

PSALTer results panel

$$S == \iiint\int (\frac{1}{6} (6 \, \mathcal{A}^{\alpha\beta\chi} \, \sigma_{\alpha\beta\chi} + 6 \, f^{\alpha\beta} \, \tau (\Delta + \mathcal{K})_{\alpha\beta} + 8 \, r_{\frac{1}{2}} \partial_{\beta} \mathcal{A}_{\alpha\imath\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta\imath} - 4 \, r_{\frac{1}{2}} \partial_{\beta} \mathcal{A}_{\alpha\theta\imath} \partial^{\theta} \mathcal{A}^{\alpha\beta\imath} + 4 \, r_{\frac{1}{2}} \partial_{\beta} \mathcal{A}_{\imath\theta\alpha} \partial^{\theta} \mathcal{A}^{\alpha\beta\imath} - 2 \, r_{\frac{1}{2}} \partial_{\imath} \mathcal{A}_{\alpha\beta\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta\imath} + 2 \, r_{\frac{1}{2}} \partial_{\theta} \mathcal{A}_{\alpha\beta\imath} \partial^{\theta} \mathcal{A}^{\alpha\beta\imath} - 4 \, r_{\frac{1}{2}} \partial_{\theta} \mathcal{A}_{\alpha\imath\beta} \partial^{\theta} \mathcal{A}^{\alpha\beta\imath} + 4 \, t_{\frac{1}{2}} \mathcal{A}_{\imath\theta\alpha} \partial^{\theta} f^{\alpha\imath} + 2 \, t_{\frac{1}{2}} \partial_{\alpha} f_{\imath\theta} \partial^{\theta} f^{\alpha\imath} - t_{\frac{1}{2}} \partial_{\alpha} f_{\theta\imath} \partial^{\theta} f^{\alpha\imath} - t_{\frac{1}{2}} \partial_{\imath} f_{\alpha\theta} \partial^{\theta} f^{\alpha\imath} + t_{\frac{1}{2}} \partial_{\theta} f_{\alpha\imath} \partial^{\theta} f^{\alpha\imath} - t_{\frac{1}{2}} \partial_{\theta} f_{\imath\alpha} \partial^{\theta} f^{\alpha\imath} - 4 \, t_{\frac{1}{2}} \mathcal{A}_{\alpha\theta\imath} (\mathcal{A}^{\alpha\imath\theta} + \partial^{\theta} f^{\alpha\imath}) + 2 \, t_{\frac{1}{2}} \mathcal{A}_{\alpha\imath\theta} (\mathcal{A}^{\alpha\imath\theta} + 2 \, \partial^{\theta} f^{\alpha\imath})) [t, x, y, z] dz dy dx dt$$

Wave operator

$0^+ \mathcal{A}^{\parallel}$	$0^+ f^{\parallel}$	$0^+ f^{\perp}$	$0^- \mathcal{A}^{\parallel}$													
$0^+ \mathcal{A}^{\parallel} \uparrow$	0	0	0	0												
$0^+ f^{\parallel} \uparrow$	0	0	0	0												
$0^+ f^{\perp} \uparrow$	0	0	0	0												
$0^- \mathcal{A}^{\parallel} \uparrow$	0	0	0	$k^2 r_{\frac{1}{2}} + t_{\frac{1}{2}}$	$1^+ \mathcal{A}^{\parallel}_{\alpha\beta}$	$1^+ \mathcal{A}^{\perp}_{\alpha\beta}$	$1^+ f^{\parallel}_{\alpha\beta}$	$1^- \mathcal{A}^{\parallel}_{\alpha}$	$1^- \mathcal{A}^{\perp}_{\alpha}$	$1^- f^{\parallel}_{\alpha}$	$1^- f^{\perp}_{\alpha}$					
	$1^+ \mathcal{A}^{\parallel} \uparrow^{\alpha\beta}$	$\frac{2t_{\frac{1}{2}}}{3}$	$\frac{\sqrt{2}t_{\frac{1}{2}}}{3}$	$\frac{1}{3}i\sqrt{2}kt_{\frac{1}{2}}$	0	0	0	0								
	$1^+ \mathcal{A}^{\perp} \uparrow^{\alpha\beta}$	$\frac{\sqrt{2}t_{\frac{1}{2}}}{3}$	$\frac{t_{\frac{1}{2}}}{3}$	$\frac{ikt_{\frac{1}{2}}}{3}$	0	0	0	0								
	$1^+ f^{\parallel} \uparrow^{\alpha\beta}$	$-\frac{1}{3}i\sqrt{2}kt_{\frac{1}{2}}$	$-\frac{1}{3}ikt_{\frac{1}{2}}$	$\frac{k^2t_{\frac{1}{2}}}{3}$	0	0	0	0								
	$1^- \mathcal{A}^{\parallel} \uparrow^{\alpha}$	0	0	0	0	0	0	0								
	$1^- \mathcal{A}^{\perp} \uparrow^{\alpha}$	0	0	0	0	0	0	0								
	$1^- f^{\parallel} \uparrow^{\alpha}$	0	0	0	0	0	0	0								
	$1^- f^{\perp} \uparrow^{\alpha}$	0	0	0	0	0	0	0	$2^+ \mathcal{A}^{\parallel}_{\alpha\beta}$	$2^+ f^{\parallel}_{\alpha\beta}$	$2^- \mathcal{A}^{\parallel}_{\alpha\beta\chi}$					
					$2^+ \mathcal{A}^{\parallel} \uparrow^{\alpha\beta}$	0	0	0			0					
					$2^+ f^{\parallel} \uparrow^{\alpha\beta}$	0	0	0			0					
					$2^- \mathcal{A}^{\parallel} \uparrow^{\alpha\beta\chi}$	0	0	0			0					

