

First spectroscopic measurements of conversion electrons from the gaseous Kr-83m at the KATRIN experiment

The KATRIN experiment will perform a measurement of the effective electron antineutrino mass with an unprecedented sensitivity of $0.2 \text{ eV}/c^2$ (90 % C.L.). An essential calibration and systematic tool in all tritium β -decay measurements is the metastable isotope $^{83\text{m}}\text{Kr}$. With its unique decay characteristics it provides monoenergetic conversion electrons of suitable energies and line widths. The short half-life of 1.83 h allows to introduce the isotope into the experimental apparatus without the risk of long-term contamination.

In this poster we present the first spectroscopic measurements of gaseous $^{83\text{m}}\text{Kr}$ electrons performed with the full beamline of KATRIN. The results demonstrate the high-resolution performance of the KATRIN spectrometer and the ability to observe a spatially distributed isotropic source of electrons, both required for the tritium β -spectrum measurement.

Authorship annotation

for the KATRIN collaboration

Session and Location

Monday Session, Poster Wall #13 (Robert-Schumann-Room)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)