

PSALTer results panel

$$S == \iiint \left(\frac{1}{6} \left(6 \mathcal{A}^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} + 6 f^{\alpha\beta} \tau (\Delta + \mathcal{K})_{\alpha\beta} - 3 r_{\dot{3}} \partial_{\beta} \mathcal{A}_{\dot{1} \dot{\theta}}^{\theta} \partial^{\prime} \mathcal{A}^{\alpha\beta}_{\dot{\alpha}} - 3 r_{\dot{3}} \partial_{\dot{1}} \mathcal{A}_{\dot{\theta}}^{\theta} \partial^{\prime} \mathcal{A}^{\alpha\beta}_{\dot{\alpha}} - 3 r_{\dot{3}} \partial_{\alpha} \mathcal{A}^{\alpha\beta\dot{1}} \partial_{\theta} \mathcal{A}_{\dot{\beta} \dot{1}}^{\theta} + 6 r_{\dot{3}} \partial^{\prime} \mathcal{A}^{\alpha\beta}_{\dot{\alpha}} \partial_{\theta} \mathcal{A}_{\dot{\beta} \dot{1}}^{\theta} - \right. \right. \\ \left. \left. 3 r_{\dot{3}} \partial_{\alpha} \mathcal{A}^{\alpha\beta\dot{1}} \partial_{\theta} \mathcal{A}_{\dot{1} \dot{\beta}}^{\theta} + 6 r_{\dot{3}} \partial^{\prime} \mathcal{A}^{\alpha\beta}_{\dot{\alpha}} \partial_{\theta} \mathcal{A}_{\dot{1} \dot{\beta}}^{\theta} - 24 r_{\dot{3}} \partial_{\beta} \mathcal{A}_{\dot{1} \theta \alpha} \partial^{\theta} \mathcal{A}^{\alpha\beta\dot{1}} + 6 r_{\dot{5}} \partial_{\dot{1}} \mathcal{A}_{\theta \dot{\kappa}}^{\kappa} \partial^{\theta} \mathcal{A}^{\alpha\dot{1}}_{\dot{\alpha}} - \right. \right. \\ \left. \left. 6 r_{\dot{5}} \partial_{\theta} \mathcal{A}_{\dot{1} \dot{\kappa}}^{\kappa} \partial^{\theta} \mathcal{A}^{\alpha\dot{1}}_{\dot{\alpha}} + 4 t_{\dot{2}} \mathcal{A}_{\dot{1} \theta \alpha} \partial^{\theta} f^{\alpha\dot{1}} + 2 t_{\dot{2}} \partial_{\alpha} f_{\dot{1} \theta} \partial^{\theta} f^{\alpha\dot{1}} - t_{\dot{2}} \partial_{\alpha} f_{\theta \dot{1}} \partial^{\theta} f^{\alpha\dot{1}} - t_{\dot{2}} \partial_{\dot{1}} f_{\alpha \theta} \partial^{\theta} f^{\alpha\dot{1}} + t_{\dot{2}} \partial_{\theta} f_{\alpha \dot{1}} \partial^{\theta} f^{\alpha\dot{1}} - \right. \right. \\ \left. \left. t_{\dot{2}} \partial_{\theta} f_{\dot{1} \alpha} \partial^{\theta} f^{\alpha\dot{1}} - 4 t_{\dot{2}} \mathcal{A}_{\alpha \theta \dot{1}} \left(\mathcal{A}^{\alpha\dot{1} \theta} + \partial^{\theta} f^{\alpha\dot{1}} \right) + 2 t_{\dot{2}} \mathcal{A}_{\alpha \dot{1} \theta} \left(\mathcal{A}^{\alpha\dot{1} \theta} + 2 \partial^{\theta} f^{\alpha\dot{1}} \right) - 6 r_{\dot{5}} \partial_{\alpha} \mathcal{A}^{\alpha\dot{1} \theta} \partial_{\kappa} \mathcal{A}_{\dot{1} \theta}^{\kappa} + \right. \right. \\ \left. \left. 12 r_{\dot{5}} \partial^{\theta} \mathcal{A}^{\alpha\dot{1}}_{\dot{\alpha}} \partial_{\kappa} \mathcal{A}_{\dot{1} \theta}^{\kappa} + 6 r_{\dot{5}} \partial_{\alpha} \mathcal{A}^{\alpha\dot{1} \theta} \partial_{\kappa} \mathcal{A}_{\theta \dot{1}}^{\kappa} - 12 r_{\dot{5}} \partial^{\theta} \mathcal{A}^{\alpha\dot{1}}_{\dot{\alpha}} \partial_{\kappa} \mathcal{A}_{\theta \dot{1}}^{\kappa} \right) \right) [t, x, y, z] dz dy dx dt$$

