



Poster session 1 - Monday 4 July

P1.055 Energy calibration of the KATRIN experiment

O Rest¹ and M Slezák²

¹Westfälische Wilhelms-Universität Münster, Germany, ²Nuclear Physics Institute of the ASCR, Czech Republic
on behalf of KATRIN collaboration

The KATRIN (KARlsruhe TRItium Neutrino-) experiment will measure the endpoint region of the tritium- β -decay spectrum to determine the neutrino mass with a sensitivity of $200 \text{ meV}/c^2$. To achieve this sub-eV sensitivity the energy of the decay electrons will be analysed using a MAC-E-filter type spectrometer. The retarding potential of the MAC-E-filter of -18.6 kV has to be monitored with a relative precision of $3 \cdot 10^{-6}$.

For this purpose the potential will be measured directly via two custom made precision high voltage dividers, which were developed with the help of PTB, the German national metrology centre. In order to determine the absolute values and the stability of the scale factors of the voltage dividers, regular calibration measurements with ppm precision are essential.

In addition to that the high voltage will be compared to a natural standard given by mono energetic conversion electrons from the decay of ^{83m}Kr . This will be done continuously with the KATRIN monitor spectrometer (from the former Mainz Neutrino Mass Experiment), which is connected to the KATRIN analysing potential. Furthermore calibration measurements will be performed regularly with a gaseous and a condensed Krypton source to guarantee a redundant calibration system.

The poster will give an overview of the energy calibration of the KATRIN experiment and will show a summary of the calibration measurements over the last years.

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