## Particle spectrograph

## Wave operator and propagator

$\begin{aligned} & \frac{v_{0}^{2}}{v_{0}^{2}} = 0 & & \frac{\partial_{0}\partial_{4}^{4}\alpha^{0} = 0}{\partial_{0}\partial_{4}^{4}\alpha^{0}} = 0 & \\ & \frac{\partial_{0}^{4}}{\partial_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{4}^{4}\alpha^{0}}{\partial_{0}^{4}} = 0 & \\ & \frac{\partial_{0}^{4}}{\partial_{0}^{4}} = 0 & & \frac{\partial_{0}^{4}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} = 0 & \\ & \frac{\partial_{0}^{4}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} = 0 & \\ & \frac{\partial_{0}^{4}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} = 0 & \\ & \frac{\partial_{0}^{4}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} + ik  \frac{\sigma_{0}^{2}}{v_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} + ik  \frac{\sigma_{0}^{2}}{v_{0}^{4}} = 0 & & \frac{\partial_{0}\partial_{0}^{4}\alpha^{0}}{\partial_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} + ik  \frac{\sigma_{0}^{2}}{v_{0}^{4}} + \partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} + ik  \frac{\sigma_{0}^{2}}{v_{0}^{4}} + \frac{\sigma_{0}^{2}}{\partial_{0}^{4}} + \partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} + \frac{\sigma_{0}^{2}}{v_{0}^{4}} + \partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} + \frac{\sigma_{0}^{2}}{v_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{v_{0}^{2}}{v_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{\sigma_{0}^{2}}{v_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} + \partial_{0}\partial_{0}\partial_{0}^{4}\alpha^{0} \\ & \frac{\sigma_{0}^{2}}{v_{0}^{4}} + \partial_{0}\partial_{0}\partial_{0}\partial_{0$
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$= 0 \qquad 0 \lambda_{\alpha} \beta_{\alpha} \alpha^{\alpha \beta \chi} = 0$ $= 0 \qquad 0 \lambda_{\alpha} \beta_{\alpha} \alpha^{\alpha \beta \chi} + \partial_{\chi} \partial^{\chi} \alpha^{\alpha \beta} = - \partial_{\chi} \partial_{\beta} \alpha^{\alpha \beta \chi}$ $+ ik \ \alpha_{1}^{\# 1} \alpha^{\beta} = 0  0 \lambda_{\alpha} \beta^{\alpha} \beta^{\gamma} + \partial_{\chi} \partial^{\gamma} \alpha^{\alpha \beta} = - \partial_{\lambda} \partial_{\beta} \alpha^{\alpha \beta \chi}$ $+ ik \ \alpha_{1}^{\# 1} \alpha^{\beta} = 0  0 \lambda_{\alpha} \beta^{\alpha} \beta^{\gamma} + \partial_{\chi} \partial^{\gamma} \beta^{\gamma} \alpha^{\alpha} + \partial_{\alpha} \partial^{\gamma} \beta^{\gamma} \beta^{\alpha} + \partial_{\alpha} \partial^{\gamma} \beta^{\gamma} \alpha^{\alpha} + \partial_{\alpha} \partial^{\beta} \beta^{\gamma} \alpha^{\alpha} \beta^{\beta} + \partial_{\alpha} \partial^{\beta} \beta^{\gamma} \alpha^{\alpha} + \partial_{\alpha} \partial^{\beta} \beta^{\gamma} \alpha^{\alpha} \beta^{\beta} + \partial_{\alpha} \partial^{\beta} \beta^{\gamma} \beta^$
$= 0 \qquad 0 \  \   \partial_{x}\partial^{\alpha}\sigma^{\beta}k^{}_{x} + \partial_{x}\partial^{k}\sigma^{\alpha}k^{}_{y} = = \partial_{x}\partial_{\beta}\sigma^{\alpha}k^{}_{x} + \partial_{x}\partial^{k}\tau^{\alpha}k^{}_{y} + \partial_{x}\partial^{k}\sigma^{\alpha}k^{}_{y} + \partial_{x}\partial^{\mu}\sigma^{\alpha}k^{}_{y} $
$+ik \ G_{1}^{\#2} a^{\beta} = 0 \ \partial_{\lambda} \partial^{\alpha} t^{\beta X} + \partial_{\lambda} \partial^{\beta} t^{X} a + \partial_{\lambda} \partial^{\beta} t$
$= \frac{\partial_{S}\chi_{O} O - + \partial_{S}O \partial_{X} O - + \partial_{S}O \partial_{S}O - $
