

PSALTer results panel

$$S == \iiint \left( \frac{1}{6} \left( 2 t_{\cdot 1} \mathcal{A}^{\alpha'}_{\cdot \alpha} \mathcal{A}_{\cdot \theta}^{\theta} + 6 \mathcal{A}^{\alpha \beta \chi} \sigma_{\alpha \beta \chi} + 6 f^{\alpha \beta} \tau (\Delta + \mathcal{K})_{\alpha \beta} - 4 t_{\cdot 1} \mathcal{A}_{\alpha}^{\theta} \partial_{\cdot 1} f^{\alpha'} + 4 t_{\cdot 1} \mathcal{A}_{\cdot \theta}^{\theta} \partial' f^{\alpha}_{\cdot \alpha} - 2 t_{\cdot 1} \partial_{\cdot 1} f^{\theta} \partial' f^{\alpha}_{\cdot \alpha} - 2 t_{\cdot 1} \partial_{\cdot 1} f^{\alpha'} \partial_{\theta} f^{\theta}_{\cdot \alpha} + 4 t_{\cdot 1} \partial' f^{\alpha}_{\cdot \alpha} \partial_{\theta} f^{\theta}_{\cdot \theta} + 8 r_{\cdot 2} \partial_{\beta} \mathcal{A}_{\alpha \cdot \theta} \partial^{\theta} \mathcal{A}^{\alpha \beta'} - 4 r_{\cdot 2} \partial_{\beta} \mathcal{A}_{\alpha \theta \cdot} \partial^{\theta} \mathcal{A}^{\alpha \beta'} + 4 r_{\cdot 2} \partial_{\beta} \mathcal{A}_{\cdot \theta \alpha} \partial^{\theta} \mathcal{A}^{\alpha \beta'} - 2 r_{\cdot 2} \partial_{\cdot 1} \mathcal{A}_{\alpha \beta \theta} \partial^{\theta} \mathcal{A}^{\alpha \beta'} + 2 r_{\cdot 2} \partial_{\theta} \mathcal{A}_{\alpha \beta \cdot} \partial^{\theta} \mathcal{A}^{\alpha \beta'} - 4 r_{\cdot 2} \partial_{\theta} \mathcal{A}_{\alpha \cdot \beta} \partial^{\theta} \mathcal{A}^{\alpha \beta'} - 6 t_{\cdot 1} \partial_{\alpha} f_{\cdot \theta} \partial^{\theta} f^{\alpha'} - 3 t_{\cdot 1} \partial_{\alpha} f_{\theta \cdot} \partial^{\theta} f^{\alpha'} + 3 t_{\cdot 1} \partial_{\cdot 1} f_{\alpha \theta} \partial^{\theta} f^{\alpha'} + 3 t_{\cdot 1} \partial_{\theta} f_{\alpha \cdot} \partial^{\theta} f^{\alpha'} + 3 t_{\cdot 1} \partial_{\theta} f_{\cdot \alpha} \partial^{\theta} f^{\alpha'} + 6 t_{\cdot 1} \mathcal{A}_{\alpha \theta \cdot} \left( \mathcal{A}^{\alpha' \theta} + 2 \partial^{\theta} f^{\alpha'} \right) \right) [t, x, y, z] dz dy dx dt$$

