

## PSALter results panel

$$S = \iiint \left( \frac{1}{6} \left( 2 t_{\cdot 1} \mathcal{A}_{\cdot \alpha}^{\alpha'} \mathcal{A}_{\cdot \theta}^{\theta} + 6 \mathcal{A}^{\alpha \beta \chi} \sigma_{\alpha \beta \chi} + 6 f^{\alpha \beta} \tau_{(\Delta + \mathcal{K}) \alpha \beta} - 4 t_{\cdot 1} \mathcal{A}_{\alpha}^{\theta} \partial_{\cdot 1} f^{\alpha'} + 4 t_{\cdot 1} \mathcal{A}_{\cdot \theta}^{\theta} \partial' f_{\alpha}^{\alpha} - 2 t_{\cdot 1} \partial_{\cdot 1} f_{\theta}^{\theta} \partial' f_{\alpha}^{\alpha} - 2 t_{\cdot 1} \partial_{\cdot 1} f^{\alpha'} \partial_{\theta} f_{\alpha}^{\theta} + 4 t_{\cdot 1} \partial' f_{\alpha}^{\alpha} \partial_{\theta} f_{\cdot \theta}^{\theta} - \right. \right. \\ \left. 8 r_{\cdot 1} \partial_{\beta \mathcal{A}} \mathcal{A}_{\alpha \cdot \theta} \partial^{\theta} \mathcal{A}^{\beta \cdot 1} + 4 r_{\cdot 1} \partial_{\beta \mathcal{A}} \mathcal{A}_{\alpha \theta \cdot} \partial^{\theta} \mathcal{A}^{\alpha \beta \cdot 1} - 16 r_{\cdot 1} \partial_{\beta \mathcal{A}} \mathcal{A}_{\cdot \theta \alpha} \partial^{\theta} \mathcal{A}^{\alpha \beta \cdot 1} - 4 r_{\cdot 1} \partial_{\cdot 1} \mathcal{A}_{\alpha \beta \theta} \partial^{\theta} \mathcal{A}^{\alpha \beta \cdot 1} + 4 r_{\cdot 1} \partial_{\beta \mathcal{A}} \mathcal{A}_{\alpha \beta \cdot} \partial^{\theta} \mathcal{A}^{\alpha \beta \cdot 1} + 4 r_{\cdot 1} \partial_{\beta \mathcal{A}} \mathcal{A}_{\alpha \cdot \beta} \partial^{\theta} \mathcal{A}^{\alpha \beta \cdot 1} + \right. \\ \left. 6 r_{\cdot 5} \partial_{\cdot 1} \mathcal{A}_{\theta}^{\kappa} \partial^{\theta} \mathcal{A}_{\alpha}^{\alpha'} - 6 r_{\cdot 5} \partial_{\theta \mathcal{A}} \mathcal{A}_{\cdot \kappa}^{\kappa} \partial^{\theta} \mathcal{A}_{\alpha}^{\alpha'} - 6 t_{\cdot 1} \partial_{\alpha f} \mathcal{A}_{\cdot \theta}^{\theta} \partial^{\theta} f^{\alpha'} - 3 t_{\cdot 1} \partial_{\alpha f} \mathcal{A}_{\theta \cdot}^{\theta} \partial^{\theta} f^{\alpha'} + 3 t_{\cdot 1} \partial_{\cdot 1} f_{\alpha \theta} \partial^{\theta} f^{\alpha'} + 3 t_{\cdot 1} \partial_{\alpha f} \mathcal{A}_{\cdot \theta}^{\theta} \partial^{\theta} f^{\alpha'} + 3 t_{\cdot 1} \partial_{\theta f} \mathcal{A}_{\alpha}^{\theta} \partial^{\theta} f^{\alpha'} + \right. \\ \left. 6 t_{\cdot 1} \mathcal{A}_{\alpha \theta \cdot} \left( \mathcal{A}^{\alpha \cdot \theta} + 2 \partial^{\theta} f^{\alpha'} \right) - 6 r_{\cdot 5} \partial_{\alpha} \mathcal{A}^{\alpha \cdot \theta} \partial_{\kappa \mathcal{A}} \mathcal{A}_{\cdot \theta}^{\kappa} + 12 r_{\cdot 5} \partial^{\theta} \mathcal{A}_{\alpha}^{\alpha'} \partial_{\kappa \mathcal{A}} \mathcal{A}_{\cdot \theta}^{\kappa} + 6 r_{\cdot 5} \partial_{\alpha} \mathcal{A}^{\alpha \cdot \theta} \partial_{\kappa \mathcal{A}} \mathcal{A}_{\theta \cdot}^{\kappa} - 12 r_{\cdot 5} \partial^{\theta} \mathcal{A}_{\alpha}^{\alpha'} \partial_{\kappa \mathcal{A}} \mathcal{A}_{\theta}^{\kappa} \right) \Big) [t, x, y, z] dz dy dx dt$$

