

PSALTer results panel

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$$\iiint\left(\frac{1}{6}(-4t_{\frac{2}{3}}\mathcal{A}_{\alpha}^{a_{\frac{1}{3}}}\mathcal{A}_{\beta}^{\theta}+6\mathcal{A}^{\alpha\beta\chi}\sigma_{\alpha\beta\chi}+6f^{\alpha\beta}\tau(\Delta+\mathcal{K})_{\alpha\beta}+8t_{\frac{2}{3}}\mathcal{A}_{\alpha}^{\theta}\partial_{\textcolor{red}{t}}f^{\alpha\textcolor{red}{1}}-3r_{\frac{2}{3}}\partial_{\beta}\mathcal{A}_{\textcolor{red}{t}}^{\theta}\partial' \mathcal{A}^{\alpha\beta}_{\alpha}-3r_{\frac{2}{3}}\partial_{\textcolor{red}{t}}\mathcal{A}_{\beta}^{\theta}\partial' \mathcal{A}^{\alpha\beta}_{\alpha}-8t_{\frac{2}{3}}\mathcal{A}_{\textcolor{red}{t}}^{\theta}\partial' f^{\alpha}_{\alpha}+4t_{\frac{2}{3}}\partial_{\textcolor{red}{t}}f^{\theta}_{\theta}\partial' f^{\alpha}_{\alpha}-3r_{\frac{2}{3}}\partial_{\alpha}\mathcal{A}^{\alpha\beta\textcolor{red}{1}}\partial_{\theta}\mathcal{A}_{\beta}^{\theta}+6r_{\frac{2}{3}}\partial' \mathcal{A}^{\alpha\beta}_{\alpha}\partial_{\theta}\mathcal{A}_{\beta}^{\theta}-3r_{\frac{2}{3}}\partial_{\alpha}\mathcal{A}^{\alpha\beta\textcolor{red}{1}}\partial_{\theta}\mathcal{A}_{\beta}^{\theta}+6r_{\frac{2}{3}}\partial' \mathcal{A}^{\alpha\beta}_{\alpha}\partial_{\theta}\mathcal{A}_{\beta}^{\theta}+4t_{\frac{2}{3}}\partial_{\textcolor{red}{t}}f^{\alpha\textcolor{red}{1}}\partial_{\theta}f^{\theta}_{\alpha}-8t_{\frac{2}{3}}\partial' f^{\alpha}_{\alpha}\partial_{\theta}f^{\theta}_{\textcolor{red}{t}}-24r_{\frac{2}{3}}\partial_{\beta}\mathcal{A}_{\textcolor{red}{t}\theta\alpha}\partial^{\theta}\mathcal{A}^{\alpha\beta\textcolor{red}{1}}+6r_{\frac{2}{5}}\partial_{\textcolor{red}{t}}\mathcal{A}_{\theta}^{\kappa}\partial^{\theta}\mathcal{A}^{a_{\frac{1}{3}}}_{\alpha}-6r_{\frac{2}{5}}\partial_{\theta}\mathcal{A}_{\textcolor{red}{t}\kappa}^{\kappa}\partial^{\theta}\mathcal{A}^{a_{\frac{1}{3}}}_{\alpha}+4t_{\frac{2}{3}}\mathcal{A}_{\textcolor{red}{t}\theta\alpha}\partial^{\theta}f^{a_{\frac{1}{3}}}+2t_{\frac{2}{2}}\partial_{\alpha}f_{\textcolor{red}{t}\theta}\partial^{\theta}f^{a_{\frac{1}{3}}}-t_{\frac{2}{2}}\partial_{\alpha}f_{\theta\textcolor{red}{t}}\partial^{\theta}f^{a_{\frac{1}{3}}}-t_{\frac{2}{2}}\partial_{\textcolor{red}{t}}f_{\alpha\theta}\partial^{\theta}f^{a_{\frac{1}{3}}}+t_{\frac{2}{2}}\partial_{\theta}f_{\alpha\textcolor{red}{t}}\partial^{\theta}f^{a_{\frac{1}{3}}}-t_{\frac{2}{2}}\partial_{\theta}f_{\textcolor{red}{t}\alpha}\partial^{\theta}f^{a_{\frac{1}{3}}}-4t_{\frac{2}{2}}\mathcal{A}_{\alpha\theta\textcolor{red}{t}}(\mathcal{A}^{a_{\frac{1}{3}}\theta}+\partial^{\theta}f^{a_{\frac{1}{3}}})+2t_{\frac{2}{2}}\mathcal{A}_{\alpha\theta\textcolor{red}{t}}(\mathcal{A}^{a_{\frac{1}{3}}\theta}+2\partial^{\theta}f^{a_{\frac{1}{3}}})-6r_{\frac{2}{5}}\partial_{\alpha}\mathcal{A}^{a_{\frac{1}{3}}\theta}\partial_{\kappa}\mathcal{A}_{\textcolor{red}{t}}^{\kappa}+12r_{\frac{2}{5}}\partial^{\theta}\mathcal{A}^{a_{\frac{1}{3}}}_{\alpha}\partial_{\kappa}\mathcal{A}_{\textcolor{red}{t}}^{\kappa}+6r_{\frac{2}{5}}\partial_{\alpha}\mathcal{A}^{a_{\frac{1}{3}}\theta}\partial_{\kappa}\mathcal{A}_{\theta\textcolor{red}{t}}^{\kappa}-12r_{\frac{2}{5}}\partial^{\theta}\mathcal{A}^{a_{\frac{1}{3}}}_{\alpha}\partial_{\kappa}\mathcal{A}_{\theta\textcolor{red}{t}}^{\kappa})[t,\textcolor{red}{x},y,z]dzdydxdt$$