Wave operator

$\overset{0}{\cdot}\mathcal{A}^{\parallel}$	$\overset{0}{\cdot}f^{\parallel}$	$\overset{0}{\cdot}f^{\perp}$	$\overset{0}{\cdot}\mathcal{A}^{\parallel}$								
$\overset{0}{\cdot}\mathcal{A}^{\parallel} \uparrow$	0	0	0	0							
$\overset{0}{\cdot}f^{\parallel} \uparrow$	0	0	0	0							
$\overset{0}{\cdot}f^{\perp} \uparrow$	0	0	0	0							
$\overset{0}{\cdot}\mathcal{A}^{\parallel} \uparrow$	0	0	0	$k^2 r_{\cdot 2} - t_{\cdot 1}$	$\overset{1}{\cdot}\mathcal{A}^{\parallel}_{\alpha\beta}$	$\overset{1}{\cdot}\mathcal{A}^{\perp}_{\alpha\beta}$	$\overset{1}{\cdot}f^{\parallel}_{\alpha\beta}$	$\overset{1}{\cdot}\mathcal{A}^{\parallel}_{\alpha}$	$\overset{1}{\cdot}\mathcal{A}^{\perp}_{\alpha}$	$\overset{1}{\cdot}f^{\parallel}_{\alpha}$	$\overset{1}{\cdot}f^{\perp}_{\alpha}$
$\overset{1}{\cdot}\mathcal{A}^{\parallel} \uparrow^{\alpha\beta}$	$-\frac{t_{\cdot 1}}{2}$	$-\frac{t_{\cdot 1}}{\sqrt{2}}$	$-\frac{i k t_{\cdot 1}}{\sqrt{2}}$	0	0	0	0				
$\overset{1}{\cdot}\mathcal{A}^{\perp} \uparrow^{\alpha\beta}$	$-\frac{t_{\cdot 1}}{\sqrt{2}}$	0	0	0	0	0	0	0			
$\overset{1}{\cdot}f^{\parallel} \uparrow^{\alpha\beta}$	$\frac{i k t_{\cdot 1}}{\sqrt{2}}$	0	0	0	0	0	0	0			
$\overset{1}{\cdot}\mathcal{A}^{\parallel} \uparrow^{\alpha}$	0	0	0	$\frac{t_{\cdot 1}}{6}$	$\frac{t_{\cdot 1}}{3 \sqrt{2}}$	0	$\frac{i k t_{\cdot 1}}{3}$				
$\overset{1}{\cdot}\mathcal{A}^{\perp} \uparrow^{\alpha}$	0	0	0	$\frac{t_{\cdot 1}}{3 \sqrt{2}}$	$\frac{t_{\cdot 1}}{3}$	0	$\frac{1}{3} i \sqrt{2} k t_{\cdot 1}$				
$\overset{1}{\cdot}f^{\parallel} \uparrow^{\alpha}$	0	0	0	0	0	0	0				
$\overset{1}{\cdot}f^{\perp} \uparrow^{\alpha}$	0	0	0	$-\frac{1}{3} i k t_{\cdot 1}$	$-\frac{1}{3} i \sqrt{2} k t_{\cdot 1}$	0	$\frac{2 k^2 t_{\cdot 1}}{3}$	$\overset{2}{\cdot}\mathcal{A}^{\parallel}_{\alpha\beta}$	$\overset{2}{\cdot}f^{\parallel}_{\alpha\beta}$	$\overset{2}{\cdot}\mathcal{A}^{\parallel}_{\alpha\beta\chi}$	
					$\overset{2}{\cdot}\mathcal{A}^{\parallel} \uparrow^{\alpha\beta}$	$\frac{t_{\cdot 1}}{2}$	$-\frac{i k t_{\cdot 1}}{\sqrt{2}}$	0			
					$\overset{2}{\cdot}f^{\parallel} \uparrow^{\alpha\beta}$	$\frac{i k t_{\cdot 1}}{\sqrt{2}}$	$k^2 t_{\cdot 1}$	0			
					$\overset{2}{\cdot}\mathcal{A}^{\parallel} \uparrow^{\alpha\beta\chi}$	0	0	$\frac{t_{\cdot 1}}{2}$			

