

PSALTer results panel

$$S = \iiint \iiint \left(\frac{1}{6} \left(-4 t_3 \cdot \mathcal{A}^{\alpha'}_{\alpha} \mathcal{A}_{,\theta}^{\theta} + 6 \mathcal{A}^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} + 6 f^{\alpha\beta} \tau (\Delta + \mathcal{K})_{\alpha\beta} + 8 t_3 \cdot \mathcal{A}_{\theta}^{\theta} \partial_{,f} f^{\alpha'} - 8 t_3 \cdot \mathcal{A}_{,\theta}^{\theta} \partial' f^{\alpha}_{\alpha} + 4 t_3 \cdot \partial_{,f} f^{\theta} \partial' f^{\alpha}_{\alpha} + 4 t_3 \cdot \partial_{,f} f^{\alpha'} \partial_{\theta} f^{\theta}_{\alpha} - \right. \right. \\ \left. \left. 8 t_3 \cdot \partial' f^{\alpha}_{\alpha} \partial_{\theta} f^{\theta}_{\alpha} + 8 r_2 \cdot \partial_{\beta} \mathcal{A}_{\alpha,\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta'} - 4 r_2 \cdot \partial_{\beta} \mathcal{A}_{\alpha\theta,\beta} \partial^{\theta} \mathcal{A}^{\alpha\beta'} + 4 r_2 \cdot \partial_{\beta} \mathcal{A}_{,\theta\alpha} \partial^{\theta} \mathcal{A}^{\alpha\beta'} - 2 r_2 \cdot \partial_{,\beta} \mathcal{A}_{\alpha\beta\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta'} + 2 r_2 \cdot \partial_{\theta} \mathcal{A}_{\alpha\beta,\beta} \partial^{\theta} \mathcal{A}^{\alpha\beta'} - \right. \right. \\ \left. \left. 4 r_2 \cdot \partial_{\theta} \mathcal{A}_{\alpha,\beta\beta} \partial^{\theta} \mathcal{A}^{\alpha\beta'} + 6 r_5 \cdot \partial_{,\beta} \mathcal{A}_{\kappa}^{\kappa} \partial^{\theta} \mathcal{A}^{\alpha'}_{\alpha} - 6 r_5 \cdot \partial_{\beta} \mathcal{A}_{,\kappa}^{\kappa} \partial^{\theta} \mathcal{A}^{\alpha'}_{\alpha} + 4 t_2 \cdot \mathcal{A}_{,\theta\alpha} \partial^{\theta} f^{\alpha'} + 2 t_2 \cdot \partial_{af} f^{\theta}_{\alpha} \partial^{\theta} f^{\alpha'} - t_2 \cdot \partial_{af} f^{\theta}_{\alpha} \partial^{\theta} f^{\alpha'} - \right. \right. \\ \left. \left. t_2 \cdot \partial_{,f} f^{\alpha} \partial^{\theta} f^{\alpha'} + t_2 \cdot \partial_{\theta} f^{\alpha}_{\alpha} \partial^{\theta} f^{\alpha'} - t_2 \cdot \partial_{\theta} f^{\theta}_{\alpha} \partial^{\theta} f^{\alpha'} - 4 t_2 \cdot \mathcal{A}_{\alpha\theta,\beta} \left(\mathcal{A}^{\alpha'\theta} + \partial^{\theta} f^{\alpha'} \right) + 2 t_2 \cdot \mathcal{A}_{\alpha,\theta} \left(\mathcal{A}^{\alpha'\theta} + 2 \partial^{\theta} f^{\alpha'} \right) - \right. \right. \\ \left. \left. 6 r_5 \cdot \partial_{\alpha} \mathcal{A}^{\alpha'\theta} \partial_{\kappa} \mathcal{A}_{,\theta}^{\kappa} + 12 r_5 \cdot \partial^{\theta} \mathcal{A}^{\alpha'}_{\alpha} \partial_{\kappa} \mathcal{A}_{,\theta}^{\kappa} + 6 r_5 \cdot \partial_{\alpha} \mathcal{A}^{\alpha'\theta} \partial_{\kappa} \mathcal{A}_{\theta,\kappa} - 12 r_5 \cdot \partial^{\theta} \mathcal{A}^{\alpha'}_{\alpha} \partial_{\kappa} \mathcal{A}_{\theta,\kappa} \right) \right) [t, x, y, z] dz dy dx dt$$

