

The KATRIN Neutrino Mass Measurement: Experiment, Status, and Outlook

Tuesday, 29 May 2018 14:00 (20 minutes)

The Karlsruhe Tritium Neutrino (KATRIN) experiment will provide a measurement of the effective electron-neutrino mass, $m(\nu_e)$, based on a precision measurement of the tritium beta decay spectrum near its endpoint. The effective mass is an average of the neutrino mass eigenstates m_i weighted by the flavor-mass mixing parameters U_{ei} according to the relation $m^2(\nu_e) = \sum_{i=1}^3 |U_{ei}|^2 m_i^2$. The KATRIN apparatus uses a windowless gas tritium source (WGTS) and a spectrometer based on the MAC-E-Filter concept to measure the beta energy spectrum. The KATRIN program is designed to reach a mass sensitivity of 0.2 eV (90 % C.L.). The collaboration has completed a series of commissioning measurements and is moving into the first running of tritium.

This talk will provide an overview of the KATRIN apparatus with emphasis on the MAC-E filter. Results from the initial commissioning runs and the status of the initial tritium beta-spectrum measurements will be presented.

E-mail

gbfranklin@cmu.edu

Collaboration name

KATRIN Collaboration

Funding source

The primary support for US participation in KATRIN is provided by the U.S. DOE, Office of Nuclear Physics, under award number DE-FG02-97ER41020

Primary author: Prof. FRANKLIN, Gregg (Carnegie Mellon University)

Presenter: Prof. FRANKLIN, Gregg (Carnegie Mellon University)

Session Classification: Neutrino Masses and Neutrino Mixing

Track Classification: NMNM