

New Trends in High-Energy Physics



Contribution ID: 8

Type: **not specified**

The neutrino mass experiment KATRIN

The Karlsruhe TRitium Neutrino (KATRIN) experiment is a large-scale experiment with the objective to determine the effective electron anti-neutrino mass with an unprecedented sensitivity of $0.2 \text{ eV}/c^2$ at 90% C.L. in a model-independent way. The measurement method is based on precision β -decay spectroscopy of molecular tritium.

The experimental setup consists of a high luminosity windowless gaseous tritium source, a magnetic electron transport system with differential and cryogenic pumping for tritium retention, and an electro-static spectrometer section for energy analysis, followed by a segmented detector system for counting transmitted β -electrons. Initial commissioning measurements with tritium were performed in 2018.

This talk will give an overview of the KATRIN experiment and its current status.

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Session Classification: New trends beyond the standard model

Track Classification: Default