Wave operator

$\overset{0}{\cdot}\mathcal{A}^{\parallel}$	$\overset{0}{\cdot}f^{\parallel}$	$\overset{0}{\cdot}f^{\perp}$	$\overset{0}{\cdot}\mathcal{A}^{\parallel}$															
$\overset{0}{\cdot}\mathcal{A}^{\parallel} \uparrow$	t_3	$-i \sqrt{2} k t_3$	0	0														
$\overset{0}{\cdot}f^{\parallel} \uparrow$	$i \sqrt{2} k t_3$	$2 k^2 t_3$	0	0														
$\overset{0}{\cdot}f^{\perp} \uparrow$	0	0	0	0														
$\overset{0}{\cdot}\mathcal{A}^{\parallel} \uparrow$	0	0	0	$k^2 r_2 + t_2$	$\overset{1}{\cdot}\mathcal{A}^{\parallel}_{\alpha\beta}$	$\overset{1}{\cdot}\mathcal{A}^{\perp}_{\alpha\beta}$	$\overset{1}{\cdot}f^{\parallel}_{\alpha\beta}$	$\overset{1}{\cdot}\mathcal{A}^{\parallel}_{\alpha}$	$\overset{1}{\cdot}\mathcal{A}^{\perp}_{\alpha}$	$\overset{1}{\cdot}f^{\parallel}_{\alpha}$	$\overset{1}{\cdot}f^{\perp}_{\alpha}$							
					$\overset{1}{\cdot}\mathcal{A}^{\parallel} \uparrow^{\alpha\beta}$	$\overset{1}{\cdot}\mathcal{A}^{\perp} \uparrow^{\alpha\beta}$	$\overset{1}{\cdot}f^{\parallel} \uparrow^{\alpha\beta}$											
					$k^2 r_5 + \frac{2 t_2}{3}$	$\frac{\sqrt{2} t_2}{3}$	$\frac{1}{3} i \sqrt{2} k t_2$	0	0	0	0							
					$\frac{\sqrt{2} t_2}{3}$	$\frac{t_2}{3}$	$\frac{i k t_2}{3}$	0	0	0	0							
					$-\frac{1}{3} i \sqrt{2} k t_2$	$-\frac{1}{3} i k t_2$	$\frac{k^2 t_2}{3}$	0	0	0	0							
					0	0	0	$k^2 r_5 + \frac{2 t_3}{3}$	$-\frac{\sqrt{2} t_3}{3}$	0	$-\frac{2}{3} i k t_3$							
					0	0	0	$-\frac{\sqrt{2} t_3}{3}$	$\frac{t_3}{3}$	0	$\frac{1}{3} i \sqrt{2} k t_3$							
					0	0	0	0	0	0	0							
					0	0	0	$\frac{2 i k t_3}{3}$	$-\frac{1}{3} i \sqrt{2} k t_3$	0	$\frac{2 k^2 t_3}{3}$	$\overset{2}{\cdot}\mathcal{A}^{\parallel}_{\alpha\beta} \overset{2}{\cdot}f^{\parallel}_{\alpha\beta}$	$\overset{2}{\cdot}\mathcal{A}^{\parallel}_{\alpha\beta\chi}$					
												$\overset{2}{\cdot}\mathcal{A}^{\parallel} \uparrow^{\alpha\beta}$	0	0	0			
												$\overset{2}{\cdot}f^{\parallel} \uparrow^{\alpha\beta}$	0	0	0			
												$\overset{2}{\cdot}\mathcal{A}^{\parallel} \uparrow^{\alpha\beta\chi}$	0	0	0			

