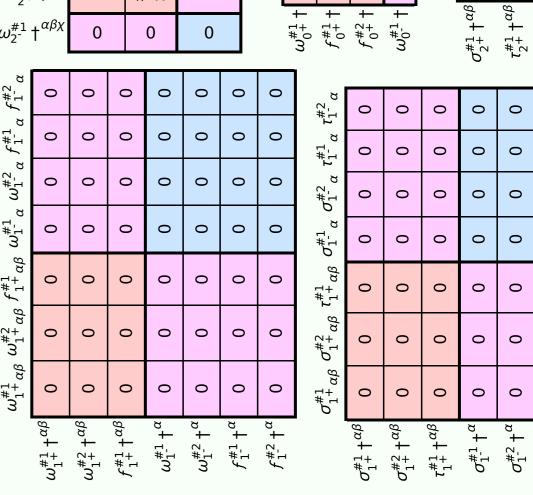
Particle spectrograph

Wave operator and propagator

	,	
SO(3) irreps Funda	SO(3) irreps Fundamental fields	Multiplicities
$\sigma_{0}^{\#1} == 0$	$\epsilon \eta_{\alpha\beta\chi\delta} \partial^{\delta} \sigma^{\alpha\beta\chi} == 0$	1
$\tau_0^{\#2} == 0$	$\partial_{\beta}\partial_{\alpha}\tau^{\alpha\beta} == 0$	1
$\sigma_{0}^{\#1} = 0$	$\partial_{\beta}\sigma^{\alpha\beta}_{\alpha} == 0$	-
$\tau_{1}^{\#2\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau^{\alpha\beta}$	е
$\tau_{1}^{\#1}{}^{\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\partial^{\alpha}\tau^{\beta\chi} == \partial_{\chi}\partial^{\chi}\partial_{\beta}\tau^{\beta\alpha}$	е
$\sigma_{1}^{\#2\alpha} == 0$	$\partial_{\chi}\partial_{\beta}\sigma^{\alpha\beta\chi} == 0$	е
$\sigma_{1}^{\#1}{}^{\alpha} == 0$	$\partial_{\chi}\partial^{\alpha}\sigma^{\beta\chi}_{\beta} + \partial_{\chi}\partial^{\chi}\sigma^{\alpha\beta}_{\beta} == \partial_{\chi}\partial_{\beta}\sigma^{\alpha\beta\chi}$	8
$\tau_{1}^{\#1}{}^{\alpha\beta} == 0$	$\partial_{\chi}\partial^{\alpha}\tau^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau^{\alpha\beta} = =$	е
	$\partial_{\chi}\partial^{\alpha} \iota^{\chi\beta} + \partial_{\chi}\partial^{\beta} \iota^{\alpha\chi} + \partial_{\chi}\partial^{\chi} \iota^{\beta\alpha}$	
$\sigma_1^{\#2}\alpha\beta==0$	$\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\beta\chi\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\beta\chi} == \partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\alpha\chi\delta}$	8
$\sigma_1^{\#1}\alpha\beta=0$	$\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\beta\chi\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\alpha\chi\beta} == \partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\alpha\chi\delta} + \partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\beta\chi\alpha}$	3
$\sigma_{2^{-}}^{\#1}\alpha\beta\chi == 0$	$3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\alpha} \sigma^{\beta \delta \epsilon} + 3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\alpha} \sigma^{\beta \delta} +$	2
	$2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\alpha \chi \delta} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\alpha \delta \chi} +$	
	$2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\beta} \sigma^{\chi \delta \alpha} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\alpha \beta \delta} +$	
	$2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\alpha \delta \beta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\beta \chi \alpha} +$	
	$3 \eta^{\beta\chi} \partial_{\phi} \partial_{\epsilon} \partial_{\alpha} \sigma^{\delta \epsilon}{}_{\delta} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\beta \delta \epsilon} +$	
	$3 \eta^{\beta \chi} \partial_{\phi} \partial_{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{\alpha \delta}{}_{\delta} == 3 \partial_{\epsilon} \partial_{\delta} \partial^{\chi} \partial^{\beta} \sigma^{\alpha \delta \epsilon} +$	
	$3 \partial_{\epsilon} \partial^{\epsilon} \partial^{\chi} \partial^{\beta} \sigma^{\alpha \delta}{}_{\delta} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\beta \chi \delta} +$	
	$4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\beta \delta \chi} + 2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha} \sigma^{\chi \delta \beta} +$	
	$2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\chi} \sigma^{\beta \delta \alpha} + 4 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\delta} \sigma^{\alpha \beta \chi} +$	
	$2 \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \partial^{\alpha \chi \beta} + 3 \eta^{\alpha \chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\beta} \sigma^{\delta \epsilon}_{\delta} +$	
	$3 \eta^{eta\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial_{\delta} \sigma^{\alpha\delta\epsilon} + 3 \eta^{\alpha\chi} \partial_{\phi} \partial^{\phi} \partial_{\epsilon} \partial^{\epsilon} \sigma^{eta\delta}$	
$\sigma_2^{\#1}{}^{\alpha\beta} == 0$	$3 \partial_{\delta} \partial_{\chi} \partial^{\alpha} \sigma^{\beta \chi \delta} + 3 \partial_{\delta} \partial_{\chi} \partial^{\beta} \sigma^{\alpha \chi \delta} + 2 \eta^{\alpha \beta} \partial_{\epsilon} \partial^{\epsilon} \partial_{\delta} \sigma^{\chi \delta} = =$	2
	$2 \partial_{\delta} \partial^{\beta} \partial^{\alpha} \sigma^{\chi \delta}_{\chi} + 3 (\partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\alpha \chi \beta} + \partial_{\delta} \partial^{\delta} \partial_{\chi} \sigma^{\beta \chi \alpha})$	
Total constraints/dailde	aints/dailde denerators	34