Wave operator

$0^+ \mathcal{A}^{\parallel}$	$0^+ f^{\perp}$	$0^+ f^{\perp}$	$0^+ \mathcal{A}^{\parallel}$											
$0^+ \mathcal{A}^{\parallel} \dagger$	t_3	$-i \sqrt{2} k t_3$	0	0										
$0^+ f^{\parallel} \dagger$	$i \sqrt{2} k t_3$	$2 k^2 t_3$	0	0										
$0^+ f^{\perp} \dagger$	0	0	0	0										
$0^+ \mathcal{A}^{\parallel} \dagger$	0	0	0	t_2	$1^+ \mathcal{A}^{\parallel}_{\alpha\beta}$	$1^+ \mathcal{A}^{\perp}_{\alpha\beta}$	$1^+ f^{\parallel}_{\alpha\beta}$	$1^- \mathcal{A}^{\parallel}_{\alpha}$	$1^- \mathcal{A}^{\perp}_{\alpha}$	$1^- f^{\parallel}_{\alpha}$	$1^- f^{\perp}_{\alpha}$			
$1^+ \mathcal{A}^{\parallel} \dagger^{\alpha\beta}$	$k^2 (2 r_3 + r_5) + \frac{2 t_2}{3}$				$\frac{\sqrt{2} t_2}{3}$	$\frac{1}{3} i \sqrt{2} k t_2$	0	0	0	0				
$1^+ \mathcal{A}^{\perp} \dagger^{\alpha\beta}$	$\frac{\sqrt{2} t_2}{3}$				$\frac{t_2}{3}$	$\frac{i k t_2}{3}$	0	0	0	0				
$1^+ f^{\parallel} \dagger^{\alpha\beta}$	$-\frac{1}{3} i \sqrt{2} k t_2$				$-\frac{1}{3} i k t_2$	$\frac{k^2 t_2}{3}$	0	0	0	0				
$1^- \mathcal{A}^{\parallel} \dagger^{\alpha}$	0	0	0	$k^2 (\frac{r_3}{2} + r_5) + \frac{2 t_3}{3}$	$-\frac{\sqrt{2} t_3}{3}$	0	$-\frac{2}{3} i k t_3$							
$1^- \mathcal{A}^{\perp} \dagger^{\alpha}$	0	0	0	$-\frac{\sqrt{2} t_3}{3}$	$\frac{t_3}{3}$	0	$\frac{1}{3} i \sqrt{2} k t_3$							
$1^- f^{\parallel} \dagger^{\alpha}$	0	0	0	0	0	0	0							
$1^- f^{\perp} \dagger^{\alpha}$	0	0	0	$\frac{2 i k t_3}{3}$	$-\frac{1}{3} i \sqrt{2} k t_3$	0	$\frac{2 k^2 t_3}{3}$	$2^+ \mathcal{A}^{\parallel}_{\alpha\beta}$	$2^+ f^{\parallel}_{\alpha\beta}$	$2^- \mathcal{A}^{\parallel}_{\alpha\beta\chi}$				
											$2^+ \mathcal{A}^{\parallel} \dagger^{\alpha\beta}$	$-\frac{3 k^2 r_3}{2}$	0	0
											$2^+ f^{\parallel} \dagger^{\alpha\beta}$	0	0	0
											$2^- \mathcal{A}^{\parallel} \dagger^{\alpha\beta\chi}$	0	0	0

