DARK ENERGY SPECTROSCOPIC INSTRUMENT

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Sum of neutrino masses

- So far assumes the sum of neutrino masses to be $\sum m_\nu = 0.06 \text{ eV}$, with a single massive eigenstate and two massless ones

- Single-parameter extension beyond this minimal model in which $\sum m_\nu$ is allowed to freely vary, in order to explore the constraining power on $\sum m_\nu$ of DESI data

- What terrestrial experiments tell us?

  - KATRIN gives an **upper bound** $\sum m_\nu \lesssim 2.4 \text{ eV}$

  - At least two of the three active neutrino masses are non-zero, *but the ordering of these masses is not known*: normal hierarchy (NH) and inverted hierarchy (IH). Priors:

$$NH : \sum m_\nu \geq 0.059 \text{ eV}, \quad IH : \sum m_\nu \geq 0.10 \text{ eV}$$