



Contribution ID: 406

Type: **Parallel session talk**

First Sub-eV Neutrino Mass Limit from the KATRIN Experiment

Monday, July 26, 2021 11:00 AM (20 minutes)

The KATRIN experiment is designed to measure the effective electron anti-neutrino mass m_ν with a sensitivity close to 0.2 eV by investigating the energy spectrum of tritium β -decay. After a brief introduction of the experiment, we will focus on the results from our second data taking phase which took place in autumn 2019. For this period, the source activity was increased by a factor of four with respect to the first campaign and around 4.2 million electrons were collected in the region of interest. A fit to this data including all dominant uncertainties yields $m_\nu^2 = 0.26 \pm 0.34 \text{ eV}^2$. This corresponds to an upper limit of $m_\nu < 0.9 \text{ eV}$ (sensitivity $m_\nu < 0.7 \text{ eV}$) using the method of Lokhov and Tkachov. Finally, we will give a brief outlook on the upcoming measurement phases.

Collaboration / Activity

KATRIN

First author

Email

Primary author: KARL, Christian (Max Planck Institute for Physics)

Co-author: MERTENS, Susanne (Max Planck Institute for Physics)

Presenter: KARL, Christian (Max Planck Institute for Physics)

Session Classification: T04: Neutrino Physics

Track Classification: Neutrino Physics