

Modeling of the response function of the KATRIN experiment

Authorship annotation

for the KATRIN collaboration

Session and Location

Monday Session, Poster Wall #15 (Robert-Schumann-Room)

Abstract content

The KATRIN experiment will measure $m(\nu_e)$ with 0.2 eV sensitivity (90% C.L.) by taking an integrated energy spectrum of tritium β -decay. The response function which describes the electron transmission through the beamline is an essential part of the fit model used for analysis. It gives rise to several sources of systematic uncertainties which need to be carefully controlled, such as the transmission properties of the integrating spectrometer and the energy loss by cyclotron radiation. These effects are modeled by precise field calculations and KASSIOPEIA simulations and can be validated by response function measurements with calibration sources. Such measurements have been carried out in the Kr-83m campaign in 2017 and will be further supported by systematics studies in mid-2018. The poster presents simulation & measurement results and provides an outlook to upcoming investigations. This work is supported by HGF, BMBF (05A17VK2), KSETA and Helmholtz YIG VH-NG-1055.

Poster included in proceedings:

yes

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