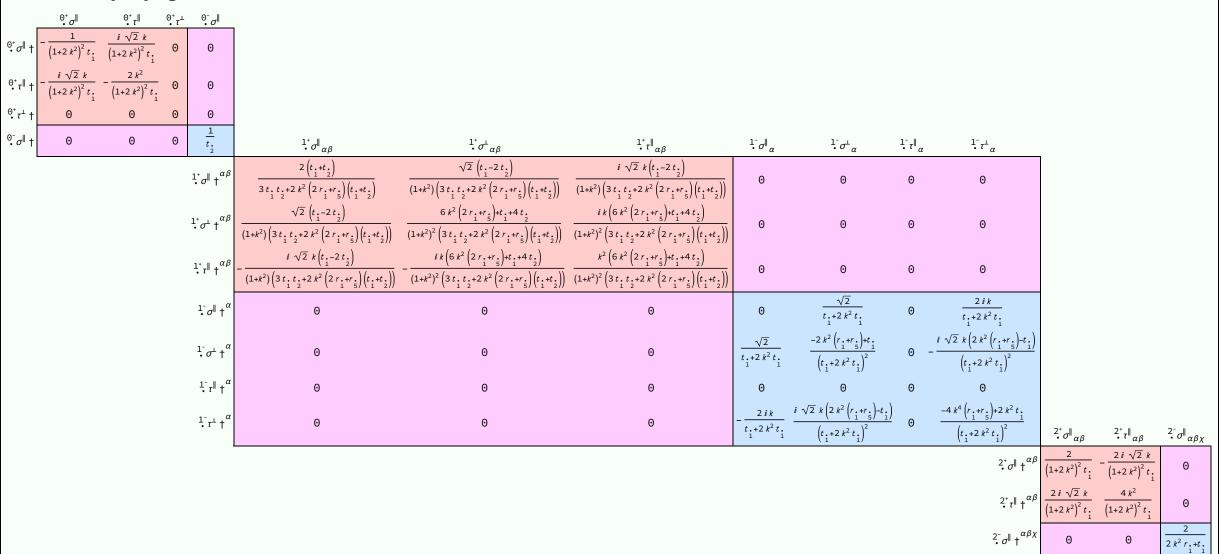
# $S = \iiint \left(\frac{1}{6} \left(6 t_{1}^{2} \mathcal{A}^{\alpha i}_{\alpha} \mathcal{A}^{\theta}_{i} + 6 \mathcal{A}^{\alpha \beta \chi}_{\alpha \beta \chi} + 6 f^{\alpha \beta}_{i} t_{1} (\Delta + \mathcal{K})_{\alpha \beta} - 12 t_{1}^{2} \mathcal{A}^{\theta}_{\alpha} \partial_{i} f^{\alpha i}_{i} + 12 t_{1}^{2} \mathcal{A}^{\theta}_{i} \partial_{i} f^{\alpha}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} - 6 t_{1}^{2} \partial_{i} f^{\alpha i}_{\alpha} \partial_{i} f^{\alpha i}_{\alpha} -$

