

Plenary Talk

PV XIII Fri 9:15 Audimax

The KATRIN experiment: latest results and future perspectives — ●SUSANNE MERTENS — Max Planck Institute for Physics and Technical University Munich

From the discovery of neutrino oscillations we know that at least two neutrino mass eigenstates have a nonzero rest-mass. However, the absolute scale of the neutrino masses cannot be assessed from oscillation experiment. A direct way to probe the absolute neutrino mass scale is via the single beta decay, where the neutrino mass manifests itself as a

small spectral distortion close to the endpoint. The Karlsruhe Tritium Neutrino (KATRIN) experiment is designed to measure the effective electron anti-neutrino mass with a sensitivity of 0.2 eV at 90% confidence level. The talk will focus on the latest KATRIN result, which reaches for the first time in the history of direct neutrino mass experiments a sub-eV sensitivity, and limits the neutrino mass to less than 0.8 eV (90% confidence level). Moreover, new results on sterile and relic neutrino searches with KATRIN will be presented. The presentation will conclude with an outlook to upcoming data sets and future perspectives of KATRIN.