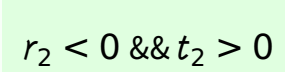


Wave operator and propagator

$$\begin{aligned}
& \text{Quadratic (free) action} \\
& S = \\
& \int \int \int \int \frac{1}{6} (6 f^{\alpha\beta} \tau_{\alpha\beta} - 18 r_3 \partial_\beta \mathcal{A}_{\theta}^{\alpha\beta} \partial_{\theta} \mathcal{A}_{\alpha}^{\alpha\beta} - 6 r_3 \partial_{\beta} \mathcal{A}_{\theta}^{\alpha\beta} \partial_{\alpha} \mathcal{A}^{\alpha\beta} - \\
& 6 r_3 \partial_{\alpha} \mathcal{A}^{\alpha\beta} \partial_{\beta} \mathcal{A}_{\theta}^{\theta} + 12 r_3 \partial_{\theta} \mathcal{A}_{\beta}^{\alpha\beta} \partial_{\alpha} \mathcal{A}_{\theta}^{\theta} - \\
& 18 r_3 \partial_{\alpha} \mathcal{A}_{\beta}^{\alpha\beta} \partial_{\theta} \mathcal{A}_{\theta}^{\theta} + 36 r_3 \partial_{\theta} \mathcal{A}_{\beta}^{\alpha\beta} \partial_{\alpha} \mathcal{A}_{\theta}^{\theta} + \\
& 4 t_2 \mathcal{A}_{\theta\alpha} \partial^{\theta} f^{\alpha\omega} + 2 t_2 \partial_{\omega} f_{\theta}^{\alpha\omega} \partial^{\theta} f^{\alpha\omega} - t_2 \partial_{\omega} f_{\theta}^{\alpha\omega} \partial^{\theta} f^{\alpha\omega} - \\
& t_2 \partial_{\theta} f_{\alpha}^{\alpha\omega} \partial^{\theta} f^{\alpha\omega} + t_2 \partial_{\theta} f_{\alpha}^{\alpha\omega} \partial^{\theta} f^{\alpha\omega} - t_2 \partial_{\theta} f_{\alpha}^{\alpha\omega} \partial^{\theta} f^{\alpha\omega} - 4 t_2 \\
& \mathcal{A}_{\alpha\theta} (\mathcal{A}^{\alpha\theta} + \partial^{\theta} \mathcal{A}^{\alpha\omega}) + 2 t_2 \mathcal{A}_{\alpha\theta} (\mathcal{A}^{\alpha\theta} + 2 \partial^{\theta} f^{\alpha\omega}) + \\
& 8 r_2 \partial_\beta \mathcal{A}_{\alpha\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta} - 4 r_2 \partial_\beta \mathcal{A}_{\alpha\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta} + \\
& 4 r_2 \partial_\beta \mathcal{A}_{\theta\alpha} \partial^{\theta} \mathcal{A}^{\alpha\beta} - 24 r_3 \partial_\beta \mathcal{A}_{\theta\alpha} \partial^{\theta} \mathcal{A}^{\alpha\beta} - \\
& 2 r_2 \partial_{\alpha} \mathcal{A}_{\theta\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta} + 2 r_2 \partial_{\alpha} \mathcal{A}_{\theta\beta} \partial^{\theta} \mathcal{A}^{\alpha\beta} - \\
& 4 r_2 \partial_{\theta} \mathcal{A}_{\alpha\beta} \partial^{\theta} \mathcal{A}^{\alpha\beta}) [t, x, y, z] dz dy dx dt
\end{aligned}$$

Unitarity conditions

[illegible]