$ \begin{array}{lll} 3 \partial_{\phi} \chi^{\partial \alpha} \sigma^{\beta} K^{\delta} + \partial_{\phi} \partial^{\phi} \partial_{\chi} \sigma^{\alpha} K^{\beta} \\ & 3 \partial_{\phi} \chi^{\partial \alpha} \sigma^{\beta} K^{\delta} + \\ & 2 \partial_{\phi} \partial^{\alpha} \chi^{\alpha} C^{\beta} K^{\beta} + \partial_{\phi} \partial^{\phi} \chi^{\alpha} C^{\alpha} K^{\beta} \\ & 3 \partial_{\phi} \partial^{\alpha} \partial^{\alpha} K^{\delta} + \partial_{\phi} \partial^{\phi} \chi^{\alpha} C^{\alpha} K^{\beta} \\ & 3 \partial_{\phi} \partial^{\alpha} \partial^{\alpha} C^{\alpha} K^{\delta} + \partial_{\phi} \partial^{\phi} \chi^{\alpha} C^{\alpha} K^{\beta} \\ & 2 \partial_{\phi} \partial^{\phi} \partial^{\alpha} C^{\beta} C^{\beta} C^{\beta} \partial^{\beta} C^{\alpha} C^{\beta} C^{\beta} C^{\beta} C^{\alpha} C^{\beta} C^{\beta$
$= \frac{2 \partial_{\alpha} \partial_{\alpha} \partial^{\alpha} G_{k} \partial^{\beta} +}{2 \partial_{\sigma} \partial_{\alpha} \partial^{\alpha} G_{k} \partial^{\beta} +} \partial_{\sigma} \partial^{\beta} \partial_{\alpha} G_{k} \partial^{\beta} \partial^{\beta} G_{k} \partial^{\beta} \partial^$
$ 2 \partial_{0} \partial^{0} \partial_{\chi} \alpha^{\alpha \beta \chi} + \partial_{5} \partial^{5} \partial_{\chi} \alpha^{\alpha \chi \beta} = $ $ 3 \partial_{5} \partial_{\chi} \partial^{\beta} \alpha^{\alpha \chi} + \partial_{5} \partial^{5} \partial_{\chi} \alpha^{\alpha \chi \beta} = $ $ 3 \partial_{5} \partial_{\chi} \partial^{\beta} \alpha^{\alpha \chi} + \partial_{5} \partial^{5} \partial_{\chi} \alpha^{\alpha \chi \beta} + $ $ 2 \partial_{c} \partial^{5} \partial^{3} \partial^{\alpha} \alpha^{\beta \delta c} + 3 \partial_{c} \partial^{5} \partial^{3} \alpha^{\alpha \beta \delta} + $ $ 2 \partial_{c} \partial^{5} \partial^{3} \partial^{\alpha} \alpha^{\chi \delta} + 4 \partial_{c} \partial^{5} \partial^{3} \partial^{\alpha} \alpha^{\beta \delta} + $ $ 2 \partial_{c} \partial^{5} \partial^{3} \partial^{\alpha} \alpha^{\chi \delta} + 4 \partial_{c} \partial^{5} \partial^{3} \partial^{\alpha} \alpha^{\beta \delta} + $ $ 3 \partial^{5} \partial^{3} \partial^{3} \partial^{\alpha} \partial^{3} \partial$
$3 \partial_{s} \partial_{\chi} \partial^{\beta} \sigma^{\alpha \chi \delta} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\beta \chi a}$ $= 0 \qquad 3 \partial_{c} \partial_{\sigma} \partial^{\beta} \sigma^{\alpha \chi \delta} + 3 \partial_{c} \partial^{c} \partial^{\beta} \sigma^{\alpha \delta} \partial^{5} + 4 \partial_{c} \partial^{c} \partial^{\beta} \sigma^{\alpha \delta} \partial^{5} \partial^{4} \sigma^{5} \partial^{5} \partial^{4} \partial^{4} \partial^{5} \partial^{5} \partial^{5} \partial^{4} \partial^{4} \partial^{5} \partial^{5} \partial^{5} \partial^{4} \partial^{5} \partial^{5} \partial^{5} \partial^{4} \partial^{5} \partial^$
$= 0 \qquad 3 \partial_{c} \partial_{c} \partial^{c} \partial^$
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$3 \partial_{\varepsilon} \partial_{s} \partial^{x} \partial^{\beta} \sigma^{\alpha \delta \varepsilon} + 3 \partial_{\varepsilon} \partial^{\varepsilon} \partial^{x} \partial^{\beta} \sigma^{\alpha \delta} \partial^{\varepsilon} + 3 \partial_{\varepsilon} \partial^{\varepsilon} \partial^{x} \partial^{\beta} \sigma^{\alpha \delta} \partial^{\varepsilon} \partial^{\varepsilon$
