

## Wave operator and propagator

[illegible]

	$\Gamma_{2^+}^{\#1} \alpha\beta$	$\Gamma_{2^+}^{\#2} \alpha\beta$	$\Gamma_{2^+}^{\#3} \alpha\beta$	$\Gamma_{2^+}^{\#1} \alpha\beta$	$\Gamma_{2^+}^{\#1} \alpha\beta\chi$	$\Gamma_{2^+}^{\#2} \alpha\beta\chi$
$\Gamma_{2^+}^{\#1} \alpha\beta$	$\frac{1}{4} (a_0 - 2 a_1 - a_2)$	0	$-\frac{1}{4} \sqrt{3} (2 a_1 + a_2 + a_9)$	0	0	0
$\Gamma_{2^+}^{\#2} \alpha\beta$	0	$-\frac{3}{4} (a_0 + 2 a_5 - 6 a_7)$	0	0	0	0
$\Gamma_{2^+}^{\#3} \alpha\beta$	$-\frac{1}{4} \sqrt{3} (2 a_1 + a_2 + a_9)$	0	$-\frac{3}{4} (2 a_1 + a_2 - 2 a_5 - 6 a_7 + 2 a_9)$	0	0	0
$\Gamma_{2^+}^{\#1} \alpha\beta$	0	0	0	$-\frac{a_0 k^2}{8}$	0	0
$\Gamma_{2^+}^{\#1} \alpha\beta\chi$	0	0	0	0	$\frac{1}{4} (a_0 - 2 a_1 - a_2)$	$-\frac{1}{4} \sqrt{3} (2 a_1 + a_2 + a_9)$
$\Gamma_{2^+}^{\#2} \alpha\beta\chi$	0	0	0	0	$-\frac{1}{4} \sqrt{3} (2 a_1 + a_2 + a_9)$	$-\frac{3}{4} (2 a_1 + a_2 - 2 a_5 - 6 a_7 + 2 a_9)$