### **Wave operator**

	$\mathscr{F}^{\parallel}$		$f^{\perp}$	$^{\circ}$ . $\mathscr{F}^{\parallel}$										
<sup>0⁺</sup> Æ <sup>∥</sup> †	-t. 1	$i\sqrt{2} kt$	0	0										
° f † †	$-i \sqrt{2} kt$	$-2k^2t$	0	0										
${\overset{0^+}{\overset{\bullet}{\bullet}}}f^\perp$ †	0	0	0	0										
<sup>0-</sup> Æ <sup>∥</sup> †	0	0	0	t. 2	${\stackrel{1^{+}}{\cdot}}\mathcal{H}^{\parallel}{}_{\alpha\beta}$	${}^{1^{+}}_{\bullet}\mathcal{F}^{\perp}{}_{\alpha\beta}$	$\frac{1}{2} f \ _{\alpha\beta}$	${\stackrel{1^-}{\cdot}}\mathcal{H}^{\parallel}{}_{\alpha}$	$^{1}_{\bullet}\mathcal{F}^{\perp}_{\alpha}$	$\frac{1}{\bullet}f^{\parallel}_{\alpha}$	$\int_{\bullet}^{1} f^{\perp}_{\alpha}$			
				$^{1^{+}}_{\bullet}\mathcal{A}^{\parallel}$ † $^{lphaeta}$	$\frac{1}{6} \left( 6 k^2 \left( 2 r_1 + r_5 \right) + t_1 + 4 t_2 \right)$		$-\frac{ik\left(t_{1}-2t_{2}\right)}{3\sqrt{2}}$	0	0	0	Θ			
				${\stackrel{1^{+}}{\cdot}}\mathcal{R}^{\perp}{\dagger}^{\alpha\beta}$	3 √2	$\frac{t \cdot +t}{\frac{1}{2}}$	$\frac{1}{3} i k \left( t_{\cdot} + t_{\cdot} \right)$	0	Θ	0	Θ			
				$f^{\parallel} \uparrow^{\parallel} \uparrow^{\alpha\beta}$	$\frac{ik\left(t_1-2t_2\right)}{3\sqrt{2}}$	$-\frac{1}{3} i k \left(t_{\cdot} + t_{\cdot}\right)$	$\frac{1}{3} k^2 \left( t_{\cdot \cdot} + t_{\cdot \cdot} \right)$	0	0	0	0			
				$^{1}_{\bullet}\mathcal{A}^{\parallel}\dagger^{lpha}$	0	0	0	$k^2 \left(r_{ \cdot \cdot} + r_{ \cdot \cdot} \right) - \frac{t_{ \cdot \cdot}}{2}$	$\frac{t_1}{\sqrt{2}}$	0	ī k t . 1			
				$^{1}_{\bullet}\mathcal{A}^{\perp}\dagger^{\alpha}$	0	Θ	0	$\frac{t}{\sqrt{2}}$	0	0	0			
				$\frac{1}{\bullet}f^{\parallel}\uparrow^{\alpha}$	0	0	0	Θ	0	0	0			
				$^{1}_{\bullet}f^{\perp}\dagger^{\alpha}$	0	Θ	0	- i k t .	Θ	Θ	0	$\mathcal{A}^{2^{+}}\mathcal{A}^{\parallel}_{\alpha\beta}$	$2^{+}_{\bullet}f^{\parallel}_{\alpha\beta}$	${}^{2^{-}}_{\bullet}\mathcal{A}^{\parallel}_{\alpha\beta\chi}$
											$\mathcal{A}^{+}\mathcal{A}^{\parallel}$ †		$-\frac{ikt}{\sqrt{2}}$	0
											$^{2^{+}}_{\bullet}f^{\parallel}$ † $^{\alpha\beta}$	$\frac{i k t_{\frac{1}{2}}}{\sqrt{2}}$		0
											${}^{2} \mathcal{A}^{\parallel} \uparrow^{\alpha\beta\chi}$	0	Θ	$k^2 r_{\bullet} + \frac{t_{\bullet}}{2}$

