

The Euler trick for \mathfrak{g}_0

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$$\mathfrak{g}_0 = \langle h, e, l, f \rangle / \begin{array}{l} h \text{ central} \\ [e, l] = -e \quad [f, l] = f \quad [e, f] = h \end{array}$$

$$\text{Add } d \text{ w/ } [d, h] = h \quad [d, e] = e \quad [d, l] = [d, f] = 0$$

Is there a linear representation?

$$\begin{pmatrix} 0 & f & -h \\ 0 & l & e \\ 0 & 0 & 0 \end{pmatrix} \rightarrow \begin{pmatrix} 0 & f & -h \\ 0 & l & e \\ 0 & 0 & d \end{pmatrix} \begin{array}{l} \mathcal{L} \\ 0 \end{array}$$