Wave operator

$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow$	$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel}$	$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\perp}$	$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\perp}$	$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel}$								
$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow$	0	0	0	0								
$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\perp} \uparrow$	0	0	0	0								
$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\perp} \uparrow$	0	0	0	0								
$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow$	0	0	0	$t_{\dot{2}}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp}_{\alpha}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp}_{\alpha}$	
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow^{\alpha\beta}$	$k^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) + \frac{2 t_{\dot{2}}}{3}$				$\frac{\sqrt{2} t_{\dot{2}}}{3}$	$\frac{1}{3} i \sqrt{2} k t_{\dot{2}}$	0	0	0	0		
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp} \uparrow^{\alpha\beta}$	$\frac{\sqrt{2} t_{\dot{2}}}{3}$				$\frac{t_{\dot{2}}}{3}$	$\frac{i k t_{\dot{2}}}{3}$	0	0	0	0		
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow^{\alpha\beta}$	$-\frac{1}{3} i \sqrt{2} k t_{\dot{2}}$				$-\frac{1}{3} i k t_{\dot{2}}$	$\frac{k^2 t_{\dot{2}}}{3}$	0	0	0	0		
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow^{\alpha}$	0				0	0	$\frac{1}{2} k^2 \left(r_{\dot{3}} + 2 r_{\dot{5}} \right)$	0	0	0		
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp} \uparrow^{\alpha}$	0				0	0	0	0	0	0		
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow^{\alpha}$	0				0	0	0	0	0	0		
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp} \uparrow^{\alpha}$	0				0	0	0	0	0	0		
							$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha\beta}$	$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\perp}_{\alpha\beta}$	$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha\beta\chi}$			
							$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow^{\alpha\beta}$	$-\frac{3 k^2 r_{\dot{3}}}{2}$	0	0		
							$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\perp} \uparrow^{\alpha\beta}$	0	0	0		
							$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \uparrow^{\alpha\beta\chi}$	0	0	0		

Saturated propagator

$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel} \uparrow$	$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel}$	$\overset{0}{\underset{\cdot}{\sigma}}^{\perp} \uparrow$	$\overset{0}{\underset{\cdot}{\sigma}}^{\perp}$																
$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel} \uparrow$	0	0	0	0															
$\overset{0}{\underset{\cdot}{\sigma}}^{\perp} \uparrow$	0	0	0	0															
$\overset{0}{\underset{\cdot}{\sigma}}^{\perp} \uparrow$	0	0	0	0															
$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel} \uparrow$	0	0	0	$\frac{1}{t_{\dot{2}}}$	$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel}{}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\sigma}}^{\perp}{}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\tau}}^{\parallel}{}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel}{}_{\alpha}$	$\overset{1}{\underset{\cdot}{\sigma}}^{\perp}{}_{\alpha}$	$\overset{1}{\underset{\cdot}{\tau}}^{\parallel}{}_{\alpha}$	$\overset{1}{\underset{\cdot}{\tau}}^{\perp}{}_{\alpha}$								
$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel} \uparrow^{\alpha\beta}$	$\frac{1}{k^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right)}$				$-\frac{\sqrt{2}}{k^2 \left(1 + k^2 \right) \left(2 r_{\dot{3}} + r_{\dot{5}} \right)}$				$-\frac{i \sqrt{2}}{k \left(1 + k^2 \right) \left(2 r_{\dot{3}} + r_{\dot{5}} \right)}$				0	0	0	0			
$\overset{1}{\underset{\cdot}{\sigma}}^{\perp} \uparrow^{\alpha\beta}$	$-\frac{\sqrt{2}}{k^2 \left(1 + k^2 \right) \left(2 r_{\dot{3}} + r_{\dot{5}} \right)}$				$\frac{3 k^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) + 2 t_{\dot{2}}}{\left(k + k^3 \right)^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) t_{\dot{2}}}$				$\frac{i \left(3 k^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) + 2 t_{\dot{2}} \right)}{k \left(1 + k^2 \right)^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) t_{\dot{2}}}$				0	0	0	0			
$\overset{1}{\underset{\cdot}{\tau}}^{\parallel} \uparrow^{\alpha\beta}$	$\frac{i \sqrt{2}}{k \left(1 + k^2 \right) \left(2 r_{\dot{3}} + r_{\dot{5}} \right)}$				$-\frac{i \left(3 k^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) + 2 t_{\dot{2}} \right)}{k \left(1 + k^2 \right)^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) t_{\dot{2}}}$				$\frac{3 k^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) + 2 t_{\dot{2}}}{\left(1 + k^2 \right)^2 \left(2 r_{\dot{3}} + r_{\dot{5}} \right) t_{\dot{2}}}$				0	0	0	0			
$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel} \uparrow^{\alpha}$	0				0				$\frac{2}{k^2 \left(r_{\dot{3}} + 2 r_{\dot{5}} \right)}$				0	0	0				
$\overset{1}{\underset{\cdot}{\sigma}}^{\perp} \uparrow^{\alpha}$	0				0				0				0	0	0	0			
$\overset{1}{\underset{\cdot}{\tau}}^{\parallel} \uparrow^{\alpha}$	0				0				0				0	0	0	0			
$\overset{1}{\underset{\cdot}{\tau}}^{\perp} \uparrow^{\alpha}$	0				0				0				0	0	0	0			
																$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel}{}_{\alpha\beta}$	$\overset{2}{\underset{\cdot}{\tau}}^{\parallel}{}_{\alpha\beta}$	$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel}{}_{\alpha\beta\chi}$	
																$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel} \uparrow^{\alpha\beta}$	$-\frac{2}{3 k^2 r_{\dot{3}}}$	0	0
																$\overset{2}{\underset{\cdot}{\tau}}^{\parallel} \uparrow^{\alpha\beta}$	0	0	0
																$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel} \uparrow^{\alpha\beta\chi}$	0	0	0