		$\iiint (f^{\alpha\beta} \ \tau_{\alpha\beta} + \omega^{\alpha\beta\chi} \ \sigma_{\alpha\beta\chi} + \frac{1}{2} \lambda (-4 \ \omega_{\alpha}^{\ \theta} \ \partial_{,} f^{\alpha\prime} + 4 \partial_{,} \omega^{\alpha\prime}_{\ \alpha} + 4 \ \omega_{,\ \theta}^{\ \theta} \ \partial^{\prime} f^{\alpha}_{\ \alpha} - 2$	$\partial_{i}f^{\theta}_{}\partial^{i}f^{\alpha}_{}$ - $2\partial_{i}f^{\alpha i}\partial_{\theta}f^{\theta}_{} + 4\partial^{i}f^{\alpha}_{}\partial_{\theta}f^{\theta}_{}$ -	$4\ f^{\alpha\prime}\ (\partial_{i}\omega_{\alpha}^{\ \theta}-\partial_{\theta}\omega_{\alpha}^{\ \theta})-4\ f^{\alpha}_{\ \alpha}\ \partial_{\theta}\omega^{\prime\theta}_{\ \prime}+4\ \omega_{\alpha\theta\prime}\ \partial^{\theta}f^{\alpha\prime}-$	$2 \partial_{\alpha} f_{,\theta} \partial^{\theta} f^{\alpha \prime} - \partial_{\alpha} f_{\theta \prime} \partial^{\theta} f^{\alpha \prime} + \partial_{\beta} f_{\alpha \theta} \partial^{\theta} f^{\alpha \prime} +$	$\partial_{\theta}f_{\alpha_{l}}\partial^{\theta}f^{\alpha_{l}}+\partial_{\theta}f_{l\alpha}\partial^{\theta}f^{\alpha_{l}}))[t,x,y,z]dzdydxdt$	$\omega_{2}^{\#1}$ $f_{2}^{\#1}$	$\frac{1}{1} + \frac{\alpha \beta}{\alpha \beta \chi}$
		$f^{\alpha\prime} + 7$	$^{\prime\prime}\partial_{\theta}f_{\alpha}^{\prime}$	(θ)	$+ {}_{\prime\prime} f_{\alpha\prime} +$	$]((_{n}f_{\theta})]$	$f_{1^{ ext{-}}\alpha}^{\#2}$	0
		θ^{θ}	2 0, f	$-\partial_{ heta}\omega_{_{lpha}}$	$\partial_{\alpha}f_{\theta_{1}}$	$\theta f_{I\alpha} \hat{o}$	$f_{1}^{\#1}$	0
		ι (-4 α	$\partial' f^{\alpha}_{\alpha}$ -	ω_{α}^{θ}	$\theta^{\ell_{\alpha'}}$	$f^{\alpha\prime} + \hat{c}$	$\omega_{1^{-}\alpha}^{\#2}$	0
		$\times + \frac{1}{2}$	$\partial_i f^{\theta}_{\ \ \ \dot{\theta}}$	$f^{\alpha\prime}$ ($\partial_{\dot{a}}$	$\partial_{\alpha}f_{\prime\theta}\hat{c}$	$f_{\alpha'}\partial^{\theta}{}_{j}$	$\omega_{1^{\bar{-}}}^{\#1}{}_{\alpha}$	0
in		$^{\iota eta \chi} \ \sigma_{lpha eta}$		4	7	96	$f_{1}^{\#1}_{\alpha\beta}$	0 0 0 0 0
Ouadratic (free) action		$\alpha_{\beta} + \omega^{c}$					$\omega_{1}^{\#1} = \omega_{1}^{\#2} = f_{1}^{\#1} = \omega_{1}^{\#1} = \omega_{1}^{\#2} = f_{1}^{\#1} = f_{1}^{\#2} = \alpha_{1}^{\#2}$	
atic (fr		$(f^{\alpha\beta} t)$					$\omega_1^{\#1}{}_+\alpha_\beta$	
Ouadr	, I S							$\omega_1^{\#1} + \alpha \beta = 0$



 $\omega_{2^{+}\alpha\beta}^{\#1} f_{2^{+}\alpha\beta}^{\#1} \omega_{2^{-}\alpha\beta\chi}^{\#1}$

τ^{#1} + τ⁰ +

 $\tau_0^{\#2}$

 $\tau_0^{\#1}$

Massive and massless spectra

Quadratic pole
Pole residue:
$$\frac{1}{\lambda} > 0$$
Polarisations: $\frac{1}{2}$

(No massive particles)

Unitarity conditions