

Wave operator and propagator

Quadratic (free) action

[illegible]

$\sigma_1^{#1} \dagger \alpha\beta$	0	$-\frac{\sqrt{2}}{t_1 + k^2} t_1$	$-\frac{i\sqrt{2}k}{t_1 + k^2} t_1$	$\sigma_1^{#1} \alpha$	0	$\sigma_1^{#2} \alpha$	0	$\tau_1^{#1} \alpha$	0	$\tau_1^{#2} \alpha$	0
$\sigma_1^{#2} \dagger \alpha\beta$	$-\frac{\sqrt{2}}{t_1 + k^2} t_1$	$\frac{-2k^2 r_1 + t_1}{(1+k^2)^2} t_1^2$	$-\frac{i(2k^3 r_1 - kt_1)}{(1+k^2)^2} t_1^2$	0	0	0	0	0	0	0	0
$\tau_1^{#1} \dagger \alpha\beta$	$\frac{i\sqrt{2}k}{t_1 + k^2} t_1$	$\frac{i(2k^3 r_1 - kt_1)}{(1+k^2)^2} t_1^2$	$\frac{-2k^4 r_1 + k^2 t_1}{(1+k^2)^2} t_1^2$	0	0	0	0	0	0	0	0
$\sigma_1^{#1} \dagger \alpha$	0	0	0	0	0	$\frac{\sqrt{2}}{t_1 + 2k^2} t_1$	0	0	0	$\frac{2ik}{t_1 + 2k^2} t_1$	0
$\sigma_1^{#2} \dagger \alpha$	0	0	0	$\frac{\sqrt{2}}{t_1 + 2k^2} t_1$	0	$\frac{1}{(1+2k^2)^2} t_1$	0	0	0	$\frac{i\sqrt{2}k}{(1+2k^2)^2} t_1$	0
$\tau_1^{#1} \dagger \alpha$	0	0	0	0	0	0	0	0	0	0	0
$\tau_1^{#2} \dagger \alpha$	0	0	0	$-\frac{2ik}{t_1 + 2k^2} t_1$	$-\frac{i\sqrt{2}k}{(1+2k^2)^2} t_1$	$-\frac{2ik}{t_1 + 2k^2} t_1$	0	0	0	$\frac{2k^2}{(1+2k^2)^2} t_1$	0

	$\sigma_{2^+}^{\#1} \alpha\beta$	$\tau_{2^+}^{\#1} \alpha\beta$	$\sigma_{2^+}^{\#1} \alpha\beta\chi$
$\sigma_{2^+}^{\#1} \dagger \alpha\beta$	$\frac{2}{(1+2k^2)^2 t_1}$	$-\frac{2i\sqrt{2}k}{(1+2k^2)^2 t_1}$	0
$\tau_{2^+}^{\#1} \dagger \alpha\beta$	$\frac{2i\sqrt{2}k}{(1+2k^2)^2 t_1}$	$\frac{4k^2}{(1+2k^2)^2 t_1}$	0
$\sigma_{2^+}^{\#1} \dagger \alpha\beta\chi$	0	0	$\frac{2}{2k^2 r_1 + t_1}$

$\omega_1^{\#1} + \alpha\beta$	$\omega_{1^+}^{\#2} f_{1^+}^{\#1} + \alpha\beta$	$\omega_{1^+}^{\#1} \alpha$	0	0	0	0
$\omega_1^{\#1} + \alpha\beta$	$k^2 r_1 - \frac{t_1}{2}$	$-\frac{t_1}{\sqrt{2}}$	$-\frac{i k t_1}{\sqrt{2}}$	0	0	0
$\omega_1^{\#2} + \alpha\beta$	$-\frac{t_1}{\sqrt{2}}$	0	0	0	0	0
$f_{1^+}^{\#1} + \alpha\beta$	$\frac{i k t_1}{\sqrt{2}}$	0	0	0	0	0
$\omega_1^{\#1} + \alpha$	0	0	$-\frac{t_1}{2}$	$\frac{t_1}{\sqrt{2}}$	0	$i k t_1$
$\omega_1^{\#2} + \alpha$	0	0	$\frac{t_1}{\sqrt{2}}$	0	0	0
$f_{1^+}^{\#1} + \alpha$	0	0	0	0	0	0
$f_{1^+}^{\#2} + \alpha$	0	0	$-i k t_1$	0	0	0

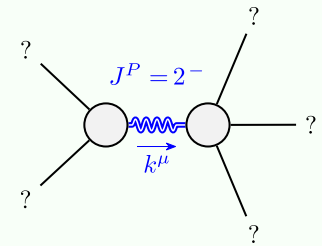
	$\omega_0^{\#1}$	$f_0^{\#1}$	$f_0^{\#2}$	$\omega_0^{\#1}$
$\omega_0^{\#1} \dagger$	$-t_1$	$i \sqrt{2} k t_1$	0	0
$f_0^{\#1} \dagger$	$-i \sqrt{2} k t_1$	$-2 k^2 t_1$	0	0
$f_0^{\#2} \dagger$	0	0	0	0
$\omega_0^{\#1} \dagger$	0	0	0	$-t_1$

$\sigma_0^{*1} +$	$-\frac{1}{(1+2k^2)^2}t_1$	$\frac{i\sqrt{2}k}{(1+2k^2)^2}t_1$	0	τ_0^{*2}	σ_0^{*1}
$\tau_0^{*1} +$	$-\frac{i\sqrt{2}k}{(1+2k^2)^2}t_1$	$-\frac{2k^2}{(1+2k^2)^2}t_1$	0	0	0
$\tau_0^{*2} +$	0	0	0	0	0
$\sigma_0^{*1} -$	0	0	0	0	$-\frac{1}{t_1}$

$\omega_2^{\#1} \dagger \alpha\beta$	$\dfrac{t_1}{2}$	$-\dfrac{ik t_1}{\sqrt{2}}$	0	$\omega_2^{\#1} \alpha\beta\chi$
$f_2^{\#1} \dagger \alpha\beta$	$\dfrac{ik t_1}{\sqrt{2}}$	$k^2 t_1$	0	
$\omega_2^{\#1} \dagger \alpha\beta\chi$	0	0	$k^2 r_1 + \dfrac{t_1}{2}$	

Source constraints/gauge generators	
SO(3) irreps	Multiplicities
$\tau_{0+}^{\#2} == 0$	1
$\tau_{0+}^{\#1} - 2 i k \sigma_{0+}^{\#1} == 0$	1
$\tau_{1-}^{\#2\alpha} + 2 i k \sigma_{1-}^{\#2\alpha} == 0$	3
$\tau_{1-}^{\#1\alpha} == 0$	3
$\tau_{1+}^{\#1\alpha\beta} + i k \sigma_{1+}^{\#2\alpha\beta} == 0$	3
$\tau_{2+}^{\#1\alpha\beta} - 2 i k \sigma_{2+}^{\#1\alpha\beta} == 0$	5
Total constraints:	16

Massive and massless spectra



Massive particle	
Pole residue:	$-\frac{1}{r_1} > 0$
Polarisations:	5
Square mass:	$-\frac{t_1}{2r_1} > 0$
Spin:	2
Parity:	Odd

(No massless particles)

Unitarity conditions

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