

PSALTER results panel

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

Wave operator

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

Saturated propagator

$\overset{0}{\cdot}\sigma^{\parallel}$	$\overset{0}{\cdot}\tau^{\parallel}$	$\overset{0}{\cdot}\tau^{\perp}$	$\overset{0}{\cdot}\sigma^{\parallel}$										
$\overset{0}{\cdot}\sigma^{\parallel}\dagger$	$\frac{1}{\left(1+2\,k^2\right)^2t_{\dot{3}}}$	$-\frac{i\,\sqrt{2}\,k}{\left(1+2\,k^2\right)^2t_{\dot{3}}}$	0	0									
$\overset{0}{\cdot}\tau^{\parallel}\dagger$	$\frac{i\,\sqrt{2}\,k}{\left(1+2\,k^2\right)^2t_{\dot{3}}}$	$\frac{2\,k^2}{\left(1+2\,k^2\right)^2t_{\dot{3}}}$	0	0									
$\overset{0}{\cdot}\tau^{\perp}\dagger$	0	0	0	0									
$\overset{0}{\cdot}\sigma^{\parallel}\dagger$	0	0	0	$\frac{1}{k^2r_{\dot{2}}-t_{\dot{1}}}$	$\overset{1}{\cdot}\sigma^{\parallel}_{\alpha\beta}$	$\overset{1}{\cdot}\sigma^{\perp}_{\alpha\beta}$	$\overset{1}{\cdot}\tau^{\parallel}_{\alpha\beta}$	$\overset{1}{\cdot}\sigma^{\parallel}_{\alpha}$	$\overset{1}{\cdot}\sigma^{\perp}_{\alpha}$	$\overset{1}{\cdot}\tau^{\parallel}_{\alpha}$	$\overset{1}{\cdot}\tau^{\perp}_{\alpha}$		
					$\overset{1}{\cdot}\sigma^{\parallel}\dagger^{\alpha\beta}$	$\overset{1}{\cdot}\sigma^{\perp}\dagger^{\alpha\beta}$	$\overset{1}{\cdot}\tau^{\parallel}\dagger^{\alpha\beta}$						
					$\overset{1}{\cdot}\sigma^{\parallel}\dagger^{\alpha\beta}$	0	$-\frac{\sqrt{2}}{t_{\dot{1}}+k^2t_{\dot{1}}}-\frac{i\,\sqrt{2}\,k}{t_{\dot{1}}+k^2t_{\dot{1}}}$	0	0	0	0		
					$\overset{1}{\cdot}\sigma^{\perp}\dagger^{\alpha\beta}$	$-\frac{\sqrt{2}}{t_{\dot{1}}+k^2t_{\dot{1}}}$	$\frac{1}{\left(1+k^2\right)^2t_{\dot{1}}}$	$\frac{ik}{\left(1+k^2\right)^2t_{\dot{1}}}$	0	0	0		
					$\overset{1}{\cdot}\tau^{\parallel}\dagger^{\alpha\beta}$	$\frac{i\,\sqrt{2}\,k}{t_{\dot{1}}+k^2t_{\dot{1}}}$	$-\frac{ik}{\left(1+k^2\right)^2t_{\dot{1}}}$	$\frac{k^2}{\left(1+k^2\right)^2t_{\dot{1}}}$	0	0	0		
					$\overset{1}{\cdot}\sigma^{\parallel}\dagger^{\alpha}$	0	0	0	$\frac{2\left(t_{\dot{1}}+t_{\dot{3}}\right)}{3t_{\dot{1}}t_{\dot{3}}}$	$-\frac{\sqrt{2}\left(t_{\dot{1}}-2t_{\dot{3}}\right)}{3\left(1+2\,k^2\right)t_{\dot{1}}t_{\dot{3}}}$	0	$-\frac{2ikt_{\dot{1}}-4ikt_{\dot{3}}}{3t_{\dot{1}}t_{\dot{3}}+6k^2t_{\dot{1}}t_{\dot{3}}}$	
					$\overset{1}{\cdot}\sigma^{\perp}\dagger^{\alpha}$	0	0	0	$-\frac{\sqrt{2}\left(t_{\dot{1}}-2t_{\dot{3}}\right)}{3\left(1+2\,k^2\right)t_{\dot{1}}t_{\dot{3}}}$	$\frac{t_{\dot{1}}+4t_{\dot{3}}}{3\left(1+2\,k^2\right)^2t_{\dot{1}}t_{\dot{3}}}$	0	$\frac{i\,\sqrt{2}\,k\left(t_{\dot{1}}+4t_{\dot{3}}\right)}{3\left(1+2\,k^2\right)^2t_{\dot{1}}t_{\dot{3}}}$	
					$\overset{1}{\cdot}\tau^{\parallel}\dagger^{\alpha}$	0	0	0	0	0	0	0	
					$\overset{1}{\cdot}\tau^{\perp}\dagger^{\alpha}$	0	0	0	$\frac{2ikt_{\dot{1}}-4ikt_{\dot{3}}}{3t_{\dot{1}}t_{\dot{3}}+6k^2t_{\dot{1}}t_{\dot{3}}}$	$-\frac{i\,\sqrt{2}\,k\left(t_{\dot{1}}+4t_{\dot{3}}\right)}{3\left(1+2\,k^2\right)^2t_{\dot{1}}t_{\dot{3}}}$	0	$\frac{2k^2\left(t_{\dot{1}}+4t_{\dot{3}}\right)}{3\left(1+2\,k^2\right)^2t_{\dot{1}}t_{\dot{3}}}$	
										$\overset{2}{\cdot}\sigma^{\parallel}_{\alpha\beta}$	$\overset{2}{\cdot}\tau^{\parallel}_{\alpha\beta}$	$\overset{2}{\cdot}\sigma^{\parallel}_{\alpha\beta\chi}$	
										$\overset{2}{\cdot}\sigma^{\parallel}\dagger^{\alpha\beta}$	$\frac{2}{\left(1+2\,k^2\right)^2t_{\dot{1}}}-\frac{2i\,\sqrt{2}\,k}{\left(1+2\,k^2\right)^2t_{\dot{1}}}$	0	
										$\overset{2}{\cdot}\tau^{\parallel}\dagger^{\alpha\beta}$	$\frac{2i\,\sqrt{2}\,k}{\left(1+2\,k^2\right)^2t_{\dot{1}}}$	$\frac{4k^2}{\left(1+2\,k^2\right)^2t_{\dot{1}}}$	0
										$\overset{2}{\cdot}\sigma^{\parallel}\dagger^{\alpha\beta\chi}$	0	0	$\frac{2}{t_{\dot{1}}}$