#### Saturated propagator



## Source constraints

Spin-parity form	Covariant form	Multiplicities	
0 <sup>+</sup> r <sup>⊥</sup> == 0	$\partial_{\beta}\partial_{\alpha}\tau \left(\Delta+\mathcal{K}\right)^{\alpha\beta} == 0$	1	
$-2 i k \cdot 0^+ \sigma^{\parallel} + 0^+ \tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha\tau}\left(\Delta+\mathcal{K}\right)^{\alpha\beta} == \partial_{\beta}\partial^{\beta}_{\tau}\left(\Delta+\mathcal{K}\right)^{\alpha}_{\alpha} + 2 \partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha}_{\alpha}^{\beta}$	1	
$2 i k \frac{1}{\cdot} \sigma^{\perp}^{\alpha} + \frac{1}{\cdot} \tau^{\perp}^{\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}_{\tau} \left(\Delta + \mathcal{K}\right)^{\beta\chi} = \partial_{\chi}\partial^{\chi}\partial_{\beta\tau} \left(\Delta + \mathcal{K}\right)^{\alpha\beta} + 2 \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial_{\beta}\sigma^{\beta\alpha\chi}$	3	
1- <sub>τ</sub>   α == Θ	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}_{\tau} \left(\Delta + \mathcal{K}\right)^{\beta \chi} = \partial_{\chi}\partial^{\chi}\partial_{\beta\tau} \left(\Delta + \mathcal{K}\right)^{\beta\alpha}$	3	
$i k \frac{1}{\cdot} \sigma^{\perp}^{\alpha\beta} + \frac{1}{\cdot} \tau^{\parallel}^{\alpha\beta} = 0$	$\partial_{\chi}\partial^{\alpha}\tau\left(\Delta+\mathcal{K}\right)^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau\left(\Delta+\mathcal{K}\right)^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau\left(\Delta+\mathcal{K}\right)^{\alpha\beta} + 2 \partial_{\sigma}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2 \partial_{\sigma}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\alpha\beta} = \partial_{\chi}\partial^{\alpha}\tau\left(\Delta+\mathcal{K}\right)^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau\left(\Delta+\mathcal{K}\right)^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau\left(\Delta+\mathcal{K}\right)^{\alpha\alpha} + 2 \partial_{\sigma}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\alpha\delta} = \partial_{\chi}\partial^{\alpha}\tau\left(\Delta+\mathcal{K}\right)^{\chi\alpha} + \partial_{\chi}\partial^{\alpha}\tau\left(\Delta+\mathcal{K}\right)^{\alpha\alpha} + \partial_{\chi}\partial^{\chi}\tau\left(\Delta+\mathcal{K}\right)^{\alpha\alpha} + \partial_{\chi}\partial^{\chi}\tau\left(\Delta+\mathcal{K}\right)^{\alpha\alpha} + \partial_{\chi}\partial^{\alpha}\tau\left(\Delta+\mathcal{K}\right)^{\alpha\alpha} + \partial_{\chi}\partial^{\chi}\tau\left(\Delta+\mathcal{K}\right)^{\alpha\alpha} + \partial_{\chi}\partial^{\chi}\tau\left(\Delta+\mathcal{K}\right$	3	
$-2 i k 2^+ \sigma \ ^{\alpha\beta} + 2^+ \tau \ ^{\alpha\beta} = 6$	$-i\left(4\ \partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}_{\tau}\left(\Delta+\mathcal{K}\right)^{\chi\delta}+2\ \partial_{\delta}\partial^{\delta}\partial^{\beta}\partial^{\alpha}_{\tau}\left(\Delta+\mathcal{K}\right)^{\chi}_{\chi}-3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}_{\tau}\left(\Delta+\mathcal{K}\right)^{\beta\chi}-3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}_{\tau}\left(\Delta+\mathcal{K}\right)^{\gamma\beta}-3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\partial_{\chi}\partial$	5	
	$3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau\ (\Delta+\mathcal{K})^{\alpha\chi} - 3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau\ (\Delta+\mathcal{K})^{\chi\alpha} + 3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau\ (\Delta+\mathcal{K})^{\alpha\beta} + 3\ \partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau\ (\Delta+\mathcal{K})^{\beta\alpha} + 4\ \emph{i}\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\sigma^{\delta}_{\ \ \delta}^{\ \ \epsilon} - 6\ \emph{i}\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\delta\beta\epsilon} - 6\ \emph{i}\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\delta\beta\epsilon} - 6\ \emph{i}\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\delta\beta\epsilon} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\delta}\partial_{\lambda}\partial^{\alpha}\sigma^{\delta\beta\epsilon} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\lambda}\partial^{\alpha}\sigma^{\delta\beta\epsilon} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\lambda}\partial^{\alpha}\sigma^{\delta\alpha} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\lambda}\partial^{\alpha}\sigma^{\delta\alpha} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\lambda}\partial^{\alpha}\sigma^{\delta\alpha} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial^{\alpha}\sigma^{\delta\alpha} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial_{\lambda}\partial^{\alpha}\sigma^{\delta\alpha} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial^{\alpha}\sigma^{\delta\alpha} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial^{\alpha}\sigma^{\delta\alpha} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial^{\alpha}\sigma^{\delta\alpha} - 6\ \emph{k}^{\chi}\ \partial_{\epsilon}\partial^{$		
	$ 6 \ i \ k^{X} \ \partial_{\epsilon} \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\delta \alpha \epsilon} + 6 \ i \ k^{X} \ \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi} \sigma^{\alpha \beta \delta} + 6 \ i \ k^{X} \ \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi} \sigma^{\beta \alpha \delta} + 2 \ \eta^{\alpha \beta} \ \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi \tau} \left( \Delta + \mathcal{K} \right)^{\chi \delta} - 2 \ \eta^{\alpha \beta} \ \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \tau \left( \Delta + \mathcal{K} \right)^{\chi}_{\chi} - 4 \ i \ \eta^{\alpha \beta} \ k^{X} \ \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\chi} \sigma^{\delta}_{\delta} = 0 $		
Total expected gauge generators: 16			

# Massive spectrum



# Massive particle $\frac{-3t_1t_2(t_1+t_2)+6r_1(t_1^2+2t_2^2)+3r_2(t_1^2+2t_2^2)}{(2r_1+r_2)(t_1+t_2)(-3t_1t_2+4r_1(t_1+t_2)+2r_2(t_1+t_2))} > 0$ Square mass: $-\frac{3t_1t_2}{2(2r_1+r_2)(t_1+t_2)} > 0$

Pole residue:	$-\frac{1}{r_{i}} > 0$
Square mass:	$-\frac{\frac{t_{\cdot}}{1}}{2r_{\cdot}} > 0$
Spin:	2
Parity:	Odd

Massive particle

#### **Massless spectrum**

Even

(No particles)

Spin: Parity:

# **Unitarity conditions**

r. < 0 && t. < 0 && t. > -t. && r. > -2 r.1 2 5 1