$$
\begin{aligned}
&\frac{1}{3}\underset{\bullet}{t}_{2}\,\mathcal{A}_{abi}\,\mathcal{A}^{abi}-\frac{2}{3}\underset{\bullet}{t}_{2}\,\mathcal{A}_{aib}\,\mathcal{A}^{abi}+\left(-\frac{\underset{\bullet}{r}_{3}}{2}+\underset{\bullet}{r}_{5}\right)\partial_{b}\mathcal{A}_{i}{}^{j}{}_{j}\,\partial^{i}\mathcal{A}^{ab}{}_{a}+\\
&\left(-\frac{\underset{\bullet}{r}_{3}}{2}-\underset{\bullet}{r}_{5}\right)\partial_{i}\mathcal{A}_{b}{}^{j}{}_{j}\,\partial^{i}\mathcal{A}^{ab}{}_{a}-\frac{2}{3}\underset{\bullet}{t}_{2}\,\mathcal{A}_{abi}\,\partial^{i}f^{ab}+\frac{2}{3}\underset{\bullet}{t}_{2}\,\mathcal{A}_{aib}\,\partial^{i}f^{ab}-\frac{2}{3}\underset{\bullet}{t}_{2}\,\mathcal{A}_{bia}\,\partial^{i}f^{ab}+\\
&\frac{1}{3}\underset{\bullet}{t}_{2}\,\partial_{a}f_{bi}\,\partial^{i}f^{ab}-\frac{1}{6}\underset{\bullet}{t}_{2}\,\partial_{a}f_{ib}\,\partial^{i}f^{ab}-\frac{1}{6}\underset{\bullet}{t}_{2}\,\partial_{b}f_{ai}\,\partial^{i}f^{ab}+\frac{1}{6}\underset{\bullet}{t}_{2}\,\partial_{i}f_{ab}\,\partial^{i}f^{ab}-\frac{1}{6}\underset{\bullet}{t}_{2}\,\partial_{i}f_{ba}\,\partial^{i}f^{ab}+\\
&\left(-\frac{\underset{\bullet}{r}_{3}}{2}-\underset{\bullet}{r}_{5}\right)\partial_{a}\mathcal{A}^{abi}\,\partial_{j}\mathcal{A}_{b}{}^{j}{}_{i}+\left(\underset{\bullet}{r}_{3}+2\,\underset{\bullet}{r}_{5}\right)\partial^{i}\mathcal{A}^{ab}{}_{a}\,\partial_{j}\mathcal{A}_{b}{}^{j}{}_{i}+\left(-\frac{\underset{\bullet}{r}_{3}}{2}+\underset{\bullet}{r}_{5}\right)\partial_{a}\mathcal{A}^{abi}\,\partial_{j}\mathcal{A}_{i}{}^{j}{}_{b}+\\
&\left(\underset{\bullet}{r}_{3}-2\,\underset{\bullet}{r}_{5}\right)\partial^{i}\mathcal{A}^{ab}{}_{a}\,\partial_{j}\mathcal{A}_{i}{}^{j}{}_{b}+\frac{4}{3}\underset{\bullet}{r}_{2}\,\partial_{b}\mathcal{A}_{aij}\,\partial^{j}\mathcal{A}^{abi}-\frac{2}{3}\underset{\bullet}{r}_{2}\,\partial_{b}\mathcal{A}_{aji}\,\partial^{j}\mathcal{A}^{abi}+\\
&\frac{2}{3}\left(\underset{\bullet}{r}_{2}-6\,\underset{\bullet}{r}_{3}\right)\partial_{b}\mathcal{A}_{ija}\,\partial^{j}\mathcal{A}^{abi}-\frac{1}{3}\underset{\bullet}{r}_{2}\,\partial_{i}\mathcal{A}_{abj}\,\partial^{j}\mathcal{A}^{abi}+\frac{1}{3}\underset{\bullet}{r}_{2}\,\partial_{j}\mathcal{A}_{abi}\,\partial^{j}\mathcal{A}^{abi}-\frac{2}{3}\underset{\bullet}{r}_{2}\,\partial_{j}\mathcal{A}_{aib}\,\partial^{j}\mathcal{A}^{abi}
\end{aligned}
\tag{1}
$$

Now we pass this theory into the PSALTer package, which computes the particle spectrum:

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

Matrix for spin-0 sector:

$$
\begin{pmatrix}
0 & 0 & 0 & 0\\
0 & 0 & 0 & 0\\
0 & 0 & 0 & 0\\
0 & 0 & 0 & k^{2}\underset{\bullet}{r}_{2}+\underset{\bullet}{t}_{2}
\end{pmatrix}
$$

Matrix for spin-1 sector:

$$
\begin{pmatrix}
k^{2}\left(2\,\underset{\bullet}{r}_{3}+\underset{\bullet}{r}_{5}\right)+\frac{2\underset{\bullet}{t}_{2}}{3} & \frac{\sqrt{2}\,\underset{\bullet}{t}_{2}}{3} & -\frac{1}{3}\,i\,\sqrt{2}\,k\,\underset{\bullet}{t}_{2} & 0 & 0 & 0 & 0\\
\frac{\sqrt{2}\,\underset{\bullet}{t}_{2}}{3} & \frac{\underset{\bullet}{t}_{2}}{3} & -\frac{1}{3}\,i\,k\,\underset{\bullet}{t}_{2} & 0 & 0 & 0 & 0\\
\frac{1}{3}\,i\,\sqrt{2}\,k\,\underset{\bullet}{t}_{2} & \frac{i\,k\,\underset{\bullet}{t}_{2}}{3} & \frac{k^{2}\,\underset{\bullet}{t}_{2}}{3} & 0 & 0 & 0 & 0\\
0 & 0 & 0 & \frac{1}{2}\,k^{2}\left(\underset{\bullet}{r}_{3}+2\,\underset{\bullet}{r}_{5}\right) & 0 & 0 & 0\\
0 & 0 & 0 & 0 & 0 & 0 & 0\\
0 & 0 & 0 & 0 & 0 & 0 & 0\\
0 & 0 & 0 & 0 & 0 & 0 & 0
\end{pmatrix}
$$

Matrix for spin-2 sector:

$$
\begin{pmatrix}
-\frac{3k^{2}\underset{\bullet}{r}_{3}}{2} & 0 & 0\\
0 & 0 & 0\\
0 & 0 & 0
\end{pmatrix}
$$

Gauge constraints on source currents:

${}^{0^{+}}_{\bullet}\tau^{\perp} == 0$

${}^{0^{+}}_{\bullet}\tau^{\parallel} == 0$

${}^{0^{+}}_{\bullet}\sigma^{\parallel} == 0$

${}^{1^{-}}_{\bullet}\tau^{\perp a} == 0$