1 + t_2) \omega_{\alpha\theta}^{\alpha} (\omega^{\alpha\theta} + 2 \partial^{\theta} f^{\alpha}) + \\
& 2 \omega_{\alpha\theta}^{\alpha} ((t_1 - 2 t_2) \omega^{\alpha\theta} + 2 (2 t_1 - t_2) \partial^{\theta} f^{\alpha}) - \\
& 8 r_1 \partial_{\beta} \omega_{,\alpha\theta}^{\theta} \partial^{\theta} \omega^{\alpha\beta} + 4 r_1 \partial_{\beta} \omega_{,\alpha\theta}^{\theta} \partial^{\theta} \omega^{\alpha\beta} - 16 r_1 \partial_{\beta} \omega_{,\theta\alpha}^{\theta} \partial^{\theta} \omega^{\alpha\beta} - 4 r_1 \partial_{\theta} \omega_{,\alpha\beta}^{\theta} \partial^{\theta} \omega^{\alpha\beta} + \\
& 4 r_1 \partial_{\theta} \omega_{,\alpha\beta}^{\theta} \partial^{\theta} \omega^{\alpha\beta})) [t, x, y, z] dz dy dx dt
\end{aligned}$$

[illegible]

Massive particle	
Pole residue:	$-\frac{1}{r_1} > 0$
Polarisations:	5
Square mass:	$-\frac{t_1}{2r_1} > 0$
Spin:	2
Parity:	Odd

(No massless particles)

$$r_1 < 0 \ \&\& \ t_1 > 0$$