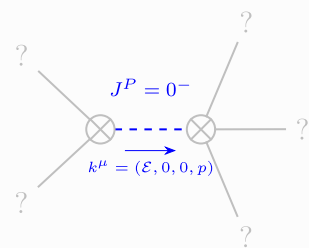
Saturated propagator

$\overset{0}{\cdot}\sigma^{\parallel}$	$\overset{0}{\cdot}\tau^{\parallel}$	$\overset{0}{\cdot}\tau^{\perp}$	$\overset{0}{\cdot}\sigma^{\parallel}$														
$\overset{0}{\cdot}\sigma^{\parallel} \uparrow$	$\frac{1}{(1+2k^2)^2 t_3}$	$-\frac{i\sqrt{2}k}{(1+2k^2)^2 t_3}$	0	0													
$\overset{0}{\cdot}\tau^{\parallel} \uparrow$	$\frac{i\sqrt{2}k}{(1+2k^2)^2 t_3}$	$\frac{2k^2}{(1+2k^2)^2 t_3}$	0	0													
$\overset{0}{\cdot}\tau^{\perp} \uparrow$	0	0	0	0													
$\overset{0}{\cdot}\sigma^{\parallel} \uparrow$	0	0	0	$\frac{1}{k^2 r_2 + t_2}$	$\overset{1}{\cdot}\sigma^{\parallel}_{\alpha\beta}$	$\overset{1}{\cdot}\sigma^{\perp}_{\alpha\beta}$	$\overset{1}{\cdot}\tau^{\parallel}_{\alpha\beta}$	$\overset{1}{\cdot}\sigma^{\parallel}_{\alpha}$	$\overset{1}{\cdot}\sigma^{\perp}_{\alpha}$	$\overset{1}{\cdot}\tau^{\parallel}_{\alpha}$	$\overset{1}{\cdot}\tau^{\perp}_{\alpha}$						
					$\overset{1}{\cdot}\sigma^{\parallel} \uparrow^{\alpha\beta}$	$\overset{1}{\cdot}\sigma^{\perp} \uparrow^{\alpha\beta}$	$\overset{1}{\cdot}\tau^{\parallel} \uparrow^{\alpha\beta}$										
					$\frac{1}{k^2 r_5}$	$-\frac{\sqrt{2}}{k^2 r_5 + k^4 r_5}$	$-\frac{i\sqrt{2}}{k r_5 + k^3 r_5}$	0	0	0	0						
					$-\frac{\sqrt{2}}{k^2 r_5 + k^4 r_5}$	$\frac{3k^2 r_5 + 2t_2}{(k+k^3)^2 r_5 t_2}$	$\frac{i(3k^2 r_5 + 2t_2)}{k(1+k^2)^2 r_5 t_2}$	0	0	0	0						
					$\frac{i\sqrt{2}}{k r_5 + k^3 r_5}$	$-\frac{i(3k^2 r_5 + 2t_2)}{k(1+k^2)^2 r_5 t_2}$	$\frac{3k^2 r_5 + 2t_2}{(1+k^2)^2 r_5 t_2}$	0	0	0	0						
					$\overset{1}{\cdot}\sigma^{\parallel} \uparrow^{\alpha}$	$\overset{1}{\cdot}\sigma^{\perp} \uparrow^{\alpha}$	$\overset{1}{\cdot}\tau^{\parallel} \uparrow^{\alpha}$	$\overset{1}{\cdot}\sigma^{\parallel} \uparrow^{\alpha}$	$\overset{1}{\cdot}\sigma^{\perp} \uparrow^{\alpha}$	$\overset{1}{\cdot}\tau^{\parallel} \uparrow^{\alpha}$	$\overset{1}{\cdot}\tau^{\perp} \uparrow^{\alpha}$						
					0	0	0	$\frac{1}{k^2 r_5}$	$\frac{\sqrt{2}}{k^2 r_5 + 2k^4 r_5}$	0	$\frac{2i}{k r_5 + 2k^3 r_5}$						
					0	0	0	$\frac{\sqrt{2}}{k^2 r_5 + 2k^4 r_5}$	$\frac{3k^2 r_5 + 2t_3}{(k+2k^3)^2 r_5 t_3}$	0	$\frac{i\sqrt{2}(3k^2 r_5 + 2t_3)}{k(1+2k^2)^2 r_5 t_3}$						
					0	0	0	0	0	0	0						
					0	0	0	$-\frac{2i}{k r_5 + 2k^3 r_5}$	$-\frac{i\sqrt{2}(3k^2 r_5 + 2t_3)}{k(1+2k^2)^2 r_5 t_3}$	0	$\frac{6k^2 r_5 + 4t_3}{(1+2k^2)^2 r_5 t_3}$	$\overset{2}{\cdot}\sigma^{\parallel}_{\alpha\beta}$	$\overset{2}{\cdot}\tau^{\parallel}_{\alpha\beta}$	$\overset{2}{\cdot}\sigma^{\parallel}_{\alpha\beta\chi}$			
												$\overset{2}{\cdot}\sigma^{\parallel} \uparrow^{\alpha\beta}$	0	0	0		
												$\overset{2}{\cdot}\tau^{\parallel} \uparrow^{\alpha\beta}$	0	0	0		
												$\overset{2}{\cdot}\sigma^{\parallel} \uparrow^{\alpha\beta\chi}$	0	0	0		

