

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} - 6 r_{\frac{3}{2}} \partial_{\beta} \mathcal{A}_{\beta}^{\theta} \partial^{\prime} \mathcal{A}^{\alpha\beta}_{\alpha} - 6 r_{\frac{3}{2}} \partial_{\alpha} \mathcal{A}^{\alpha\beta\prime} \partial_{\theta} \mathcal{A}_{\beta}^{\theta} + 12 r_{\frac{3}{2}} \partial^{\prime} \mathcal{A}^{\alpha\beta}_{\alpha} \partial_{\theta} \mathcal{A}_{\beta}^{\theta} + \right. \right. \\ \left. \left. 8 r_{\frac{2}{2}} \partial_{\beta} \mathcal{A}_{\alpha\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta\prime} - 4 r_{\frac{2}{2}} \partial_{\beta} \mathcal{A}_{\alpha\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta\prime} + 4 r_{\frac{2}{2}} \partial_{\beta} \mathcal{A}_{\theta\alpha} \partial^{\theta} \mathcal{A}^{\alpha\beta\prime} - 24 r_{\frac{3}{2}} \partial_{\beta} \mathcal{A}_{\theta\alpha} \partial^{\theta} \mathcal{A}^{\alpha\beta\prime} - \right. \right. \\ \left. \left. 2 r_{\frac{2}{2}} \partial_{\beta} \mathcal{A}_{\alpha\beta\theta} \partial^{\theta} \mathcal{A}^{\alpha\beta\prime} + 2 r_{\frac{2}{2}} \partial_{\theta} \mathcal{A}_{\alpha\beta} \partial^{\theta} \mathcal{A}^{\alpha\beta\prime} - 4 r_{\frac{2}{2}} \partial_{\theta} \mathcal{A}_{\alpha\beta} \partial^{\theta} \mathcal{A}^{\alpha\beta\prime} + 4 t_{\frac{2}{2}} \mathcal{A}_{\theta\alpha} \partial^{\theta} f^{\alpha\prime} + \right. \right. \\ \left. \left. 2 t_{\frac{2}{2}} \partial_{\alpha} f_{\theta} \partial^{\theta} f^{\alpha\prime} - t_{\frac{2}{2}} \partial_{\alpha} f_{\theta} \partial^{\theta} f^{\alpha\prime} - t_{\frac{2}{2}} \partial_{\alpha} f_{\alpha\theta} \partial^{\theta} f^{\alpha\prime} + t_{\frac{2}{2}} \partial_{\theta} f_{\alpha} \partial^{\theta} f^{\alpha\prime} - t_{\frac{2}{2}} \partial_{\theta} f_{\alpha} \partial^{\theta} f^{\alpha\prime} - \right. \right. \\ \left. \left. 4 t_{\frac{2}{2}} \mathcal{A}_{\alpha\theta} \left(\mathcal{A}^{\alpha\prime\theta} + \partial^{\theta} f^{\alpha\prime} \right) + 2 t_{\frac{2}{2}} \mathcal{A}_{\alpha\theta} \left(\mathcal{A}^{\alpha\prime\theta} + 2 \partial^{\theta} f^{\alpha\prime} \right) \right) \right) [t, x, y, z] dz dy dx dt$$

Wave operator

$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel}$	$\overset{0}{\underset{\cdot}{f}}^{\parallel}$	$\overset{0}{\underset{\cdot}{f}}^{\perp}$	$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel}$											
$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \dagger$	0	0	0	0										
$\overset{0}{\underset{\cdot}{f}}^{\parallel} \dagger$	0	0	0	0										
$\overset{0}{\underset{\cdot}{f}}^{\perp} \dagger$	0	0	0	0										
$\overset{0}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \dagger$	0	0	0	$k^2 r_{\frac{2}{2}} + t_{\frac{2}{2}}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{f}}^{\parallel}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha}$	$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp}_{\alpha}$	$\overset{1}{\underset{\cdot}{f}}^{\parallel}_{\alpha}$	$\overset{1}{\underset{\cdot}{f}}^{\perp}_{\alpha}$			
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \dagger^{\alpha\beta}$	$\frac{1}{6} \left(9 k^2 r_{\frac{3}{2}} + 4 t_{\frac{2}{2}} \right)$	$\frac{\sqrt{2} t_{\frac{2}{2}}}{3}$	$\frac{1}{3} i \sqrt{2} k t_{\frac{2}{2}}$	0	0	0	0							
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp} \dagger^{\alpha\beta}$	$\frac{\sqrt{2} t_{\frac{2}{2}}}{3}$	$\frac{t_{\frac{2}{2}}}{3}$	$\frac{i k t_{\frac{2}{2}}}{3}$	0	0	0	0							
$\overset{1}{\underset{\cdot}{f}}^{\parallel} \dagger^{\alpha\beta}$	$-\frac{1}{3} i \sqrt{2} k t_{\frac{2}{2}}$	$-\frac{1}{3} i k t_{\frac{2}{2}}$	$\frac{k^2 t_{\frac{2}{2}}}{3}$	0	0	0	0							
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \dagger^{\alpha}$	0	0	0	0	0	0	0	0						
$\overset{1}{\underset{\cdot}{\mathcal{A}}}^{\perp} \dagger^{\alpha}$	0	0	0	0	0	0	0	0						
$\overset{1}{\underset{\cdot}{f}}^{\parallel} \dagger^{\alpha}$	0	0	0	0	0	0	0	0						
$\overset{1}{\underset{\cdot}{f}}^{\perp} \dagger^{\alpha}$	0	0	0	0	0	0	0	0						
				$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha\beta}$	$\overset{2}{\underset{\cdot}{f}}^{\parallel}_{\alpha\beta}$	$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\parallel}_{\alpha\beta\chi}$								
				$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \dagger^{\alpha\beta}$	$-\frac{3 k^2 r_{\frac{3}{2}}}{2}$	0	0							
				$\overset{2}{\underset{\cdot}{f}}^{\parallel} \dagger^{\alpha\beta}$	0	0	0							
				$\overset{2}{\underset{\cdot}{\mathcal{A}}}^{\parallel} \dagger^{\alpha\beta\chi}$	0	0	0							