## Wave operator

[illegible]

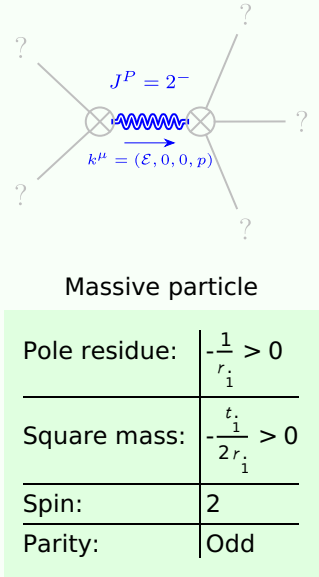
## Saturated propagator

[illegible]

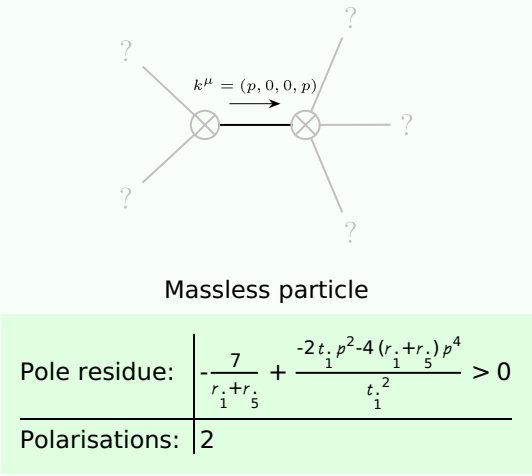
## Source constraints

Spin-parity form	Covariant form	Multiplicities
$\vec{0}^+ \cdot \sigma^{\parallel} == 0$	$\partial_{\beta} \sigma^{\alpha}{}_{\alpha}{}^{\beta} == 0$	1
$\vec{0}^+ \cdot \vec{t}^{\parallel} == 0$	$\partial_{\beta} \partial_{\alpha} \tau (\Delta + \mathcal{T})^{\alpha\beta} == \partial_{\beta} \partial^{\beta}{}_{\tau} (\Delta + \mathcal{T})^{\alpha}{}_{\alpha}$	1
$\vec{0}^+ \cdot \vec{t}^{\perp} == 0$	$\partial_{\beta} \partial_{\alpha} \tau (\Delta + \mathcal{T})^{\alpha\beta} == 0$	1
$2 \ i \ k \ \vec{1}^+_{\cdot} \cdot \sigma^{\perp\alpha} + \vec{1}^+_{\cdot} \cdot \vec{t}^{\perp\alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha}{}_{\tau} (\Delta + \mathcal{T})^{\beta\chi} == \partial_{\chi} \partial^{\chi}{}_{\beta} \partial_{\tau} (\Delta + \mathcal{T})^{\alpha\beta} + 2 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial_{\beta} \sigma^{\beta\alpha\chi}$	3
$\vec{1}^+_{\cdot} \cdot \vec{t}^{\parallel\alpha} == 0$	$\partial_{\chi} \partial_{\beta} \partial^{\alpha}{}_{\tau} (\Delta + \mathcal{T})^{\beta\chi} == \partial_{\chi} \partial^{\chi}{}_{\beta} \partial_{\tau} (\Delta + \mathcal{T})^{\beta\alpha}$	3
$i \ k \ \vec{1}^+_{\cdot} \cdot \sigma^{\perp\alpha\beta} + \vec{1}^+_{\cdot} \cdot \vec{t}^{\parallel\alpha\beta} == 0$	$\partial_{\chi} \partial^{\alpha}{}_{\tau} (\Delta + \mathcal{T})^{\beta\chi} + \partial_{\chi} \partial^{\beta}{}_{\tau} (\Delta + \mathcal{T})^{\chi\alpha} + \partial_{\chi} \partial^{\chi}{}_{\tau} (\Delta + \mathcal{T})^{\alpha\beta} + 2 \ \partial_{\delta} \partial_{\chi} \partial^{\alpha}{}_{\sigma} \chi^{\beta\delta} + 2 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial_{\sigma} \chi^{\alpha\beta} ==$ $\partial_{\chi} \partial^{\alpha}{}_{\tau} (\Delta + \mathcal{T})^{\chi\beta} + \partial_{\chi} \partial^{\beta}{}_{\tau} (\Delta + \mathcal{T})^{\alpha\chi} + \partial_{\chi} \partial^{\chi}{}_{\tau} (\Delta + \mathcal{T})^{\beta\alpha} + 2 \ \partial_{\delta} \partial_{\chi} \partial^{\beta}{}_{\sigma} \chi^{\alpha\delta}$	3