Saturated propagator

$\overset{0}{\cdot} \sigma^{\parallel}$	$\overset{0}{\cdot} \tau^{\parallel}$	$\overset{0}{\cdot} \tau^{\perp}$	$\overset{0}{\cdot} \sigma^{\parallel}$								
$\overset{0}{\cdot} \sigma^{\parallel} \uparrow$	0	0	0	0							
$\overset{0}{\cdot} \tau^{\parallel} \uparrow$	0	0	0	0							
$\overset{0}{\cdot} \tau^{\perp} \uparrow$	0	0	0	0							
$\overset{0}{\cdot} \sigma^{\parallel} \uparrow$	0	0	0	$\frac{1}{k^2 r_{\cdot 2} - t_{\cdot 1}}$	$\overset{1}{\cdot} \sigma^{\parallel}_{\alpha \beta}$	$\overset{1}{\cdot} \sigma^{\perp}_{\alpha \beta}$	$\overset{1}{\cdot} \tau^{\parallel}_{\alpha \beta}$	$\overset{1}{\cdot} \sigma^{\parallel}_{\alpha}$	$\overset{1}{\cdot} \sigma^{\perp}_{\alpha}$	$\overset{1}{\cdot} \tau^{\parallel}_{\alpha}$	$\overset{1}{\cdot} \tau^{\perp}_{\alpha}$
$\overset{1}{\cdot} \sigma^{\parallel} \uparrow^{\alpha \beta}$	0	$-\frac{\sqrt{2}}{t_{\cdot 1} + k^2 t_{\cdot 1}}$	$-\frac{i \sqrt{2} k}{t_{\cdot 1} + k^2 t_{\cdot 1}}$	0	0	0	0				
$\overset{1}{\cdot} \sigma^{\perp} \uparrow^{\alpha \beta}$	$-\frac{\sqrt{2}}{t_{\cdot 1} + k^2 t_{\cdot 1}}$	$\frac{1}{(1+k^2)^2 t_{\cdot 1}}$	$\frac{i k}{(1+k^2)^2 t_{\cdot 1}}$	0	0	0	0				
$\overset{1}{\cdot} \tau^{\parallel} \uparrow^{\alpha \beta}$	$\frac{i \sqrt{2} k}{t_{\cdot 1} + k^2 t_{\cdot 1}}$	$-\frac{i k}{(1+k^2)^2 t_{\cdot 1}}$	$\frac{k^2}{(1+k^2)^2 t_{\cdot 1}}$	0	0	0	0				
$\overset{1}{\cdot} \sigma^{\parallel} \uparrow^{\alpha}$	0	0	0	$\frac{6}{(3+4 k^2)^2 t_{\cdot 1}}$	$\frac{6 \sqrt{2}}{(3+4 k^2)^2 t_{\cdot 1}}$	0	$\frac{12 i k}{(3+4 k^2)^2 t_{\cdot 1}}$				
$\overset{1}{\cdot} \sigma^{\perp} \uparrow^{\alpha}$	0	0	0	$\frac{6 \sqrt{2}}{(3+4 k^2)^2 t_{\cdot 1}}$	$\frac{12}{(3+4 k^2)^2 t_{\cdot 1}}$	0	$\frac{12 i \sqrt{2} k}{(3+4 k^2)^2 t_{\cdot 1}}$				
$\overset{1}{\cdot} \tau^{\parallel} \uparrow^{\alpha}$	0	0	0	0	0	0	0				
$\overset{1}{\cdot} \tau^{\perp} \uparrow^{\alpha}$	0	0	0	$-\frac{12 i k}{(3+4 k^2)^2 t_{\cdot 1}}$	$-\frac{12 i \sqrt{2} k}{(3+4 k^2)^2 t_{\cdot 1}}$	0	$\frac{24 k^2}{(3+4 k^2)^2 t_{\cdot 1}}$	$\overset{2}{\cdot} \sigma^{\parallel}_{\alpha \beta}$	$\overset{2}{\cdot} \tau^{\parallel}_{\alpha \beta}$	$\overset{2}{\cdot} \sigma^{\parallel}_{\alpha \beta \chi}$	
					$\overset{2}{\cdot} \sigma^{\parallel} \uparrow^{\alpha \beta}$	$\frac{2}{(1+2 k^2)^2 t_{\cdot 1}}$	$-\frac{2 i \sqrt{2} k}{(1+2 k^2)^2 t_{\cdot 1}}$	0			
					$\overset{2}{\cdot} \tau^{\parallel} \uparrow^{\alpha \beta}$	$\frac{2 i \sqrt{2} k}{(1+2 k^2)^2 t_{\cdot 1}}$	$\frac{4 k^2}{(1+2 k^2)^2 t_{\cdot 1}}$	0			
					$\overset{2}{\cdot} \sigma^{\parallel} \uparrow^{\alpha \beta \chi}$	0	0	$\frac{2}{t_{\cdot 1}}$			

