

Probing Physics Beyond the Neutrino Mass at the KATRIN Experiment

Saturday 20 July 2024 15:15 (15 minutes)

The KATRIN experiment aims to measure the neutrino mass by precision spectroscopy of tritium β -decay. Recently, KATRIN has improved the upper bound on the electron-neutrino mass to $0.8 \text{ eV}/c^2$ at 90% CL and is continuing to take data.

Beyond the neutrino mass, the ultra-precise measurement of the β -spectrum at KATRIN can reveal further distinct signatures of new physics. Current investigations involve searching for an eV-scale sterile neutrino motivated by several anomalies, specific Lorentz invariance violating parameters only accessible via interaction processes such as at KATRIN, and probing the local relic neutrino background by threshold-free neutrino capture on tritium. Additionally, searches are being conducted for general neutrino interactions, enabling a broad search for novel interactions, and for neutrino-DM interactions using the dark MSW effect.

This presentation will highlight a selection of new physics searches carried out at KATRIN and present their most recent results.

Alternate track

1. Beyond the Standard Model

I read the instructions above

Yes

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Session Classification: Neutrino Physics

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