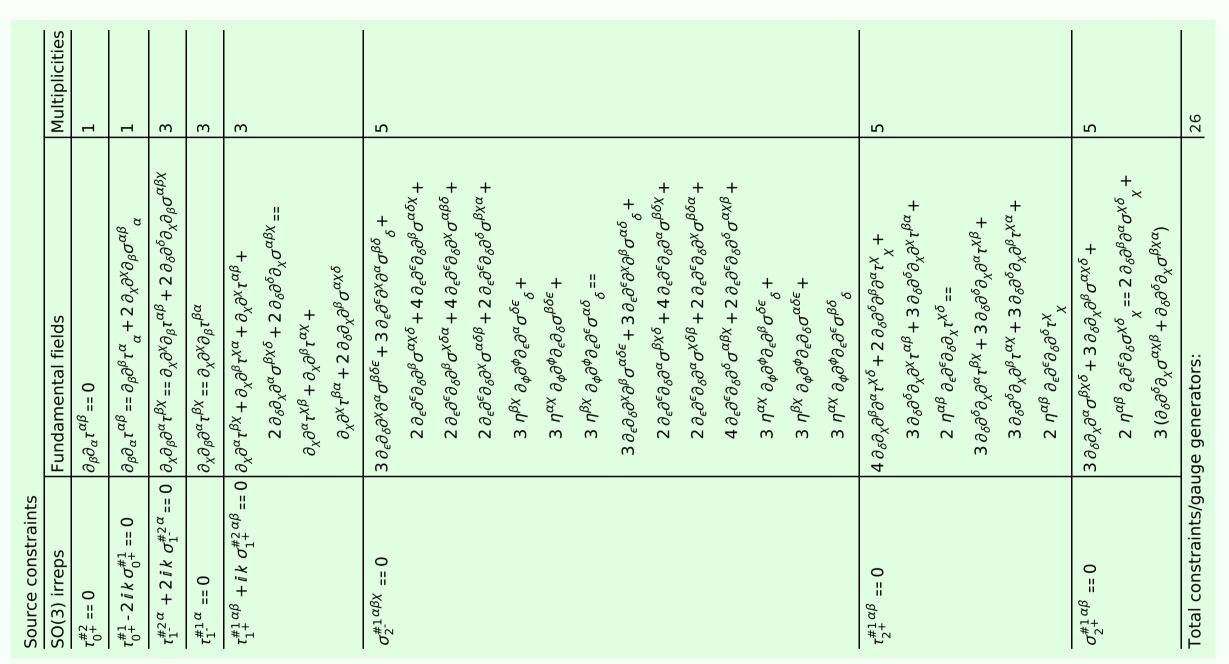
## Particle spectrograph

Wave operator and propagator



	<b>~</b>												
	$\partial_i f^{\alpha i}$ - $8 t_{\bar{i}}$	$f_{\alpha}^{\theta}$ -	$^{\prime}\partial^{\theta}f^{\alpha\prime}$ -			A <sup>αβι</sup> -						<i>د</i> +	7#1
	$+8t_3\mathcal{A}_{\alpha}^{\ \  heta}$	+ 4 $t_3$ 0, $f^{lpha\prime}$ 0 $_ heta$	$^{x\prime} + 2 t_2  \partial_{\alpha} f_{I\theta}$	$\partial_{\theta}f_{\alpha_{I}}\partial_{\theta}f^{\alpha_{I}}$ -	$+ ({}_{l} f_{\alpha l}) +$	$r_2\partial_{oldsymbol{eta}}\mathcal{A}_{lpha\scriptscriptstyle I}{}_{oldsymbol{eta}}\partial_{oldsymbol{eta}}$	$_{\alpha}\partial^{ heta}\mathcal{A}^{lphaeta_{l}}$ -	$_{3'}\partial ^{ heta}\mathcal{A}^{lphaeta_{l}}$ -	$_{\kappa}\partial^{ heta}\mathcal{A}^{lpha\prime}{}_{lpha}$ -	$\partial_{\kappa}\mathcal{A}_{\mu}^{\ \ \ \ }+$	$^{\alpha\prime\theta}\partial_{\kappa}\mathcal{R}_{\theta^{\prime\prime}}^{\prime}$ -	] מב מץ מצ מ	J#2
	$\mathcal{A}^{lphaeta\chi}\;\sigma_{lphaeta\chi}$ .	$_3\partial_1 f^{\theta}_{}\partial^1 f^{lpha}_{}$ -	$t_2 \mathcal{A}_{1\theta\alpha} \partial^{\theta} f^{c}$	$f_{\alpha\theta}\partial^{\theta}f^{\alpha\prime}+t_{2}$	$\mathcal{A}_{\alpha\theta_{I}}$ ( $\mathcal{A}^{\alpha_{I}\theta}$	$2\partial^{\theta}f^{\alpha\prime}) + 8,$	$+4r_2\partial_{eta}\mathcal{A}_{, heta}$	$+2r_2\partial_\theta\mathcal{A}_{\alpha\beta}$	$+6r_5\partial_i\mathcal{R}_{\theta}^{K}$	$-6r_5\partial_{lpha}\mathcal{A}^{lpha\prime heta}$	$_{\theta}^{\prime}+6r_{5}\partial_{\alpha}\mathcal{A}^{\prime}$	$_{'}^{\kappa}))[t,  x,  y,  z$	G#1
	$f^{\alpha\beta}  \tau_{\alpha\beta} + 6$	$_{\theta} \partial' f^{\alpha}_{\alpha} + 4 t_{\bar{z}}$	$f^{\alpha}_{\ \alpha}\partial_{\theta}f^{\ \theta}_{\ \ }+4$	$_{9_{1}}\partial ^{ heta}f^{lpha \prime}$ - $_{t_{2}}\partial _{ij}$	$_{\alpha}\partial^{\theta}f^{\alpha\prime}$ - 4 $t_{2}$	$(_{\alpha \prime  heta} (\mathcal{A}^{lpha \prime eta} +$	$\mathcal{A}_{\alpha\theta_{l}}\partial^{\theta}\mathcal{A}^{\alpha\beta_{l}}$	$\mathcal{A}_{lphaeta heta}\partial^{ heta}\mathcal{A}^{lphaeta_{ert}}$	$\mathcal{A}_{\alpha\prime\beta}\partial^{\theta}\mathcal{A}^{\alpha\beta\prime}$	$\mathcal{A}_{,\ \kappa}^{\ \kappa}\partial^{ heta}\mathcal{A}^{lpha'}_{\ lpha}$	$^{eta}$ $^{eta}$ $^{eta}$ $^{eta}$ $^{eta}$ $^{eta}$	$\partial^{ heta}\mathcal{A}^{lpha_{ert}}\partial_{\kappa}\mathcal{A}_{eta}$	T#1
action	$(\alpha')^{\alpha'} \mathcal{A}^{\theta}_{\beta} + 6$	$^{ heta}$	$8t_3\theta'_j$	$t_2  \partial_{\alpha} f_{\ \ }$	$t_2\partial_{ heta} f_{\prime}$	$2t_2 \mathcal{A}$	$4 r_2 \partial_{\beta}$	$2r_2\partial_{\nu}$	$4 r_2 \partial_{\theta}$	$6r_5\partial_{\theta}$	12 r <sub>5</sub> ć	12 r <sub>5</sub> ĉ	O#2
