Contribution ID: **54** Type: **Oral**

Status of the KATRIN experiment and the first tritium measurements

Tuesday, 3 July 2018 17:30 (30 minutes)

The goal of the \textbf{KA}rlsruhe \textbf{TRI}tium \textbf{N}eutrino (KATRIN) experiment is the determination of the electron neutrino mass $m(\nu_{\mathrm{e}})$ with a sensitivity of $0.2\,\mathrm{eV/c^2}$ (90% C.L.)
by measuring an integrated energy spectrum of electrons from tritium β-decay.
The measurement of the tritium β-spectrum close to its endpoint at $E_0 = 18.6\,\mathrm{keV}$ enables a model-independent investigation of the absolute neutrino mass scale.

The KATRIN experiment consists of a 70~m long beam line where electrons from a windowless gaseous tritium source (WTGS) are guided by magnetic fields to an electrostatic retardation spectrometer (MAC-E filter, energy resolution $\Delta E = 0.93\,\mathrm{eV}$ for $E = 18.6\,\mathrm{keV}$) and counted with a segmented silicon detector.
After a comprehensive construction and commissioning phase using photoelectrons and conversion electrons from ^{83m}Kr, tritium data-taking with KATRIN commences this year. In preparation for nominal tritium operations, a measurement campaign with an initial concentration of about 1~\% tritium in a deuterium-tritium gas mixture in the WGTS was carried out.
This run allows in-depth studies of hardware performance, systematic effects, and overall stability of the systems.
The talk gives an overview of the current status of the experiment, focusing on the results of the recent first data-taking period with tritium.

This project is supported by BMBF project 05A17VK2, the Helmholtz Association and the Helmholtz Young Investigator Group VH-NG-1055.

Primary author: Dr CHOI, Wonqook (Karlsruher Institut für Technologie (KIT))

Presenter: Dr CHOI, Wonqook (Karlsruher Institut für Technologie (KIT))

Session Classification: Parallel Session 1-8