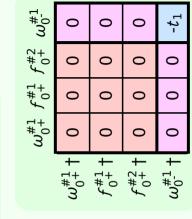
| $\tau_{1}^{\#2}{}_{\alpha}$        | 0                                | 0   | 0  | $\frac{12ik}{(3+4k^2)^2t_1}$      | $\frac{12 i \sqrt{2} k}{(3+4 k^2)^2 t_1}$ | 0                              | $\frac{24  k^2}{(3+4  k^2)^2  t_1}$   |
|------------------------------------|----------------------------------|---|--|-----------------------------------|---|--------------------------------|---------------------------------------|
| $\tau_{1}^{\#1}{}_{\alpha}$        | 0                                | 0   | 0  | 0                                 | 0   | 0                              | 0                                     |
| $\sigma_{1}^{\#2}$                 | 0                                | 0   | 0  | $\frac{6\sqrt{2}}{(3+4k^2)^2t_1}$ | $\frac{12}{(3+4k^2)^2t_1}$                | 0                              | $-\frac{12i\sqrt{2}k}{(3+4k^2)^2t_1}$ |
| $\sigma_{1^{-}\alpha}^{\#1}$       | 0                                | 0   | 0  | $\frac{6}{(3+4 k^2)^2 t_1}$       | $\frac{6\sqrt{2}}{(3+4k^2)^2t_1}$         | 0                              | $-\frac{12ik}{(3+4k^2)^2t_1}$         |
| ${\tau_1^{\#1}}_{+}$               | $-\frac{i\sqrt{2}k}{t_1+k^2t_1}$ | $-\frac{i(2k^3r_1-kt_1)}{(1+k^2)^2t_1^2}$ | $\frac{-2k^4r_1+k^2t_1}{(1+k^2)^2t_1^2}$ | 0                                 | 0   | 0                              | 0                                     |
| $\sigma_{1}^{\#2}{}_{\alpha\beta}$ | $-\frac{\sqrt{2}}{t_1+k^2t_1}$   | $\frac{-2k^2r_1+t_1}{(1+k^2)^2t_1^2}$     | $\frac{i(2k^3r_1-kt_1)}{(1+k^2)^2t_1^2}$ | 0                                 | 0   | 0                              | 0                                     |
| $\sigma_1^{\#1}{}_+\alpha\beta$    | 0                                | $-\frac{\sqrt{2}}{t_1+k^2t_1}$            | $\frac{i\sqrt{2}k}{t_1+k^2t_1}$          | 0                                 | 0   | 0                              | 0                                     |
|                                    | $\sigma_1^{\#1} + \alpha \beta$  | $_{1}^{#2}$ $+^{\alpha\beta}$             | $\tau_1^{\#1} + \alpha \beta$            | $\sigma_{1}^{\#1} +^{lpha}$       | $\sigma_{1}^{#2} + \alpha$                | $\tau_{1}^{\#_{1}} +^{\alpha}$ | $\tau_1^{\#2} +^{\alpha}$             |

| Lagrangian density |
|--------------------|
|--------------------|

| $f_{1^-}^{\#2}$               | 0                               | 0                                 | 0                          | <i>ikt</i> 1<br>3                        | $\tfrac{1}{3}\bar{l}\sqrt{2}kt_1$ | 0                        | $\frac{2k^2t_1}{3}$  |
|-------------------------------|---------------------------------|-----------------------------------|----------------------------|--|-----------------------------------|--------------------------|--|
| $f_{1^-}^{\#1} \alpha$        | 0                               | 0                                 | 0                          | 0  | 0                                 | 0                        | 0  |
| $\omega_{1^{-}\alpha}^{\#2}$  | 0                               | 0                                 | 0                          | $\frac{t_1}{3\sqrt{2}}$                  | $\frac{\epsilon}{\Gamma_2}$       | 0                        | $\begin{vmatrix} -\frac{1}{3} \ \tilde{l} \ \sqrt{2} \ kt_1 \end{vmatrix}$ |
| $\omega_{1}^{\#1}{}_{\alpha}$ | 0                               | 0                                 | 0                          | 6<br>6                                   | $\frac{t_1}{3\sqrt{2}}$           | 0                        | $-\frac{1}{3}\bar{l}kt_1$  |
| $f_{1}^{\#1}$                 | $-\frac{ikt_1}{\sqrt{2}}$       | 0                                 | 0                          | 0  | 0                                 | 0                        | 0  |
| $\omega_1^{\#2}$              | $-\frac{t_1}{\sqrt{2}}$         | 0                                 | 0                          | 0  | 0                                 | 0                        | 0  |
| $\omega_{1}^{\#1}$            | $k^2 r_1 - \frac{t_1}{2}$       | $-\frac{t_1}{\sqrt{2}}$           | $\frac{i k t_1}{\sqrt{2}}$ | 0  | 0                                 | 0                        | 0  |
|                               | $\omega_1^{\#1} + \alpha^{eta}$ | $\omega_1^{\#2} + \alpha^{\beta}$ | $f_1^{\#1} + \alpha \beta$ | $\omega_{1^{\bar{-}}}^{\#_1} +^{\alpha}$ | $\omega_{1}^{\#2} +^{lpha}$       | $f_{1}^{\#1} +^{\alpha}$ | $f_{1}^{#2} + \alpha$  |



