Istituto Nazionale di Fisica Nucleare
Sezione di Padova

Seminario

November 4th, 2021 – 2:00 pm (CET)

Zoom Link:
https://unipd.zoom.us/j/83357857329

Probing the neutrino mass scale with the KATRIN experiment: First sub-eV sensitivity results.

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Abstract

The KArlsruhe TRItium Neutrino experiment (KATRIN) is searching for the minute imprint of the neutrino mass in the endpoint region of the tritium beta-decay spectrum. KATRIN employs a high-intensity gaseous molecular tritium source and a high-resolution electrostatic filter with magnetic adiabatic collimation to target a neutrino-mass sensitivity of 0.2 eV/c^2, thus improving on previous experiments by an order of magnitude, after five years of data-taking.

This presentation we will focus on the second data taking phase which took place in autumn 2019. In this physics run, the tritium-activity-to-background ratio increased by a factor of three with respect to the previous campaign and, for the first time in the history of direct neutrino mass experiment, a sub-eV sensitivity to the neutrino mass could be achieved. The talk will introduce the measurement principle of KATRIN, present the latest results, and give a brief outlook to the ongoing and upcoming data taking campaigns.

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