atic (free)	$(rac{1}{6} \ (-4  t_3  \mathcal{A})$												O#1
	Quadratic (free) action	uadratic (free) action == $\iiint_{\epsilon} (-4t_3  \mathcal{A}^{\alpha_l}_{\alpha}  \mathcal{A}^{\theta}_{l} + 6  f^{\alpha\beta}  \tau_{\alpha\beta} + 6  \mathcal{A}^{\alpha\beta\chi}  \sigma_{\alpha\beta\chi} + 8t_3  \mathcal{A}^{\theta}_{\alpha}  \theta  \partial_l f^{\alpha_l} - 8t_3$	atic (free) action	atic (free) action $ \begin{pmatrix} \frac{1}{6} \left( -4t_3 \mathcal{A}^{\alpha\prime}_{\alpha} \mathcal{A}^{\beta}_{i} + 6f^{\alpha\beta} \tau_{\alpha\beta} + 6\mathcal{A}^{\alpha\beta\chi} \sigma_{\alpha\beta\chi} + 8t_3 \mathcal{A}^{\beta}_{\alpha} \theta_{\beta} \beta_i f^{\alpha\prime} - 8t_3 \\ \mathcal{A}^{\beta}_{i} \theta^{\partial} f^{\alpha}_{\alpha} + 4t_3 \partial_i f^{\theta}_{\alpha} \theta^{\partial} f^{\alpha}_{\alpha} + 4t_3 \partial_i f^{\alpha}_{\alpha} \theta_{\beta} f^{\alpha\prime} - 8t_3 \partial_i f^{\alpha}_{\alpha} \partial_{\theta} f^{\alpha\prime} + 2t_2 \partial_{\alpha} f_{i\theta} \partial^{\theta} f^{\alpha\prime} - 6t_3 \partial_{\theta} f^{\alpha\prime} + 6t_3 \mathcal{A}^{\beta}_{i} \theta^{\partial} f^{\alpha\prime}_{\alpha} - 6t_3 \partial_{\theta} f^{\alpha\prime}_{\alpha$	atic (free) action	atic (free) action $ \frac{1}{6} \left( -4t_3\mathcal{A}^{\alpha\prime}_{\alpha}\mathcal{A}^{\beta}_{i,\theta} + 6f^{\alpha\beta}\tau_{\alpha\beta} + 6\mathcal{A}^{\alpha\beta\chi}_{\alpha}\sigma_{\alpha\beta\chi} + 8t_3\mathcal{A}^{\beta}_{\alpha\theta}\partial_i f^{\alpha\prime}_{i} - 8t_3 \\ \mathcal{A}^{\beta}_{i,\theta}\partial^i f^{\alpha}_{\alpha} + 4t_3\partial_i f^{\theta}_{\theta}\partial^i f^{\alpha}_{\alpha} + 4t_3\partial_i f^{\alpha\prime}_{\alpha}\partial_\theta f^{\alpha\prime}_{\alpha} - 8t_3\partial_i f^{\alpha\prime}_{\alpha}\partial_\theta f^{\alpha\prime}_{\alpha} - 4t_2\mathcal{A}_{i\theta\alpha}\partial^\theta f^{\alpha\prime}_{\alpha} + 2t_2\partial_\theta f_{\alpha\prime}\partial^\theta f^{\alpha\prime}_{\alpha} - t_2\partial_i f_{\alpha\theta}\partial^\theta f^{\alpha\prime}_{\alpha} + t_2\partial_\theta f_{\alpha\prime}\partial^\theta f^{\alpha\prime}_{\alpha} - t_2\partial_i f_{\alpha\theta}\partial^\theta f^{\alpha\prime}_{\alpha} + t_2\partial_\theta f_{\alpha\prime}\partial^\theta f^{\alpha\prime}_{\alpha} - t_2\partial_i f_{\alpha\theta}\partial^\theta f^{\alpha\prime}_{\alpha} + t_2\mathcal{A}_{\alpha\theta\prime}(\mathcal{A}^{\alpha\prime\theta} + \partial^\theta