

## The Wire Electrode of the KATRIN Experiment

**Authors:**

**Matthias Prall**                      [matthias.prall@uni-muenster.de](mailto:matthias.prall@uni-muenster.de)

Volker Hannen

Björn Hillen

Hans-Werner Ortjohann

Raphael Jöhren

Kathrin Valerius

Christian Weinheimer

Michael Zacher

The **K**arlsruhe **T**ritium **N**eutrino experiment, **KATRIN** will determine the effective mass of the  $\bar{\nu}_e$  with a sensitivity of 0.2 eV (90% C.L.) via a measurement of the  $T_2$  beta-spectrum near the endpoint at 18.6 keV. An ultra-low background of a few mHz and an energy resolution of 0.9 eV are necessary in order to reach this sensitivity. To suppress secondary electron background from cosmic muons and from environmental radioactivity we will equip KATRIN's main spectrometer with a 650 m<sup>2</sup> large, two-layered and quasi-massless wire electrode. The electrode has to be non-radioactive, non-magnetic, bakeable at 350°C and compatible with a vacuum of 10<sup>-11</sup> mbar. The 248 modules of the electrode have to be produced with a mechanical precision of O(0.1) mm. We present the design, as well as the mass production and automated quality assurance of the electrode modules. This project is funded by the German Ministry for Education and Research (BMBF).