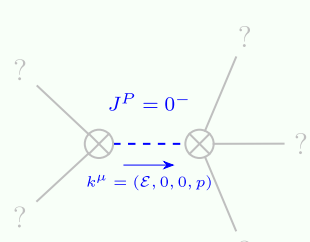
Saturated propagator

$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel}$	$\overset{0}{\underset{\cdot}{\tau}}^{\parallel}$	$\overset{0}{\underset{\cdot}{\tau}}^{\perp}$	$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel}$										
$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel} \dagger$	0	0	0	0									
$\overset{0}{\underset{\cdot}{\tau}}^{\parallel} \dagger$	0	0	0	0									
$\overset{0}{\underset{\cdot}{\tau}}^{\perp} \dagger$	0	0	0	0									
$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel} \dagger$	0	0	0	$\frac{1}{k^2 r_{\frac{2}{2}} + t_{\frac{2}{2}}}$	$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\sigma}}^{\perp}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\tau}}^{\parallel}_{\alpha\beta}$	$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel}_{\alpha}$	$\overset{1}{\underset{\cdot}{\sigma}}^{\perp}_{\alpha}$	$\overset{1}{\underset{\cdot}{\tau}}^{\parallel}_{\alpha}$	$\overset{1}{\underset{\cdot}{\tau}}^{\perp}_{\alpha}$		
$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel} \dagger^{\alpha\beta}$	$\frac{2}{3 k^2 r_{\frac{3}{3}}}$	$-\frac{2 \sqrt{2}}{3 k^2 r_{\frac{3}{3}} + 3 k^4 r_{\frac{3}{3}}}$	$-\frac{2 i \sqrt{2}}{3 k r_{\frac{3}{3}} + 3 k^3 r_{\frac{3}{3}}}$	0	0	0	0						
$\overset{1}{\underset{\cdot}{\sigma}}^{\perp} \dagger^{\alpha\beta}$	$-\frac{2 \sqrt{2}}{3 k^2 r_{\frac{3}{3}} + 3 k^4 r_{\frac{3}{3}}}$	$\frac{9 k^2 r_{\frac{3}{3}} + 4 t_{\frac{2}{2}}}{3 (k + k^3)^2 r_{\frac{3}{2}} t_{\frac{2}{2}}}$	$\frac{i (9 k^2 r_{\frac{3}{3}} + 4 t_{\frac{2}{2}})}{3 k (1 + k^2)^2 r_{\frac{3}{2}} t_{\frac{2}{2}}}$	0	0	0	0						
$\overset{1}{\underset{\cdot}{\tau}}^{\parallel} \dagger^{\alpha\beta}$	$\frac{2 i \sqrt{2}}{3 k r_{\frac{3}{3}} + 3 k^3 r_{\frac{3}{3}}}$	$-\frac{i (9 k^2 r_{\frac{3}{3}} + 4 t_{\frac{2}{2}})}{3 k (1 + k^2)^2 r_{\frac{3}{2}} t_{\frac{2}{2}}}$	$\frac{9 k^2 r_{\frac{3}{3}} + 4 t_{\frac{2}{2}}}{3 (1 + k^2)^2 r_{\frac{3}{2}} t_{\frac{2}{2}}}$	0	0	0	0						
$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel} \dagger^{\alpha}$	0	0	0	0	0	0	0	0					
$\overset{1}{\underset{\cdot}{\sigma}}^{\perp} \dagger^{\alpha}$	0	0	0	0	0	0	0	0					
$\overset{1}{\underset{\cdot}{\tau}}^{\parallel} \dagger^{\alpha}$	0	0	0	0	0	0	0	0					
$\overset{1}{\underset{\cdot}{\tau}}^{\perp} \dagger^{\alpha}$	0	0	0	0	0	0	0	0					
				$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel}_{\alpha\beta}$	$\overset{2}{\underset{\cdot}{\tau}}^{\parallel}_{\alpha\beta}$	$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel}_{\alpha\beta\chi}$							
				$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel} \dagger^{\alpha\beta}$	$-\frac{2}{3 k^2 r_{\frac{3}{3}}}$	0	0						
				$\overset{2}{\underset{\cdot}{\tau}}^{\parallel} \dagger^{\alpha\beta}$	0	0	0						
				$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel} \dagger^{\alpha\beta\chi}$	0	0	0						

