

PSALTer results panel

$$S = \int \int \int \int \int \left( h^{\alpha\beta} \mathcal{T}_{\alpha\beta} + \frac{1}{2} \alpha_{\cdot 2} \partial_{\beta} h^{\chi}_{\cdot \chi} \partial^{\beta} h^{\alpha}_{\cdot \alpha} + \right. \\ \left. \alpha_{\cdot 1} (\partial_{\alpha} h^{\alpha\beta} \partial_{\chi} h^{\chi}_{\cdot \beta} - \partial^{\beta} h^{\alpha}_{\cdot \alpha} \partial_{\chi} h^{\chi}_{\cdot \beta} - \frac{1}{2} \partial_{\chi} h_{\alpha\beta} \partial^{\chi} h^{\alpha\beta}) \right) [ \\ t, \chi, y, z] dz dy dx dt$$

Wave operator

$0^+ h^{\perp}$

$0^+ h^{\parallel}$

$0^+ h^{\perp} \dagger$

$0^+ h^{\parallel} \dagger$

$\frac{1}{2} (-\alpha_{\cdot 1} + \alpha_{\cdot 2}) k^2$

$\frac{1}{2} \sqrt{3} (-\alpha_{\cdot 1} + \alpha_{\cdot 2}) k^2$

$\frac{1}{2} \sqrt{3} (-\alpha_{\cdot 1} + \alpha_{\cdot 2}) k^2$

$-\frac{1}{2} (\alpha_{\cdot 1} - 3 \alpha_{\cdot 2}) k^2$

$1^- h^{\perp}_{\alpha}$

$1^- h^{\perp} \dagger^{\alpha}$

$2^+ h^{\parallel}_{\alpha\beta}$

$2^+ h^{\parallel} \dagger^{\alpha\beta}$

$0$

$-\frac{\alpha_{\cdot 1} k^2}{2}$

Saturated propagator

$0^+ \mathcal{T}^{\perp}$

$0^+ \mathcal{T}^{\parallel}$

$0^+ \mathcal{T}^{\perp} \dagger$

$0^+ \mathcal{T}^{\parallel} \dagger$

$\frac{\alpha_{\cdot 1} - 3 \alpha_{\cdot 2}}{\alpha_{\cdot 1} (\alpha_{\cdot 1} - \alpha_{\cdot 2}) k^2}$

$-\frac{\sqrt{3}}{\alpha_{\cdot 1} k^2}$

$-\frac{\sqrt{3}}{\alpha_{\cdot 1} k^2}$

$\frac{1}{\alpha_{\cdot 1} k^2}$

$1^- \mathcal{T}^{\perp}_{\alpha}$

$1^- \mathcal{T}^{\perp} \dagger^{\alpha}$

$2^+ \mathcal{T}^{\parallel}_{\alpha\beta}$

$2^+ \mathcal{T}^{\parallel} \dagger^{\alpha\beta}$

$0$

$-\frac{2}{\alpha_{\cdot 1} k^2}$

Source constraints

Spin-parity form	Covariant form	Multiplicities
$1^- \mathcal{T}^{\perp \alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha} \mathcal{T}^{\beta \chi} == \partial_{\chi} \partial^{\chi} \partial_{\beta} \mathcal{T}^{\alpha \beta}$	3
Total expected gauge generators:		3

Massive spectrum

(No particles)

Massless spectrum

Massless particle

Pole residue:  $\left| \frac{p^2}{-\alpha_{\cdot 1} + \alpha_{\cdot 2}} \right| > 0$

Polarisations:  $| 1$

Massless particle

Pole residue:  $\left| -\frac{p^2}{\alpha_{\cdot 1}} \right| > 0$

Polarisations:  $| 2$

Unitarity conditions

$$\alpha_{\cdot 1} < 0 \ \&\& \ \alpha_{\cdot 2} > \alpha_{\cdot 1}$$