f^{\alpha\prime}_{\alpha}) + t_2\partial_\theta f_{\alpha\prime}\partial^\theta f^{\alpha\prime}_{\alpha} - 4t_2\mathcal{A}_{\alpha\theta\prime}(\mathcal{A}^{\alpha\prime\theta} + \partial^\theta f^{\alpha\prime}_{\alpha}) + t_2\partial_\theta f_{\alpha\prime}\partial^\theta f^{\alpha\prime}_{\alpha} - t_2\partial_\theta f_{\alpha\prime}\partial^\theta f^{\alpha\prime}_{\alpha$	atic (free) action	atic (free) action $ \frac{1}{6} (-4t_3  \mathcal{A}^{\alpha_l}  \mathcal{A}_{\alpha}^{} + 6  f^{\alpha\beta}  t_{\alpha\beta} + 6  \mathcal{A}^{\alpha\beta\chi}  \sigma_{\alpha\beta\chi} + 8t_3  \mathcal{A}_{\alpha}^{} \partial_{\beta} f^{\alpha_l} - 8t_3 $ $ \mathcal{A}_{,$	atic (free) action $ \frac{1}{6} (-4t_3  \mathcal{A}^{\alpha \prime}_{\alpha}  \mathcal{A}^{\beta}_{i} + 6  f^{\alpha \beta}  t_{\alpha \beta} + 6  \mathcal{A}^{\alpha \beta \times}  \sigma_{\alpha \beta \times} + 8  t_3  \mathcal{A}^{\beta}_{\alpha}  \partial_i f^{\alpha \prime} - 8  t_3 \\ \mathcal{A}^{\beta}_{i}  \partial^j f^{\alpha}_{\alpha} + 4  t_3  \partial_i f^{\theta}_{\beta}  \partial^j f^{\alpha}_{\alpha} + 4  t_3  \partial_i f^{\alpha \prime}  \partial_{\theta} f^{\alpha \prime} - 8  t_3  \partial_i f^{\alpha \prime}  \partial_{\theta} f^{\alpha \prime} - 8  t_3  \partial_i f^{\alpha \prime}  \partial_{\theta} f^{\alpha \prime} - 4  t_2  \mathcal{A}_{i \beta \alpha}  \partial^{\theta} f^{\alpha \prime} + 2  t_2  \partial_{\alpha} f_{i \beta}  \partial^{\theta} f^{\alpha \prime} - 4  t_2  \mathcal{A}_{i \beta \alpha}  \partial^{\theta} f^{\alpha \prime} + t_2  \partial_{\theta} f^{\alpha \prime} - 4  t_2  \mathcal{A}_{i \beta \alpha}  \partial^{\theta} f^{\alpha \prime} + 1  d_{\alpha} \partial^{\theta} f^{\alpha \prime} - 4  d_{\alpha}  \mathcal{A}_{i \beta \alpha}  \partial^{\theta} f^{\alpha \prime} + 2  \partial^{\theta} f^{\alpha \prime} + 8  t_2  \partial_{\theta} \mathcal{A}_{\alpha \beta \prime} - 4  t_2  \partial_{\theta} \mathcal{A}_{\alpha \beta \prime} - 4  t_2  \partial_{\theta} \mathcal{A}_{\alpha \beta \prime} - 4  d_{\alpha} \partial^{\theta} \mathcal{A}_{\alpha \beta \prime} - 4  d_{$	atic (free) action $ \frac{1}{6} \left( -4t_3  \mathcal{A}^{\alpha l}  \mathcal{A}_{\beta}^{\ \theta} + 6  f^{\alpha \beta}  \tau_{\alpha \beta} + 6  \mathcal{A}^{\alpha \beta \chi}  \sigma_{\alpha \beta \chi} + 8t_3  \mathcal{A}_{\alpha}^{\ \theta}  \partial_l f^{\alpha l} - 8t_3 \right) $ $ \mathcal{A}_{l, \theta}^{\ \theta}  \partial^l f^{\alpha}_{\alpha} + 4t_3  \partial_l