$2 \partial_{\varepsilon} \partial^{\varepsilon} \partial_{\sigma} \partial^{\alpha} \sigma^{\beta X \delta} + 4 \partial_{\varepsilon} \partial^{\varepsilon} \partial_{\sigma} \sigma^{\beta \delta \delta}$ $2 \partial_{\varepsilon} \partial^{\varepsilon} \partial_{\sigma} \partial^{\alpha} \sigma^{X \delta \beta} + 2 \partial_{\varepsilon} \partial^{\varepsilon} \partial_{\sigma} \sigma^{\beta \delta \delta}$ $4 \partial_{\varepsilon} \partial^{\varepsilon} \partial_{\sigma} \partial^{\alpha} \sigma^{X \delta \beta} + 2 \partial_{\varepsilon} \partial^{\varepsilon} \partial^{\sigma} \sigma^{X \delta \delta}$ $3 \eta^{\alpha X} \partial_{\phi} \partial^{\phi} \partial_{\varepsilon} \partial^{\beta} \sigma^{\varepsilon} \partial^{\varepsilon} +$ $3 \eta^{\alpha X} \partial_{\phi} \partial^{\phi} \partial_{\varepsilon} \partial^{\varepsilon} \sigma^{\delta} \partial^{\varepsilon} \partial^{\varepsilon$
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$4 \partial_{\varepsilon} \partial^{\varepsilon} \partial_{\sigma} \partial^{\sigma} \partial^{\alpha} B X + 2 \partial_{\varepsilon} \partial^{\varepsilon} \partial^{\sigma} \partial^{\alpha} X + 2 \partial_{\varepsilon} \partial^{\varepsilon} \partial^{\sigma} \partial^{\alpha} X + 2 \partial_{\varepsilon} \partial^{\varepsilon} \partial^{\sigma} \partial^{\alpha} X + 2 \partial_{\varepsilon} \partial^{\varepsilon} \partial^{\sigma} $
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$3 \eta^{\alpha X} \partial_{\varphi} \partial^{\varphi} \partial_{\varepsilon} \partial^{\varepsilon} \partial^{\beta} \delta^{\alpha} \tau^{X} +$ $4 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha} \tau^{X} \delta + 2 \partial_{\delta} \partial^{\delta} \partial^{\alpha} \tau^{X} +$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \nabla^{\alpha} \partial^{\beta} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \nabla^{\beta} \partial^{\alpha} +$ $2 \eta^{\alpha \beta} \partial_{\varepsilon} \partial^{\varepsilon} \partial_{\chi} \tau^{X} \partial^{\varepsilon} =$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau^{\beta X} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau^{X} \partial^{\beta} +$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau^{\beta X} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} \tau^{X} \partial^{\beta} +$ $2 \eta^{\alpha \beta} \partial_{\varepsilon} \partial^{\varepsilon} \partial_{\delta} \partial^{\delta} \tau^{X} \partial^{\beta} \tau^{X} \partial^{\beta} \partial^{\alpha} \nabla^{\lambda} \partial^{\beta} \partial^{\alpha} \nabla^{\lambda} \partial^{\beta} \partial^{\alpha} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial^{\alpha$
$=0 \qquad 4 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha} \tau^{\chi \delta} + 2 \partial_{\delta} \partial^{\delta} \partial^{\beta} \partial^{\alpha} \tau^{\chi} + 3 \partial_{\delta} \partial^{\delta} \partial^{\alpha} \tau^{\chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \tau^{\beta \alpha} + 2 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\chi} \tau^{\beta \alpha} + 3 \partial_{\delta} \partial^{\delta} \partial^{\chi} \partial^{\alpha} \tau^{\beta \alpha} + 3 \partial_{\delta} \partial^{\delta} \partial^{\alpha} \tau^{\beta \alpha} + 3 \partial_{\delta} \partial^{\delta} \partial^{\alpha} \tau^{\beta \alpha} + 2 \partial_{\delta} \partial^{\delta} \partial^{\alpha} \partial^{\chi} \partial^{\alpha} \tau^{\beta \alpha} + 2 \partial_{\delta} \partial^{\delta} \partial^{\alpha} \partial^{\lambda} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial^{\lambda} \partial^{\alpha} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial^{\lambda} \partial^{\alpha} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial^{\lambda} \partial^{\alpha} \partial^{\alpha} \partial^{\alpha} \partial^{\alpha} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial$