Saturated propagator

$0^+ \sigma^{\parallel}$	$0^+ \tau^{\parallel}$	$0^+ \tau^{\perp}$	$0^+ \sigma^{\parallel}$													
$0^+ \sigma^{\parallel} \dagger$	$\frac{1}{(1+2k^2)^2 t_{\frac{2}{3}}}$	$-\frac{i\sqrt{2}k}{(1+2k^2)^2 t_{\frac{2}{3}}}$	0	0												
$0^+ \tau^{\parallel} \dagger$	$\frac{i\sqrt{2}k}{(1+2k^2)^2 t_{\frac{2}{3}}}$	$\frac{2k^2}{(1+2k^2)^2 t_{\frac{2}{3}}}$	0	0												
$0^+ \tau^{\perp} \dagger$	0	0	0	0												
$0^+ \sigma^{\parallel} \dagger$	0	0	0	$\frac{1}{t_{\frac{2}{2}}}$	$1^+ \sigma^{\parallel}_{\alpha\beta}$	$1^+ \sigma^{\perp}_{\alpha\beta}$	$1^+ \tau^{\parallel}_{\alpha\beta}$	$1^- \sigma^{\parallel}_{\alpha}$	$1^- \sigma^{\perp}_{\alpha}$	$1^- \tau^{\parallel}_{\alpha}$	$1^- \tau^{\perp}_{\alpha}$					
	$1^+ \sigma^{\parallel} \dagger^{\alpha\beta}$	$\frac{1}{k^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}})}$	$-\frac{\sqrt{2}}{k^2 (1+k^2) (2r_{\frac{2}{3}}+r_{\frac{2}{5}})}$	$-\frac{i\sqrt{2}}{k (1+k^2) (2r_{\frac{2}{3}}+r_{\frac{2}{5}})}$	0	0	0	0	0	0	0					
	$1^+ \sigma^{\perp} \dagger^{\alpha\beta}$	$-\frac{\sqrt{2}}{k^2 (1+k^2) (2r_{\frac{2}{3}}+r_{\frac{2}{5}})}$	$\frac{3k^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}})+2t_{\frac{2}{2}}}{(k+k^3)^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}}) t_{\frac{2}{2}}}$	$\frac{i (3k^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}})+2t_{\frac{2}{2}})}{k (1+k^2)^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}}) t_{\frac{2}{2}}}$	0	0	0	0	0	0	0					
	$1^+ \tau^{\parallel} \dagger^{\alpha\beta}$	$\frac{i\sqrt{2}}{k (1+k^2) (2r_{\frac{2}{3}}+r_{\frac{2}{5}})}$	$-\frac{i (3k^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}})+2t_{\frac{2}{2}})}{k (1+k^2)^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}}) t_{\frac{2}{2}}}$	$\frac{3k^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}})+2t_{\frac{2}{2}}}{(1+k^2)^2 (2r_{\frac{2}{3}}+r_{\frac{2}{5}}) t_{\frac{2}{2}}}$	0	0	0	0	0	0	0					
	$1^- \sigma^{\parallel} \dagger^{\alpha}$	0	0	0	$\frac{2}{k^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}})}$	$\frac{2\sqrt{2}}{k^2 (1+2k^2) (r_{\frac{2}{3}}+2r_{\frac{2}{5}})}$	0	$\frac{4i}{k (1+2k^2) (r_{\frac{2}{3}}+2r_{\frac{2}{5}})}$					$2^+ \sigma^{\parallel}_{\alpha\beta}$	$2^+ \tau^{\parallel}_{\alpha\beta}$	$2^- \sigma^{\parallel}_{\alpha\beta\chi}$	
	$1^- \sigma^{\perp} \dagger^{\alpha}$	0	0	0	$\frac{2\sqrt{2}}{k^2 (1+2k^2) (r_{\frac{2}{3}}+2r_{\frac{2}{5}})}$	$\frac{3k^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}})+4t_{\frac{2}{3}}}{(k+2k^3)^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}}) t_{\frac{2}{3}}}$	0	$\frac{i\sqrt{2} (3k^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}})+4t_{\frac{2}{3}})}{k (1+2k^2)^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}}) t_{\frac{2}{3}}}$								
	$1^- \tau^{\parallel} \dagger^{\alpha}$	0	0	0	0	0	0	0								
	$1^- \tau^{\perp} \dagger^{\alpha}$	0	0	0	$-\frac{4i}{k (1+2k^2) (r_{\frac{2}{3}}+2r_{\frac{2}{5}})}$	$-\frac{i\sqrt{2} (3k^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}})+4t_{\frac{2}{3}})}{k (1+2k^2)^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}}) t_{\frac{2}{3}}}$	0	$\frac{6k^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}})+8t_{\frac{2}{3}}}{(1+2k^2)^2 (r_{\frac{2}{3}}+2r_{\frac{2}{5}}) t_{\frac{2}{3}}}$								
												$2^+ \sigma^{\parallel} \dagger^{\alpha\beta}$	$-\frac{2}{3k^2 r_{\frac{2}{3}}}$	0	0	
												$2^+ \tau^{\parallel} \dagger^{\alpha\beta}$	0	0	0	
												$2^- \sigma^{\parallel} \dagger^{\alpha\beta\chi}$	0	0	0	