f^{\theta}_{\alpha}  \partial^l f^{\alpha}_{\alpha} + 4t_3  \partial_l f^{\alpha l}  \partial_{\theta} f^{\alpha l} - 8t_3  \partial_l f^{\alpha l}  \partial_{\theta} f^{\alpha l} - 4t_2  \mathcal{A}_{l \theta \alpha}  \partial^{\theta} f^{\alpha l} + 2t_2  \partial_{\alpha} f_{l \theta}  \partial^{\theta} f^{\alpha l} - t_2  \partial_l f_{\alpha \theta}  \partial^{\theta} f^{\alpha l} + t_2  \partial_{\theta} f^{\alpha l} + 2t_2  \partial_{\theta} f^{\alpha l} + 8t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta}  \partial^{\theta} \mathcal{A}_{\alpha l} - 4t_2  \mathcal{A}_{\alpha \theta l}  (\mathcal{A}^{\alpha l \theta} + 2  \partial^{\theta} f^{\alpha l}) + 8t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} - 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} - 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} - 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} - 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} - 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} - 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} - 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} + 2t_2  \partial_{\theta} \mathcal{A}_{\alpha l \theta} - 2t_2  \partial_{\theta} \mathcal{A}$	atic (free) action $ \frac{1}{6} (-4t_3  \mathcal{A}^{\alpha\prime}_{\ \alpha}  \mathcal{A}^{ \theta}_{\ \beta} + 6  f^{\alpha\beta}  \tau_{\alpha\beta} + 6  \mathcal{A}^{\alpha\beta\chi}  \sigma_{\alpha\beta\chi} + 8t_3  \mathcal{A}^{ \theta}_{\ \alpha}  \partial_i f^{\alpha\prime}_{\ \alpha} - 8t_3 \\ \mathcal{A}^{ \theta}_{\ \beta}  \partial^i f^{\alpha}_{\ \alpha} + 4t_3  \partial_i f^{\theta}_{\ \theta}  \partial^j f^{\alpha}_{\ \alpha} + 4t_3  \partial_i f^{\alpha\prime}_{\ \theta}  \partial_i f^{\alpha\prime}_{\ \alpha} - 8t_3  \partial_i f^{\alpha\prime}_{\ \alpha} - 8t$	atic (free) action $ \frac{1}{6} (-4t_3  \mathcal{A}^{\alpha l}  \alpha_{\beta} + 6  f^{\alpha \beta}  t_{\alpha \beta} + 6  \mathcal{A}^{\alpha \beta \chi}  \sigma_{\alpha \beta \chi} + 8  t_3  \mathcal{A}^{\ \theta}_{\alpha}  \partial_{\beta} f^{\alpha l} - 8  t_3 \\ \mathcal{A}^{\ \theta}_{,  \theta}  \partial^{\prime} f^{\alpha}_{ \alpha} + 4  t_3  \partial_{\prime} f^{\theta}_{ \theta}  \partial^{\prime} f^{\alpha}_{ \alpha} + 4  t_3  \partial_{\prime} f^{\alpha l}  \partial_{\theta} f^{\alpha l} - 8  t_3 \\ \mathcal{A}^{\ \theta}_{,  \theta}  \partial^{\prime} f^{\alpha}_{ \alpha} + 4  t_2  \partial_{\prime} f^{\theta}_{ \alpha}  \partial^{\prime} f^{\alpha l} + 2  t_2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} + 