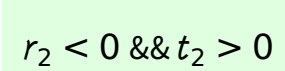


# Wave operator and propagator

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

## Unitarity conditions



	$\omega_{2^+}^{\#1} \uparrow \alpha\beta$	$f_{2^+}^{\#1} \uparrow \alpha\beta$	$\omega_{2^-}^{\#1} \uparrow \alpha\beta\chi$
$\omega_{2^+}^{\#1} \uparrow \alpha\beta$	0	0	0
$f_{2^+}^{\#1} \uparrow \alpha\beta$	0	0	0
$\omega_{2^-}^{\#1} \uparrow \alpha\beta\chi$	0	0	0

	$\omega_0^{\#1} \uparrow$	$f_0^{\#1} \uparrow$	$f_0^{\#2} \uparrow$	$\omega_0^{\#1}$
$\omega_0^{\#1} \uparrow$	$6k^2 r_3$	0	0	0
$f_0^{\#1} \uparrow$	0	0	0	0
$f_0^{\#2} \uparrow$	0	0	0	0
$\omega_0^{\#1}$	0	0	0	$k^2 r_2 + t_2$