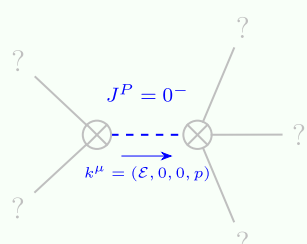
Saturated propagator

$0^+ \sigma^{\parallel}$	$0^+ \tau^{\parallel}$	$0^+ \tau^{\perp}$	$0^- \sigma^{\parallel}$										
$0^+ \sigma^{\parallel} \uparrow$	0	0	0	0									
$0^+ \tau^{\parallel} \uparrow$	0	0	0	0									
$0^+ \tau^{\perp} \uparrow$	0	0	0	0									
$0^- \sigma^{\parallel} \uparrow$	0	0	0	$\frac{1}{k^2 r_{\frac{1}{2}} + t_{\frac{1}{2}}}$	$1^+ \sigma^{\parallel}_{\alpha\beta}$	$1^+ \sigma^{\perp}_{\alpha\beta}$	$1^+ \tau^{\parallel}_{\alpha\beta}$	$1^- \sigma^{\parallel}_{\alpha}$	$1^- \sigma^{\perp}_{\alpha}$	$1^- \tau^{\parallel}_{\alpha}$	$1^- \tau^{\perp}_{\alpha}$		
	$1^+ \sigma^{\parallel} \uparrow^{\alpha\beta}$	$\frac{6}{(3+k^2)^2 t_{\frac{1}{2}}}$	$\frac{3 \sqrt{2}}{(3+k^2)^2 t_{\frac{1}{2}}}$	$\frac{3 i \sqrt{2} k}{(3+k^2)^2 t_{\frac{1}{2}}}$	0	0	0	0					
	$1^+ \sigma^{\perp} \uparrow^{\alpha\beta}$	$\frac{3 \sqrt{2}}{(3+k^2)^2 t_{\frac{1}{2}}}$	$\frac{3}{(3+k^2)^2 t_{\frac{1}{2}}}$	$\frac{3 i k}{(3+k^2)^2 t_{\frac{1}{2}}}$	0	0	0	0					
	$1^+ \tau^{\parallel} \uparrow^{\alpha\beta}$	$-\frac{3 i \sqrt{2} k}{(3+k^2)^2 t_{\frac{1}{2}}}$	$-\frac{3 i k}{(3+k^2)^2 t_{\frac{1}{2}}}$	$\frac{3 k^2}{(3+k^2)^2 t_{\frac{1}{2}}}$	0	0	0	0					
	$1^- \sigma^{\parallel} \uparrow^{\alpha}$	0	0	0	0	0	0	0					
	$1^- \sigma^{\perp} \uparrow^{\alpha}$	0	0	0	0	0	0	0					
	$1^- \tau^{\parallel} \uparrow^{\alpha}$	0	0	0	0	0	0	0					
	$1^- \tau^{\perp} \uparrow^{\alpha}$	0	0	0	0	0	0	0	$2^+ \sigma^{\parallel}_{\alpha\beta}$	$2^+ \tau^{\parallel}_{\alpha\beta}$	$2^- \sigma^{\parallel}_{\alpha\beta\chi}$		
					$2^+ \sigma^{\parallel} \uparrow^{\alpha\beta}$	0	0				0		
					$2^+ \tau^{\parallel} \uparrow^{\alpha\beta}$	0	0				0		
					$2^- \sigma^{\parallel} \uparrow^{\alpha\beta\chi}$	0	0				0		