Source constraints

Spin-parity form	Covariant form	Multiplicities
$\overset{0}{\cdot} \tau^{\perp} == 0$	$\partial_{\beta} \partial_{\alpha \tau} (\Delta + \mathcal{K})^{\alpha \beta} == 0$	1
$\overset{0}{\cdot} \tau^{\parallel} == 0$	$\partial_{\beta} \partial_{\alpha \tau} (\Delta + \mathcal{K})^{\alpha \beta} == \partial_{\beta} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha}_{\alpha}$	1
$\overset{0}{\cdot} \sigma^{\parallel} == 0$	$\partial_{\beta} \sigma^{\alpha \beta}_{\alpha} == 0$	1
$2 i k \overset{1}{\cdot} \sigma^{\parallel \alpha} + \overset{1}{\cdot} \tau^{\perp \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta \chi} + 2 \left( \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\beta}_{\beta}{}^{\chi} - \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial_{\beta} \sigma^{\beta \alpha \chi} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \sigma^{\beta \alpha}_{\beta} \right) == \partial_{\chi} \partial^{\chi} \partial_{\beta \tau} (\Delta + \mathcal{K})^{\alpha \beta}$	3
$\overset{1}{\cdot} \tau^{\parallel \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta \chi} == \partial_{\chi} \partial^{\chi} \partial_{\beta \tau} (\Delta + \mathcal{K})^{\beta \alpha}$	3
$\overset{1}{\cdot} \sigma^{\parallel \alpha} == \overset{1}{\cdot} \sigma^{\perp \alpha}$	$\partial_{\chi} \partial^{\alpha} \sigma^{\beta}_{\beta}{}^{\chi} + \partial_{\chi} \partial^{\chi} \sigma^{\beta \alpha}_{\beta} == 0$	3
$i k \overset{1}{\cdot} \sigma^{\perp \alpha \beta} + \overset{1}{\cdot} \tau^{\parallel \alpha \beta} == 0$	$\partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta \chi} + \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\chi \alpha} + \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\alpha \beta} + 2 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\chi \beta \delta} + 2 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \sigma^{\alpha \beta} == \partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi \beta} + \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha \chi} + \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\beta \alpha} + 2 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\chi \alpha \delta}$	3
$-2 i k \overset{2}{\cdot} \sigma^{\parallel \alpha \beta} + \overset{2}{\cdot} \tau^{\parallel \alpha \beta} == 0$	$-i \left( 4 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi \delta} + 2 \partial_{\delta} \partial^{\delta} \partial^{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi}_{\chi}{}^{\delta} - 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta \chi} - 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi \beta} - 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha \chi} - 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\chi \alpha} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\alpha \beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\beta \alpha} + 4 i k^{\chi} \partial_{\epsilon} \partial_{\chi} \partial^{\beta} \partial^{\alpha} \sigma^{\delta}_{\delta}{}^{\epsilon} - 6 i k^{\chi} \partial_{\epsilon} \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\delta \beta \epsilon} - 6 i k^{\chi} \partial_{\epsilon} \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\delta \alpha \epsilon} + 6 i k^{\chi} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi} \sigma^{\alpha \beta \delta} + 6 i k^{\chi} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi} \sigma^{\beta \alpha \delta} + 2 \eta^{\alpha \beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi} \tau (\Delta + \mathcal{K})^{\chi \delta} - 2 \eta^{\alpha \beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \tau (\Delta + \mathcal{K})^{\chi}_{\chi}{}^{\delta} - 4 i \eta^{\alpha \beta} k^{\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\chi} \sigma^{\delta}_{\delta}{}^{\epsilon} \right) == 0$	5
Total expected gauge generators:		20

Massive spectrum

Massive particle

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

Massless spectrum

(No particles)

Unitarity conditions

$$r_{\cdot 2} < 0 \&\& t_{\cdot 1} < 0$$