Source constraints

Spin-parity form	Covariant form	Multiplicities
$\overset{0}{\underset{\cdot}{\tau}}^{\perp} == 0$	$\partial_{\beta} \partial_{\alpha \tau} (\Delta + \mathcal{K})^{\alpha\beta} == 0$	1
$\overset{0}{\underset{\cdot}{\tau}}^{\parallel} == 0$	$\partial_{\beta} \partial_{\alpha \tau} (\Delta + \mathcal{K})^{\alpha\beta} == \partial_{\beta} \partial^{\beta} \tau (\Delta + \mathcal{K})^{\alpha}_{\alpha}$	1
$\overset{0}{\underset{\cdot}{\sigma}}^{\parallel} == 0$	$\partial_{\beta} \sigma^{\alpha \beta} == 0$	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
$\overset{1}{\underset{\cdot}{\sigma}}^{\parallel \alpha} == 0$	$\partial_{\delta} \partial^{\alpha} \sigma^{\chi}_{\chi}{}^{\delta} + \partial_{\delta} \partial^{\delta} \sigma^{\chi\alpha}_{\chi} == \partial_{\delta} \partial_{\chi} \sigma^{\chi\alpha\delta}$	3
$i k \overset{1}{\underset{\cdot}{\sigma}}^{\perp \alpha\beta} + \overset{1}{\underset{\cdot}{\tau}}^{\parallel \alpha\beta} == 0$	$\partial_{\chi} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\beta\chi} + \partial_{\chi} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\chi\alpha} + \partial_{\chi} \partial^{\chi}_{\tau} (\Delta + \mathcal{K})^{\alpha\beta} + 2 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\chi\beta\delta} + 2 \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\chi\alpha\beta} ==$ $\partial_{\chi} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\chi\beta} + \partial_{\chi} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\alpha\chi} + \partial_{\chi} \partial^{\chi}_{\tau} (\Delta + \mathcal{K})^{\beta\alpha} + 2 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\chi\alpha\delta}$	3
$\overset{2}{\underset{\cdot}{\sigma}}^{\parallel \alpha\beta\chi} == 0$	$3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\alpha} \sigma^{\delta\beta\epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\alpha} \sigma^{\delta\beta}_{\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\alpha\chi\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\chi\alpha\delta} +$ $2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\delta\alpha\chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\beta\alpha\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\delta\alpha\beta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\alpha\beta\chi} +$ $3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\alpha} \sigma^{\delta}_{\delta}{}^{\epsilon} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\delta\beta\epsilon} + 3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{\delta\alpha}_{\delta} ==$ $3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\beta} \sigma^{\delta\alpha\epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\beta} \sigma^{\delta\alpha}_{\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\beta\chi\delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\chi\beta\delta} +$ $2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\delta\beta\chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\alpha\beta\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\beta\alpha\chi} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\chi\alpha\beta} +$ $3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\beta} \sigma^{\delta}_{\delta}{}^{\epsilon} + 3 \eta^{\beta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\delta\alpha\epsilon} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{\delta\beta}_{\delta}$	5
$\overset{2}{\underset{\cdot}{\tau}}^{\parallel \alpha\beta} == 0$	$4 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\chi\delta} + 2 \partial_{\delta} \partial^{\delta} \partial^{\beta} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\chi}_{\chi} +$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi}_{\tau} (\Delta + \mathcal{K})^{\alpha\beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi}_{\tau} (\Delta + \mathcal{K})^{\beta\alpha} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial_{\chi \tau} (\Delta + \mathcal{K})^{\chi\delta} ==$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\beta\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha}_{\tau} (\Delta + \mathcal{K})^{\chi\beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\alpha\chi} +$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta}_{\tau} (\Delta + \mathcal{K})^{\chi\alpha} + 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta}_{\tau} (\Delta + \mathcal{K})^{\chi}_{\chi}$	5
Total expected gauge generators:		28

Massive spectrum



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

Massless spectrum

(No particles)

Unitarity conditions

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