2  \partial_{\sigma} f^{\alpha l} - 2  \partial_{\sigma} f^{\alpha l} + 2 $	atic (free) action $ \begin{aligned} \frac{1}{6} \left( -4t_3  \mathcal{A}^{\alpha}_{\alpha}  \mathcal{A}^{\theta}_{\theta} + 6  f^{\alpha\beta}  t_{\alpha\beta} + 6  \mathcal{A}^{\alpha\beta\chi}  \sigma_{\alpha\beta\chi} + 8t_3  \mathcal{A}^{\theta}_{\alpha}  \partial_{\tau} f^{\alpha \prime} - 8t_3 \\ \mathcal{A}^{\theta}_{\theta}  \partial^{\prime} f^{\alpha}_{\alpha} + 4t_3  \partial_{\prime} f^{\theta}_{\theta}  \partial^{\prime} f^{\alpha}_{\alpha} + 4t_3  \partial_{\prime} f^{\alpha \prime}  \partial_{\theta} f^{\alpha \prime} - \\ \mathcal{A}^{\theta}_{\beta}  \partial^{\prime} f^{\alpha}_{\alpha} + 4t_2  \partial_{\prime} f^{\theta}_{\theta}  \partial^{\prime} f^{\alpha}_{\alpha} + 2t_2  \partial_{\alpha} f^{\theta}_{\theta}  \partial^{\prime} f^{\alpha \prime} - \\ \mathcal{A}^{2}  \partial_{\sigma} f^{\theta}_{\theta}  \partial^{\prime} f^{\alpha \prime}_{\alpha} - t_2  \mathcal{A}_{\theta\theta}_{\theta}  (\mathcal{A}^{\alpha\prime\theta}_{\theta} + 3\theta^{\prime} f^{\alpha\prime}_{\alpha}) + \\ \mathcal{A}^{2}  \partial_{\theta} f^{\alpha\prime}_{\alpha} - 4t_2  \mathcal{A}_{\alpha\theta}_{\theta}  (\mathcal{A}^{\alpha\prime\theta}_{\theta} + 3\theta^{\prime} f^{\alpha\prime}_{\alpha}) + \\ \mathcal{A}^{2}  \partial_{\theta} f^{\alpha\prime}_{\alpha} + 2t_2  \partial_{\theta} f^{\alpha\prime}_{\alpha} + 8t_2  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\alpha} - \\ \mathcal{A}^{2}  \partial_{\theta} f^{\alpha\prime\theta}_{\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 8t_2  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 8t_2  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 8t_2  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 6  f^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 6  f^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 6  f^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 6  f^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 6  f^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\alpha\theta} + 2  \partial^{\prime} f^{\alpha\prime}_{\theta} + 6  f^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\theta} - \\ \mathcal{A}^{2}  \partial_{\theta} \mathcal{A}_{\alpha\theta}_{\alpha\theta} + 2  \partial_{\sigma} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial_{\sigma} \mathcal{A}_{\alpha\theta}_{\theta} + 2  \partial_{\sigma} \mathcal{A}_{\alpha\theta}_{\theta} - 2  \partial_{\sigma} \mathcal{A}_{\alpha\theta}$

