

The (possibly singular)  $a$ -matrices associated  
with the Lagrangian, as defined below Eq. (18) of arXiv:1812.02675:

Matrix for spin-0 sector:

$$\begin{pmatrix} 0 & -\sqrt{3} \, \alpha_{\textcolor{blue}{2}} \\ -\sqrt{3} \, \alpha_{\textcolor{blue}{2}} & -2 \, \alpha_{\textcolor{blue}{2}} + \alpha_{\textcolor{blue}{1}} \, k^2 \end{pmatrix}$$

Matrix for spin-1 sector:

$$\begin{pmatrix} \alpha_{\textcolor{blue}{2}} \end{pmatrix}$$

Matrix for spin-2 sector:

$$\begin{pmatrix} \alpha_{\textcolor{blue}{2}} - \frac{\alpha_{\textcolor{blue}{1}} \, k^2}{2} \end{pmatrix}$$

Gauge constraints on source currents:

The Drazin (Moore–Penrose) inverses of these  $a$ -matrices, which are functionally analogous to the inverse  $b$ -matrices described below Eq. (21) of arXiv:1812.02675:

Matrix for spin-0 sector:

$$\begin{pmatrix} \frac{2 \, \alpha_{\textcolor{blue}{2}} - \alpha_{\textcolor{blue}{1}} \, k^2}{3 \, \alpha_{\textcolor{blue}{2}}^2} & -\frac{1}{\sqrt{3} \, \alpha_{\textcolor{blue}{2}}} \\ -\frac{1}{\sqrt{3} \, \alpha_{\textcolor{blue}{2}}} & 0 \end{pmatrix}$$

Matrix for spin-1 sector:

$$\begin{pmatrix} \frac{1}{\alpha_{\textcolor{blue}{2}}} \end{pmatrix}$$

Matrix for spin-2 sector:

$$\begin{pmatrix} -\frac{1}{\alpha_{\textcolor{blue}{2}} - \frac{\alpha_{\textcolor{blue}{1}} \, k^2}{2}} \end{pmatrix}$$

Square masses:

$$\left\{ \emptyset, \emptyset, \emptyset, \emptyset, \left\{ \frac{2 \, \alpha_{\textcolor{blue}{2}}}{\alpha_{\textcolor{blue}{1}}} \right\}, \emptyset \right\}$$

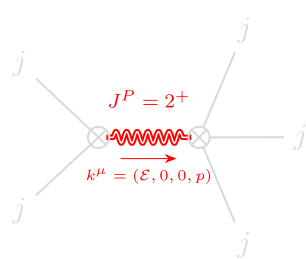
Massive pole residues:

$$\left\{ \emptyset, \emptyset, \emptyset, \emptyset, \left\{ -\frac{2}{\alpha_{\textcolor{blue}{1}}} \right\}, \emptyset \right\}$$

Massless eigenvalues:

$$\emptyset$$

Overall particle spectrum:



Massive particle

Pole residue:	$-\frac{2}{\alpha_{\textcolor{blue}{1}}} > 0$
Square mass:	$\frac{2 \, \alpha_{\textcolor{blue}{2}}}{\alpha_{\textcolor{blue}{1}}} > 0$
Spin:	2
Parity:	Even

Overall unitarity conditions:

$$\alpha_{\textcolor{blue}{1}} < 0 \text{ \&\& } \alpha_{\textcolor{blue}{2}} < 0$$