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
$-2 i k \overset{0}{\cdot}\sigma^{\parallel} + \overset{0}{\cdot}\tau^{\parallel} == 0$	$\partial_{\beta} \partial_{\alpha} \tau (\Delta + \mathcal{K})^{\alpha\beta} == \partial_{\beta} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha}_{\alpha} + 2 \partial_{\chi} \partial^{\chi} \partial_{\beta} \sigma^{\alpha}_{\alpha}{}^{\beta}$	1
$2 i k \overset{1}{\cdot}\sigma^{\perp\alpha} + \overset{1}{\cdot}\tau^{\perp\alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta\chi} == \partial_{\chi} \partial^{\chi} \partial_{\beta} \tau (\Delta + \mathcal{K})^{\alpha\beta} + 2 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial_{\beta} \sigma^{\beta\alpha\chi}$	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
$i k \overset{1}{\cdot}\sigma^{\perp\alpha\beta} + \overset{1}{\cdot}\tau^{\parallel\alpha\beta} == 0$	$\partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta\chi} + \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\chi\alpha} + \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\alpha\beta} + 2 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\chi\beta\delta} + 2 \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\chi\alpha\beta} ==$ $\partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi\beta} + \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha\chi} + \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\beta\alpha} + 2 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\chi\alpha\delta}$	3
$\overset{2}{\cdot}\sigma^{\parallel\alpha\beta\chi} == 0$	$3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\alpha} \sigma^{\delta\beta\epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\delta\beta}_{\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\alpha\chi\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\chi\alpha\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\delta\alpha\chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\beta\alpha\delta} +$ $4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\delta\alpha\beta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\alpha\beta\chi} + 3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\alpha} \sigma^{\delta}_{\delta}{}^{\epsilon} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\delta\beta\epsilon} + 3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{\delta\alpha}_{\delta} ==$ $3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\beta} \sigma^{\delta\alpha\epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\beta} \sigma^{\delta\alpha}_{\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\beta\chi\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\chi\beta\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\delta\beta\chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\alpha\beta\delta} +$ $2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\beta\alpha\chi} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\chi\alpha\beta} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\beta} \sigma^{\delta}_{\delta}{}^{\epsilon} + 3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\delta\alpha\epsilon} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{\delta\beta}_{\delta}$	5
$\overset{2}{\cdot}\tau^{\parallel\alpha\beta} == 0$	$4 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi\delta} + 2 \partial_{\delta} \partial^{\delta} \partial^{\beta} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi}_{\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\alpha\beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \tau (\Delta + \mathcal{K})^{\beta\alpha} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi} \tau (\Delta + \mathcal{K})^{\chi\delta} ==$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\beta\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau (\Delta + \mathcal{K})^{\chi\beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\chi\alpha} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \tau (\Delta + \mathcal{K})^{\chi}_{\chi}$	5
$\overset{2}{\cdot}\sigma^{\parallel\alpha\beta} == 0$	$3 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\chi\beta\delta} + 3 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\chi\alpha\delta} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \sigma^{\chi}_{\chi}{}^{\delta} == 2 \partial_{\delta} \partial^{\beta} \partial^{\alpha} \sigma^{\chi}_{\chi}{}^{\delta} + 3 (\partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\alpha\beta\chi} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\beta\alpha\chi})$	5
Total expected gauge generators:		26

Massive spectrum



Massive particle	
Pole residue:	$-\frac{1}{r_2} > 0$
Square mass:	$-\frac{t_2}{r_2} > 0$
Spin:	0
Parity:	Odd

Massless spectrum

(There are no massless particles)

Gauge symmetries

(Not yet implemented in PSALTER)

Unitarity conditions

$r_2 < 0 \ \&\& \ t_2 > 0$

Validity assumptions

(Not yet implemented in PSALTER)