$$\begin{aligned}
& \text{Symmetric (free) action} \\
& S = \\
& \iiint \int_{24} \left( \frac{1}{4} (-2 a_0 + 2 a_1 + a_2 - 12 a_6 + 2 a_9) \Gamma_{\mu}^{\alpha} \Gamma_{\nu}^{\beta} \Gamma^{\alpha\beta} - 3 (a_8 + 8 a_1 - 2 a_5 - 18 \right. \\
& \quad \left. a_7 + 4 a_9) \Gamma_{\alpha\beta\mu}^{\alpha} \Gamma^{\alpha\beta\mu} - 3 a_0 \Gamma_{\alpha\beta\beta}^{\alpha} \Gamma^{\alpha\beta\mu} - \right. \\
& \quad 12 a_2 \Gamma_{\alpha\beta\mu}^{\alpha} \Gamma^{\alpha\beta\mu} + 6 a_5 \Gamma_{\alpha\beta\beta}^{\alpha} \Gamma^{\alpha\beta\mu} + \\
& \quad 54 a_7 \Gamma_{\alpha\beta\mu}^{\alpha} \Gamma^{\alpha\beta\mu} - 12 a_9 \Gamma_{\alpha\beta\beta}^{\alpha} \Gamma^{\alpha\beta\mu} - 12 a_2 \Gamma_{\alpha\beta\mu}^{\alpha} \Gamma^{\alpha\beta\mu} \Gamma_{\beta\alpha\mu}^{\alpha} - \\
& \quad 12 a_5 \Gamma_{\alpha\beta\mu}^{\alpha} \Gamma_{\beta\alpha\mu}^{\alpha} - 12 a_0 \Gamma_{\beta\mu\alpha}^{\alpha\beta} + 24 a_2 \Gamma_{\beta\mu\alpha}^{\alpha\beta} \Gamma_{\beta\mu\alpha}^{\alpha} - \\
& \quad 24 a_5 \Gamma_{\beta\mu\alpha}^{\alpha\beta} \Gamma_{\beta\mu\alpha}^{\alpha} + 12 a_9 \Gamma_{\beta\mu\alpha}^{\alpha\beta} \Gamma_{\beta\mu\alpha}^{\alpha} + 2 a_0 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} - \\
& \quad 16 a_1 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} - 8 a_2 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} + 12 a_5 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} + \\
& \quad 12 a_7 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} - 12 a_9 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} + 2 a_0 \Gamma_{\alpha}^{\alpha\beta} \Gamma_{\beta}^{\beta\mu} + \\
& \quad 12 a_5 \Gamma_{\alpha}^{\alpha\beta} \Gamma_{\beta}^{\beta\mu} + 12 a_7 \Gamma_{\alpha}^{\alpha\beta} \Gamma_{\beta}^{\beta\mu} - 4 a_9 \Gamma_{\alpha}^{\alpha\beta} \Gamma_{\beta}^{\beta\mu} + \\
& \quad 24 a_1 \Gamma_{\alpha\beta\mu}^{\alpha} \Gamma_{\mu\beta\alpha}^{\alpha} - 12 a_5 \Gamma_{\alpha\beta\mu}^{\alpha} \Gamma_{\mu\beta\alpha}^{\alpha} + 12 a_9 \Gamma_{\alpha\beta\mu}^{\alpha} \Gamma_{\mu\beta\alpha}^{\alpha} + \\
& \quad 4 a_0 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} - 24 a_7 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} + 4 a_9 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} - \\
& \quad 12 a_7 \Gamma_{\alpha}^{\alpha\beta} \Gamma_{\beta}^{\beta\mu} + 8 a_1 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} + 4 a_2 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} - \\
& \quad 12 a_7 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} + 4 a_9 \Gamma_{\alpha}^{\alpha} \Gamma_{\beta}^{\beta} \Gamma_{\mu}^{\mu} + 24 h^{\alpha\beta} \mathcal{T}_{\alpha\beta} + \\
& \quad 24 \Gamma^{\alpha\beta\chi} \Delta_{\alpha\beta\chi} - 12 a_0 \Gamma^{\alpha\beta\mu} \partial_{\beta\mu} \gamma_{\alpha} - 6 a_0 \Gamma_{\alpha}^{\alpha} \partial_{\beta} h_{\mu}^{\mu} + \\
& \quad 6 a_0 \Gamma^{\alpha\beta} \partial_{\beta} h_{\mu}^{\mu} - 6 a_0 h_{\mu}^{\mu} \Gamma_{\alpha}^{\alpha} \partial_{\beta} h_{\mu}^{\mu} + 6 a_0 h_{\mu}^{\mu} \Gamma_{\alpha}^{\alpha} \partial_{\beta} h_{\mu}^{\mu} - \\
& \quad 12 a_0 h_{\alpha\mu} \partial_{\beta} \Gamma^{\alpha\beta} + 6 a_0 h^{\alpha\beta} \partial_{\alpha} \partial_{\beta} h_{\mu}^{\mu} - \\
& \quad 3 a_0 \partial_{\beta} h_{\mu}^{\mu} \partial^{\beta} h_{\alpha}^{\alpha} + 12 a_0 \Gamma_{\alpha}^{\alpha} \partial_{\mu} h_{\beta}^{\beta} + 6 a_0 \partial^{\beta} h_{\alpha}^{\alpha} \partial_{\mu} h_{\beta}^{\beta} - \\
& \quad 12 a_0 h_{\alpha}^{\alpha\beta} \partial_{\mu} \partial_{\beta} h_{\mu}^{\mu} + 6 a_0 h_{\alpha}^{\alpha} \partial_{\mu} \partial_{\beta} h_{\mu}^{\mu} + \\
& \quad 6 a_0 h^{\alpha\beta} \partial_{\mu} \partial_{\beta} h_{\alpha\mu} - 6 a_0 h_{\alpha}^{\alpha} \partial_{\mu} \partial_{\beta} h_{\mu}^{\mu} - \\
& \quad 6 a_0 \partial_{\beta} h_{\alpha\mu} \partial^{\beta} h_{\mu}^{\mu} + 3 a_0 \partial_{\mu} h_{\alpha\mu} \partial^{\mu} h^{\alpha\beta} + \\
& \quad 12 a_0 h_{\beta\mu} \partial_{\mu} \Gamma_{\alpha}^{\alpha} + 24 a_{13} \partial_{\alpha} \Gamma_{\mu}^{\mu} \partial^{\mu} \Gamma^{\alpha\beta} - \\
& \quad 24 a_{13} \partial_{\mu} \Gamma_{\alpha}^{\alpha} \partial^{\mu} \Gamma^{\alpha\beta} ) [t, x, y, z] d x d y d z d t
\end{aligned}$$
[illegible]

	<b>Massive particle</b> <b>Pole residue:</b> $\frac{1}{4a_{13}} > 0$ <b>Polarisations:</b> 3 <b>Square mass:</b> $\frac{-3a_9 + 2(a_5 - 8a_6 + 5a_7)}{8a_{13}} > 0$ <b>Spin:</b> 1 <b>Parity:</b> Odd	
		<b>Quadratic pole</b> <b>Pole residue:</b> $-\frac{1}{a_0} > 0$ <b>Polarisations:</b> 2

$$a_0 < 0 \ \&\& \ a_7 > \frac{1}{10} (3a_0 - 2a_5 + 16a_6) \ \&\& \ a_{13} > 0$$