$-2 \ i \ k \ \vec{2}^+_{\cdot} \cdot \sigma^{\parallel\alpha\beta} + \vec{2}^+_{\cdot} \cdot \vec{t}^{\parallel\alpha\beta} == 0$	$-i \left( 4 \ \partial_{\delta} \partial_{\chi} \partial^{\beta}{}_{\tau} (\Delta + \mathcal{T})^{\chi\delta} + 2 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial^{\beta}{}_{\tau} (\Delta + \mathcal{T})^{\chi}{}_{\chi} - 3 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial_{\tau} (\Delta + \mathcal{T})^{\beta\chi} - \right.$ $3 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial^{\alpha}{}_{\tau} (\Delta + \mathcal{T})^{\chi\beta} - 3 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial^{\beta}{}_{\tau} (\Delta + \mathcal{T})^{\alpha\chi} - 3 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial^{\beta}{}_{\tau} (\Delta + \mathcal{T})^{\chi\alpha} + 3 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial^{\alpha}{}_{\tau} (\Delta + \mathcal{T})^{\alpha\beta} +$ $3 \ \partial_{\delta} \partial^{\delta}{}_{\chi} \partial^{\alpha}{}_{\tau} (\Delta + \mathcal{T})^{\beta\alpha} + 4 \ i \ k^{\chi} \ \partial_{\epsilon} \partial_{\chi} \partial^{\beta}{}_{\sigma} \sigma^{\delta}{}_{\delta}{}^{\epsilon} - 6 \ i \ k^{\chi} \ \partial_{\epsilon} \partial_{\delta} \partial_{\chi} \partial^{\alpha}{}_{\sigma} \sigma^{\delta\beta\epsilon} - 6 \ i \ k^{\chi} \ \partial_{\epsilon} \partial_{\delta} \partial_{\chi} \partial^{\beta}{}_{\sigma} \sigma^{\delta\alpha\epsilon} + 6 \ i \ k^{\chi} \ \partial_{\epsilon} \partial^{\epsilon}{}_{\delta} \partial_{\delta} \partial_{\chi} \sigma^{\alpha\beta\delta} +$ $\left. 6 \ i \ k^{\chi} \ \partial_{\epsilon} \partial^{\epsilon}{}_{\delta} \partial_{\delta} \partial_{\chi} \sigma^{\beta\alpha\delta} + 2 \ \eta^{\alpha\beta} \ \partial_{\epsilon} \partial^{\epsilon}{}_{\delta} \partial_{\delta} \chi_{\tau} (\Delta + \mathcal{T})^{\chi\delta} - 2 \ \eta^{\alpha\beta} \ \partial_{\epsilon} \partial^{\epsilon}{}_{\delta} \partial_{\delta}{}_{\tau} (\Delta + \mathcal{T})^{\chi}{}_{\chi} - 4 \ i \ \eta^{\alpha\beta} \ k^{\chi} \ \partial_{\phi} \partial^{\phi}{}_{\delta} \partial_{\epsilon} \chi \sigma^{\delta}{}_{\delta}{}^{\epsilon} \right) == 0$	5
Total expected gauge generators:		17

## Massive spectrum



## Massless spectrum



## Unitarity conditions

$$r_1 < 0 \ \&\& \ r_5 < -r_1 \ \&\& \ t_1 > 0$$