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$2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\lambda} \tau^{X\delta} ==$ $3 \partial_{\delta} \partial^{\delta} \partial_{\lambda} \partial^{\alpha} \tau^{\beta X} + 3 \partial_{\delta} \partial^{\delta} \partial_{\lambda} \partial^{\alpha} \tau^{X\beta} +$ $3 \partial_{\delta} \partial^{\delta} \partial_{\lambda} \partial^{\beta} \tau^{\alpha X} + 3 \partial_{\delta} \partial^{\delta} \partial_{\lambda} \partial^{\beta} \tau^{X\alpha} +$ $2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \tau^{X}$ $== 0$ $3 \partial_{\delta} \partial_{\lambda} \partial^{\alpha} \partial^{\beta} X^{\delta} + 3 \partial_{\delta} \partial_{\lambda} \partial^{\beta} \partial^{\alpha} X^{\delta} +$ $2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \nabla^{\lambda} \partial^{\beta} \partial^{\alpha} \nabla^{\lambda} \partial^{\beta} \partial^{\alpha} \nabla^{\lambda} \partial^{\beta} \partial^{\alpha} \nabla^{\lambda} \partial^{\beta} \partial^{\alpha} \partial^{\alpha} \partial^{\alpha$
$3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} t^{\beta \chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\alpha} t^{\chi \beta} +$ $3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} t^{\alpha \chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} t^{\chi \alpha} +$ $2 \eta^{\alpha \beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\epsilon} t^{\chi}$ $3 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \partial^{\beta} \chi^{\delta} + 3 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha} \chi^{\delta} +$ $2 \eta^{\alpha \beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\kappa} \partial^{\kappa$
$3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} t^{\alpha \chi} + 3 \partial_{\delta} \partial^{\delta} \partial_{\chi} \partial^{\beta} t^{\chi \alpha} +$ $2 \eta^{\alpha \beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\epsilon} t^{\chi}$ $== 0$ $3 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \partial^{\beta} X^{\delta} + 3 \partial_{\delta} \partial_{\chi} \partial^{\beta} \partial^{\alpha} X^{\delta} +$ $2 \eta^{\alpha \beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \partial_{\chi} = 2 \partial_{\delta} \partial^{\beta} \partial^{\alpha} \partial^{\chi} \partial_{\chi} \partial^{\beta} \partial^{\alpha} \partial^{\chi} \partial^{\beta} \partial^{\alpha} \partial^{\lambda} \partial^{\beta} \partial^{\alpha} \partial^{\alpha} \partial^{\alpha} \partial^{\alpha} \partial^{\beta} \partial^{\alpha} \partial$
$ 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\epsilon} \tau^{X}_{X} $ $ == 0 $ $ 3 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\beta X \delta} + 3 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\alpha X \delta} + $ $ 2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \sigma^{X \delta}_{X} == 2 \partial_{\delta} \partial^{\beta} \partial^{\alpha} \sigma^{X \delta}_{X} $
$= 0 \qquad 3 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\beta \chi \delta} + 3 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\alpha \chi \delta} + 2 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\alpha \chi \delta} + 2 \partial_{\delta} \partial_{\kappa} \partial^{\beta} \sigma^{\alpha \chi \delta} + 2 \partial_{\kappa} \partial_{\kappa} \partial^{\beta} \partial_{\kappa} \partial^{\kappa \kappa} \partial^{\kappa} \partial^{\kappa$
$2 \eta^{\alpha\beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \sigma^{X\delta} = 2 \partial_{\delta} \partial^{\beta} \partial^{\alpha} \sigma^{X\delta}$
$(\partial_{\delta}\partial_{\delta}\partial_{\chi}\sigma^{\alpha\lambda\nu} + \partial_{\delta}\partial_{\delta}\partial_{\chi}\sigma^{\nu\lambda\alpha})$
$(\mathcal{A}_{\chi}^{\nu\chi\alpha})$