$\tau_{1}^{\#2}{}_{\alpha}$	0	0	0	2 i kr5+2 k <sup>3</sup> r5	$\frac{i\sqrt{2}(3k^2r_5+2t_3)}{k(1+2k^2)^2r_5t_3}$	0	$\frac{6k^2r_5+4t_3}{(1+2k^2)^2r_5t_3}$									
$\tau_{1^{-}}^{\#1}{}_{\alpha}$	0	0	0	0	$0 \qquad \frac{\sqrt{k}\sqrt{2}}{k(1)}$	0	0	$f_{1^{ ext{-}}lpha}^{\#2}$	0	0	0	$-\frac{2}{3}\bar{l}kt_3$	$\frac{1}{3}\bar{l}\sqrt{2}kt_3$	0	$\frac{2k^2t_3}{3}$	
$\sigma_{1}^{\#2}{}_{lpha}$	0	0	0	$\frac{\sqrt{2}}{k^2 r_5 + 2 k^4 r_5}$	$3k^2r_5+2t_3$ $(k+2k^3)^2r_5t_3$	0	$-\frac{i\sqrt{2}(3k^2r_5+2t_3)}{k(1+2k^2)^2r_5t_3}$	$f_{1^{ ext{-}}lpha}^{\#1}$	0	0	0	0	0	0	0	
$\sigma_1^{\sharp}$				γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ	$\frac{3k^2r_1}{(k+2k^3)^2}$	)	$-\frac{i\sqrt{2}(3k)}{k(1+2)}$	${\mathcal A}_{1^-}^{\#2}{}_{lpha}$	0	0	0	$\frac{\sqrt{2} t_3}{3}$	<del>ر</del> غ ع	0	$-\frac{1}{3}\vec{l}\sqrt{2}kt_3$	
$\sigma_{1^-}^{\#1}{}_{lpha}$	0	0	0	$\frac{1}{k^2 r_5}$	$\frac{\sqrt{2}}{k^2 r_5 + 2k^4 r_5}$	0	$\frac{2i}{kr_5+2k^3r_5}$	α				$\frac{2t_3}{3}$	<u>دا</u>			
	 r <sub>5</sub>	$\frac{2t_2)}{5t_2}$	t2 5 t2		k <sup>2</sup> r		 kr	$\mathcal{A}_{1}^{\#1}$	0	0	0	$k^2 r_5 +$	$-\frac{\sqrt{2}t_3}{3}$	0	2 i k t 3	
$\tau_1^{\#1}_{+\alpha\beta}$	$-\frac{i\sqrt{2}}{kr_5+k^3r_5}$	$\frac{i(3k^2r_5+2t_2)}{k(1+k^2)^2r_5t_2}$	$\frac{3k^2r_5+2t_2}{(1+k^2)^2r_5t_2}$	0	0	0	0	$f_{1}^{\#1}$	$i \sqrt{2} kt_2$	<u>i kt2</u> 3	$\frac{k^2 t_2}{3}$	0	0	0	0	Ś
$\sigma_{1}^{\#2}$	$-\frac{\sqrt{2}}{k^2 r_5 + k^4 r_5}$	$3k^2r_5 + 2t_2$ $(k+k^3)^2r_5t_2$	$-\frac{i(3k^2r_5+2t_2)}{k(1+k^2)^2r_5t_2}$	0	0	0	0	${\cal A}_{1}^{\#2}{}_{+}$	$\frac{\sqrt{2}t_2}{3}  \frac{1}{3} i$	\$\frac{t_2}{3}	ikt <sub>2</sub>	0	0	0	0	${\mathcal F}$