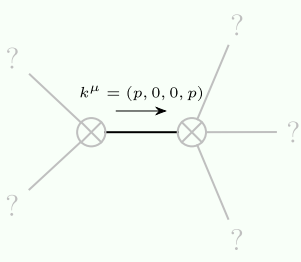
Source constraints

Spin-parity form	Covariant form	Multiplicities
$0^+ \tau^{\perp} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == 0$	1
$-2i k\, 0^+ \sigma^{\parallel} + 0^+ \tau^{\parallel} == 0$	$\partial_{\beta}\partial_{\alpha}\tau(\Delta+\mathcal{K})^{\alpha\beta} == \partial_{\beta}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha}_{\alpha} + 2\partial_{\chi}\partial^{\chi}\partial_{\beta}\sigma^{\alpha}_{\alpha}{}^{\beta}$	1
$2i k\, 1^- \sigma^{\perp\alpha} + 1^- \tau^{\perp\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial_{\beta}\sigma^{\beta\alpha\chi}$	3
$1^- \tau^{\parallel\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau(\Delta+\mathcal{K})^{\beta\alpha}$	3
$i k\, 1^+ \sigma^{\perp\alpha\beta} + 1^+ \tau^{\parallel\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 2\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi\beta\delta} + 2\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\chi\alpha\beta} == \partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} + \partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 2\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha\delta}$	3
$2^- \sigma^{\alpha\beta\chi} == 0$	$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_{\delta}\partial^{\alpha}\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_{\delta}\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
$2^+ \tau^{\parallel\alpha\beta} == 0$	$4\partial_{\delta}\partial_{\chi}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\delta} + 2\partial_{\delta}\partial^{\delta}\partial^{\beta}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi}_{\chi} + 3\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\alpha\beta} + 3\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\tau(\Delta+\mathcal{K})^{\beta\alpha} + 2\eta^{\alpha\beta}\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial_{\chi}\tau(\Delta+\mathcal{K})^{\chi\delta} == 3\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\beta\chi} + 3\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\alpha}\tau(\Delta+\mathcal{K})^{\chi\beta} + 3\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\alpha\chi} + 3\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\beta}\tau(\Delta+\mathcal{K})^{\chi\alpha} + 2\eta^{\alpha\beta}\partial_{\epsilon}\partial^{\epsilon}\partial_{\delta}\partial^{\delta}\tau(\Delta+\mathcal{K})^{\chi}_{\chi}$	5
Total expected gauge generators:		21

Massive spectrum

(No particles)

Massless spectrum



Massless particle

Pole residue:	$-\frac{14}{r_{\frac{2}{3}}} + \frac{57}{2r_{\frac{2}{3}}+r_{\frac{2}{5}}} - \frac{216}{r_{\frac{2}{3}}+2r_{\frac{2}{5}}} > 0$
Polarisations:	2

Unitarity conditions

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