

The Condensed Krypton Source (CKrS) as Calibration Tool for KATRIN

The Karlsruhe TRitium Neutrino experiment is a model-independent measurement of the neutrino mass from the tritium β decay spectrum, aiming for a sensitivity of $0.2 \text{ eV}/c^2$ (90% C.L.). The CKrS has been developed as a source for absolute energy calibration, monitoring and determination of the transmission function of the MAC-E-filter spectrometer. It utilizes nearly mono-energetic conversion electrons from an adsorbed 83mKr layer on a graphite substrate, which can be moved over the complete flux tube area at its position in the KATRIN beamline, allowing for per-pixel calibration of the focal plane detector. The cleanliness of the substrate and the quality of the frozen radioactive films are monitored by means of laser ellipsometry because they are crucial for the stability and reproducibility of the conversion electron spectrum. An overview over the experimental setup and first results from the commissioning measurement phase are shown.

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Authorship annotation

for the KATRIN collaboration

Session and Location

Monday Session, Poster Wall #2 (Robert-Schumann-Room)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)