0	- <u> </u>							$^{[}_{lphaeta}$	$\frac{2t_2}{3}$		$\sqrt{2} kt_2 \left  -\frac{1}{3} \right $					σ
$\sigma_{1}^{\#1}{}_{+}\alpha\beta$	$\frac{1}{k^2 r_5}$	$\frac{\sqrt{2}}{k^2 r_5 + k^4 r_5}$	$\frac{i\sqrt{2}}{kr_5+k^3r_5}$	0	0	0	0	${\mathscr A}_1^{\#1}$	$k^2 r_5 +$	$\frac{\sqrt{2} t_2}{3}$	$-\frac{1}{3}\vec{l}$	0	0	0	0	τ
	$\sigma_{1}^{\#1} + \alpha \beta$	$\sigma_{1}^{#2} + \alpha \beta$	$\tau_1^{\#1} + ^{\alpha \beta}$	$\sigma_{1}^{\#1} +^{lpha}$	$\sigma_{1}^{\#2} +^{\alpha}$	$\tau_{1}^{\#1} + ^{\alpha}$	$\tau_{1}^{\#2} + \alpha$		$\mathcal{A}_{1}^{\#1} \dagger^{\alpha\beta}$	$\mathcal{A}_{1}^{\#2} + \alpha^{\beta}$	$f_1^{\#1} + \alpha^{\beta}$	$\mathcal{A}_{1}^{\#_{1}} \dagger^{\alpha}$	$\mathcal{A}_{1}^{\#2} +^{\alpha}$	$f_{1}^{\#1} \dagger^{\alpha}$	$f_1^{\#2} + \alpha$	τ
	$\mathcal{P}_{\square}$	$\mathcal{P}_{\square}$	<b>1</b>	)	)	-			$\mathcal{L}$	$\mathcal{L}$	f	۲,)	۲.)			0

 $\sigma_{2^{+}\alpha\beta}^{\sharp 1} \phantom{\alpha\beta} \phantom{\alpha\beta$ 

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

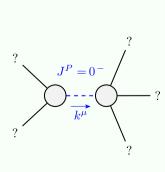
 $-\frac{i\sqrt{2}k}{(1+2k^2)^2t_3}$ 

 $\frac{2\,k^2}{(1+2\,k^2)^2\,t_3}$ 

 $\frac{1}{(1+2\,k^2)^2\,t_3}$ 

 $\frac{i \sqrt{2} k}{(1+2k^2)^2 t_3}$ 

## Massive and massless spectra



Massive partic	(No	
Pole residue:	ma	
Polarisations:	ssles	
Square mass:	ss pa	
Spin:	0	rtic
Parity:	Odd	les)

Unitarity conditions

 $r_2 < 0 \&\& t_2 > 0$