Source constraints

Spin-parity form	Covariant form	Multiplicities
$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel} == 0$	$\partial_{\beta} \sigma^{\alpha \beta}_{\dot{\alpha}} == 0$	1
$\overset{0}{\underset{\cdot}{\tau}}^{\parallel} == 0$	$\partial_{\beta} \partial_{\alpha \tau} (\Delta + \mathcal{K})^{\alpha\beta} == \partial_{\beta} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\alpha}_{\dot{\alpha}}$	1
$\overset{0}{\underset{\cdot}{\tau}}^{\perp} == 0$	$\partial_{\beta} \partial_{\alpha \tau} (\Delta + \mathcal{K})^{\alpha\beta} == 0$	1
$\overset{1}{\underset{\cdot}{\tau}}^{\perp \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\beta\chi} == \partial_{\chi} \partial^{\chi} \partial_{\beta \tau} (\Delta + \mathcal{K})^{\alpha\beta}$	3
$\overset{1}{\underset{\cdot}{\tau}}^{\parallel \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\beta\chi} == \partial_{\chi} \partial^{\chi} \partial_{\beta \tau} (\Delta + \mathcal{K})^{\beta\alpha}$	3
$\overset{1}{\underset{\cdot}{\sigma}}^{\perp \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \sigma^{\beta\alpha\chi} == 0$	3
$i k \overset{1}{\underset{\cdot}{\sigma}}^{\perp \alpha\beta} + \overset{1}{\underset{\cdot}{\tau}}^{\parallel \alpha\beta} == 0$	$\partial_{\chi} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\beta\chi} + \partial_{\chi} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\chi\alpha} + \partial_{\chi} \partial^{\chi}_{\tau} (\Delta + \mathcal{K})^{\alpha\beta} + 2 \partial_{\delta} \partial^{\alpha} \partial^{\chi} \sigma^{\beta\delta} + 2 \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\chi\alpha\beta} ==$ $\partial_{\chi} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\chi\beta} + \partial_{\chi} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\alpha\chi} + \partial_{\chi} \partial^{\chi}_{\tau} (\Delta + \mathcal{K})^{\beta\alpha} + 2 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\chi\alpha\delta}$	3
$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel \alpha\beta\chi} == 0$	$3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\alpha} \sigma^{\delta\beta\epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\alpha} \sigma^{\delta\beta}_{\dot{\delta}} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\alpha\chi\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\chi\alpha\delta} +$ $2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\delta\alpha\chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\beta\alpha\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\delta\alpha\beta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\alpha\beta\chi} +$ $3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\alpha} \sigma^{\delta}_{\dot{\delta}} \epsilon + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\delta\beta\epsilon} + 3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{\delta\alpha}_{\dot{\delta}} ==$ $3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\beta} \sigma^{\delta\alpha\epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\beta} \sigma^{\delta\alpha}_{\dot{\delta}} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\beta\chi\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\chi\beta\delta} +$ $2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\delta\beta\chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\alpha\beta\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\beta\alpha\chi} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\chi\alpha\beta} +$ $3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\beta} \sigma^{\delta}_{\dot{\delta}} \epsilon + 3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\delta\alpha\epsilon} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{\delta\beta}_{\dot{\delta}}$	5
$\overset{2}{\underset{\cdot}{\tau}}^{\parallel \alpha\beta} == 0$	$4 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\chi\delta} + 2 \partial_{\delta} \partial^{\delta} \partial^{\beta} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\chi}_{\dot{\chi}} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi}_{\tau} (\Delta + \mathcal{K})^{\alpha\beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi}_{\tau} (\Delta + \mathcal{K})^{\beta\alpha} +$ $2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi \tau} (\Delta + \mathcal{K})^{\chi\delta} == 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\beta\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\chi\beta} +$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\alpha\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\chi\alpha} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta}_{\tau} (\Delta + \mathcal{K})^{\chi}_{\dot{\chi}}$	5
Total expected gauge generators:		25

Massive spectrum

(No particles)

Massless spectrum

Massless particle

Pole residue:	$-\frac{2}{r_{\dot{3}}} + \frac{7}{2 r_{\dot{3}} + r_{\dot{5}}} - \frac{24}{r_{\dot{3}} + 2 r_{\dot{5}}} > 0$
Polarisations:	2

Unitarity conditions

$$\left(r_{\dot{3}} < 0 \ \&\& \left(r_{\dot{5}} < -\frac{r_{\dot{3}}}{2} \parallel r_{\dot{5}} > -2 r_{\dot{3}} \right) \right) \parallel \left(r_{\dot{3}} > 0 \ \&\& -2 r_{\dot{3}} < r_{\dot{5}} < -\frac{r_{\dot{3}}}{2} \right)$$