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
$-2\,i\,k\,\overset{0}{\cdot}\sigma^{\parallel}+\overset{0}{\cdot}\tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha\tau}(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\beta}\partial^{\beta}_{\tau}(\Delta+\mathcal{K})^{\alpha}_{\alpha}+2\,\partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha\beta}_{\alpha}$	1
$2\,i\,k\,\overset{1}{\cdot}\sigma^{\perp}+\overset{1}{\cdot}\tau^{\perp} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}_{\tau}(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta\tau}(\Delta+\mathcal{K})^{\alpha\beta}+2\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial_{\beta}\sigma^{\beta\alpha\chi}$	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
$-2\,i\,k\,\overset{2}{\cdot}\sigma^{\parallel\alpha\beta}+\overset{2}{\cdot}\tau^{\parallel\alpha\beta} == 0$	$-i\left(4\,\partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}_{\tau}(\Delta+\mathcal{K})^{\chi\delta}+2\,\partial_{\delta}\partial^{\delta}\partial^{\beta}\partial^{\alpha}_{\tau}(\Delta+\mathcal{K})^{\chi}_{\chi}-3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}_{\tau}(\Delta+\mathcal{K})^{\beta\chi}-3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}_{\tau}(\Delta+\mathcal{K})^{\chi\beta}-3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}_{\tau}(\Delta+\mathcal{K})^{\alpha\chi}-3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}_{\tau}(\Delta+\mathcal{K})^{\chi\alpha}+3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}_{\tau}(\Delta+\mathcal{K})^{\alpha\beta}+3\,\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}_{\tau}(\Delta+\mathcal{K})^{\beta\alpha}+4\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\sigma^{\delta}_{\delta}\epsilon-6\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\delta\beta\epsilon}-6\,i\,k^{\chi}\,\partial_{\epsilon}\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\delta\alpha\epsilon}+6\,i\,k^{\chi}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\alpha\beta\delta}+6\,i\,k^{\chi}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\sigma^{\beta\alpha\delta}+2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi\tau}(\Delta+\mathcal{K})^{\chi\delta}-2\,\eta^{\alpha\beta}\,\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}_{\tau}(\Delta+\mathcal{K})^{\chi}_{\chi}-4\,i\,\eta^{\alpha\beta}\,k^{\chi}\,\partial_{\phi}\partial^{\phi}\partial_{\epsilon}\partial_{\chi}\sigma^{\delta}_{\delta}\epsilon\right) == 0$	5
Total expected gauge generators:		16

Massive spectrum

Massive particle

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

Massless spectrum

(No particles)

Unitarity conditions

$$r_{\dot{2}}<0\,\&\&t_{\dot{1}}<0$$