0	0	0	0	0	0	0	$\alpha$ $t_1^{\#1}$	0	0	0	0	0	0	0				
0	0	0	0	0	0	0	$\sigma_{1}^{\#2}$	0	0	0	0	0	0	0				
							$\sigma_{1}^{\#1}{}_{lpha}$	0	0	0	0	0	0	0				
$\frac{1}{3}\bar{I}\sqrt{2}kt_2$	<u>ikt2</u> 3	$\frac{k^2 t_2}{3}$	0	0	0	0	$\tau_{1}^{\#1}_{+}\alpha_{\beta}$	$\frac{3i\sqrt{2}k}{(3+k^2)^2t_2}$	$\frac{3ik}{(3+k^2)^2t_2}$	$\frac{3k^2}{(3+k^2)^2t_2}$	0	0	0	0				
$\frac{\sqrt{2}t_2}{3}$	1.5 3	$-\frac{1}{3}$ I k $t_2$	0	0	0	0	$\sigma_{1}^{\#2}{}_{lphaeta}$	$\frac{3\sqrt{2}}{(3+k^2)^2t_2}$	$\frac{3}{(3+k^2)^2 t_2}$	$\frac{3ik}{(3+k^2)^2t_2}$	0	0	0	0	$\sigma_{2^{ ext{-}}}^{\#1}{}_{lphaeta\chi}$	0	0	0
$\frac{2t_2}{3}$	$\frac{\sqrt{2}t_2}{3}$	$\bar{l}\sqrt{2}kt_2$	0	0	0	0				ı					$\tau_{2}^{\#1}_{2}$	0	0	0
		- <u>1</u> 3					$\sigma_{1}^{\#1}{}_{\alpha\beta}$	$\frac{6}{(3+k^2)^2 t_2}$	$\frac{3\sqrt{2}}{(3+k^2)^2t_2}$	$-\frac{3i\sqrt{2}k}{(3+k^2)^2t_2}$	0	0	0	0	$\sigma_{2}^{\#1}{}_{lphaeta}$	0	0	0
$\mathcal{A}_{1}^{\#1} + \alpha \beta$	$\mathcal{A}_{1}^{\#2} \dagger^{\alpha \beta}$	$f_{1+}^{#1} \dagger^{\alpha \beta}$	$\mathcal{A}_{1^{\bar{-}}}^{\#1}  \dagger^{\alpha}$	$\mathcal{A}_{1}^{\#2} \dagger^{lpha}$	$f_{1}^{\#1} \dagger^{\alpha}$	$f_{1}^{\#2} \dagger^{lpha}$		$\sigma_{1}^{\#1} + ^{lphaeta}$	$\sigma_{1}^{\#2} + \alpha \beta$	$\tau_{1}^{\#1} + \alpha \beta$	$\sigma_{1}^{\#1} +^{\alpha}$	$\sigma_{1}^{\#2} +^{\alpha}$	$ au_{1}^{\#1} +^{lpha}$	$t_1^{\#2} + \alpha$		$\sigma_2^{\#1} + \alpha^{\beta}$	$\tau_2^{\#1} + \alpha \beta$	$\sigma_{2^{-}}^{\#1} +^{lphaeta\chi}$
																		5

 $\mathcal{A}_{0}^{\#1} f_{0}^{\#1} f_{0}^{\#2} \mathcal{A}_{0}^{\#1}$ 

0 0

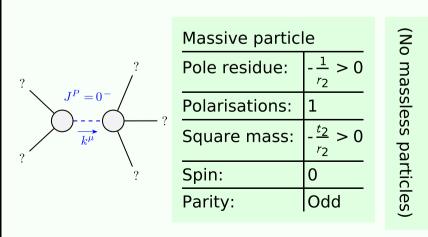
0 0 0 0 0

0 0 0 0 0 0

0 0 0 0 0 0

 $\mathcal{A}_{2^{+}\alpha\beta}^{\#1} \, f_{2^{+}\alpha\beta}^{\#1} \, \mathcal{A}_{2^{-}\alpha\beta\chi}^{\#1}$ 

## Massive and massless spectra



## Unitarity conditions