Source constraints

Spin-parity form	Covariant form	Multiplicities
$0^+ \tau^{\perp} == 0$	$\partial_{\beta} \partial_{\alpha} \tau (\Delta + \mathcal{K})^{\alpha\beta} == 0$	1
$0^+ \tau^{\parallel} == 0$	xAct`xTensor`Private`Reconstruct[Symmetry[4, $0^+ \check{\varphi}_b \bullet \bullet \bullet \bullet \tau^{\parallel} \bullet \bullet \bullet \bullet$ , { $\bullet \bullet \bullet \bullet \rightarrow a$ , $\bullet \bullet \bullet \bullet \rightarrow b$ , $\bullet \bullet \bullet \bullet \rightarrow -a$ , $\bullet \bullet \bullet \bullet \rightarrow -b$ }, StrongGenSet[{ $\{ \}$ , GenSet[ $\{ \}$ ]}], {1, {a, -a, b, -b}}][{1, 3, 5, 2}]] == 0	1
$0^- \sigma^{\parallel} == 0$	$\partial_{\beta} \sigma^{\alpha \beta} == 0$	1
$1^- \tau^{\perp \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta\chi} == \partial_{\chi} \partial^{\chi} \partial_{\beta} \tau (\Delta + \mathcal{K})^{\alpha\beta}$	3
$1^- \tau^{\parallel \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta\chi} == \partial_{\chi} \partial^{\chi} \partial_{\beta} \tau (\Delta + \mathcal{K})^{\beta\alpha}$	3
$1^- \sigma^{\perp \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \sigma^{\beta\alpha\chi} == 0$	3
$1^- \sigma^{\parallel \alpha} == 0$	$\partial_{\delta} \partial^{\alpha} \sigma^{\chi \delta} + \partial_{\delta} \partial^{\delta} \sigma^{\chi \alpha} == \partial_{\delta} \partial_{\chi} \sigma^{\chi\alpha\delta}$	3
$i k \, 1^+ \sigma^{\parallel \alpha\beta} + 1^+ \tau^{\parallel \alpha\beta} == 0$	$\partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta\chi} + \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\chi\alpha} + \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\alpha\beta} + \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\chi\alpha\delta} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\alpha\beta\chi} == \partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi\beta} + \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha\chi} + \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\beta\alpha} + \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\chi\beta\delta} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\beta\alpha\chi}$	3
$1^+ \sigma^{\parallel \alpha\beta} == 1^+ \sigma^{\perp \alpha\beta}$	$3 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\chi\beta\delta} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\beta\alpha\chi} + 2 \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\chi\alpha\beta} == 3 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\chi\alpha\delta} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\alpha\beta\chi}$	3
$2^- \sigma^{\parallel \alpha\beta\chi} == 0$	$3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\alpha} \sigma^{\delta\beta\epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\alpha} \sigma^{\delta\beta}_{\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\alpha\chi\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\chi\alpha\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\delta\alpha\chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\beta\alpha\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\delta\alpha\beta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\delta\alpha}_{\delta} == 3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\beta} \sigma^{\delta\alpha\epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\beta} \sigma^{\delta\alpha}_{\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\beta\chi\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\chi\beta\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\delta\beta\chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\alpha\beta\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\beta\alpha\chi} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\chi\alpha\beta} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\beta} \sigma^{\delta}_{\delta}{}^{\epsilon} + 3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\delta\alpha\epsilon} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{\delta\beta}_{\delta}$	5
$2^+ \tau^{\parallel \alpha\beta} == 0$	$4 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi\delta} + 2 \partial_{\delta} \partial^{\delta} \partial^{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi}_{\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\alpha\beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\beta\alpha} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi} \tau (\Delta + \mathcal{K})^{\chi\delta} == 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi\beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\chi\alpha} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \tau (\Delta + \mathcal{K})^{\chi}_{\chi}$	5
$2^- \sigma^{\parallel \alpha\beta} == 0$	$3 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\chi\beta\delta} + 3 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\chi\alpha\delta} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \sigma^{\chi}_{\chi}{}^{\delta} == 2 \partial_{\delta} \partial^{\beta} \partial^{\alpha} \sigma^{\chi}_{\chi}{}^{\delta} + 3 (\partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\alpha\beta\chi} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\beta\alpha\chi})$	5
Total expected gauge generators:		36

Massive spectrum



Massive particle

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

Massless spectrum

(No particles)

Unitarity conditions

$$r_{\frac{1}{2}} < 0 \ \&\& \ t_{\frac{1}{2}} > 0$$