

## Forward Beam Monitor data from KATRIN first tritium measurements

### Authorship annotation

for the KATRIN collaboration

### Session and Location

Monday Session, Poster Wall #7 (Robert-Schumann-Room)

### Abstract content

The KATRIN experiment will measure the neutrino mass with a sensitivity of  $0.2 \text{ eV}$  (90 % CL). This will be achieved by observing the  $\beta$ -electron spectrum of tritium decay. The tritium source properties, in particular the activity, need to be stable and known to a high precision to accurately measure the neutrino mass. The source will undergo extensive measurements from several monitoring systems. The *Forward Beam Monitor* (FBM) is one such monitoring system.

The FBM detector board contains pin diodes, a hall sensor, and a temperature gauge. It is inserted into the flux tube where the electron flux density is  $10^6 \text{ s}^{-1} \text{ mm}^{-2}$ . The  $\beta$ -electrons are detected with a precision requirement of 0.1 % in less than a minute. The measurement principle and precision using the FBM pin diodes were demonstrated using rubidium and americium calibration sources. The KATRIN first tritium measurement phase took place during 2018 where tritium spectra and count rates were measured.

### Poster included in proceedings:

yes

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