|   | $\sigma_{2^{+}\alpha\beta}^{\#1}$   | $	au_2^{\#1}_{lphaeta}$              | $\sigma_{2}^{\#1}{}_{\alpha\beta\chi}$ |
|---|-------------------------------------|--------------------------------------|--|
| $\sigma_{2}^{\#1} \dagger^{\alpha\beta}$    | $\frac{2}{(1+2k^2)^2t_1}$           | $-\frac{2i\sqrt{2}k}{(1+2k^2)^2t_1}$ | 0                                      |
| $	au_{2}^{\#1} \dagger^{lphaeta}$           | $\frac{2i\sqrt{2}k}{(1+2k^2)^2t_1}$ | $\frac{4k^2}{(1+2k^2)^2t_1}$         | 0                                      |
| $\sigma_{2}^{\#1}\dagger^{\alpha\beta\chi}$ | 0                                   | 0                                    | $\frac{2}{2k^2r_1+t_1}$                |

3 1 1 1 1

Source constraints SO(3) irreps

 $\sigma_{0}^{\#1} == 0$ 

 $\tau_{0}^{\#1} == 0$ 

 $\tau_{0+}^{\#2} == 0$ 

|              | $\sigma_0^{\#1}$ | $\tau_{0}^{\#1}$ | $\tau_{0}^{\#2}$ | $\sigma_0^{\#1}$ |
|--------------|------------------|------------------|------------------|------------------|
| #1<br>0+ †   | 0                | 0                | 0                | 0                |
| #1<br>0+ †   | 0                | 0                | 0                | 0                |
| #2<br>0+ †   | 0                | 0                | 0                | 0                |
| # <u>1</u> † | 0                | 0                | 0                | $-\frac{1}{t_1}$ |
|              |                  |                  |                  |                  |

| $\omega_{2}^{\#1}_{-}$ $_{lphaeta\chi}$                      | 0                              | 0                            | $k^2 r_1 + \frac{t_1}{2}$      |
|--|--------------------------------|------------------------------|--------------------------------|
| $f_{2}^{\#1}$  | $-\frac{ikt_1}{\sqrt{2}}$      | $k^2 t_1$                    | 0                              |
| $\omega_{2^+}^{\#1}\alpha_\beta \ f_{2^+}^{\#1}\alpha_\beta$ | $\frac{t_1}{2}$                | $\frac{ikt_1}{\sqrt{2}}$     | 0                              |
|  | $\omega_{2}^{\#1} +^{lphaeta}$ | $f_{2}^{\#1} + \alpha \beta$ | $y_2^{*1} + \alpha \beta \chi$ |

 $\tau_{2}^{\#1}\alpha\beta - 2ik \ \sigma_{2}^{\#1}\alpha\beta == 0$  5 Total #: 20

m

 $\tau_1^{\#1}\alpha\beta + ik \ \sigma_1^{\#2}\alpha\beta == 0$ 

m

 $\sigma_{1}^{\#1}{}^{\alpha} == \sigma_{1}^{\#2}{}^{\alpha}$ 

m

 $\tau_{1}^{\#1}{}^{\alpha} == 0$ 

0 ==

 $t_1^{\#2}{}^\alpha + 2ik \, \sigma_1^{\#1}{}^\alpha$ 

|               | Massive particle |                         |  |  |
|---------------|------------------|-------------------------|--|--|
| ? $J^P = 2^-$ | Pole residue:    | $-\frac{1}{r_1} > 0$    |  |  |
| 7 = 2         | Polarisations:   | 5                       |  |  |
| $k^{\mu}$     | Square mass:     | $-\frac{t_1}{2r_1} > 0$ |  |  |
| ?             | Spin:            | 2                       |  |  |
|               | Parity:          | Odd                     |  |  |
|               |                  |                         |  |  |

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

(No massless particles)