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Sterile neutrinos with the KATRIN Experiment, current status and prospects

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The KATRIN experiment is designed to measure the mass of the electron anti-neutrino by investigating the energetic endpoint of the tritium spectrum. KATRIN recently release it's latest results and is the rst direct experiment to report a sub-eV neutrino mass limit. As a complementary result, KATRIN also reported its rst limits for eV-scale sterile neutrinos.

The TRISTAN (TRitium Investigation on STerile to Active Neutrino mixing) project aims at searching for keV-sterile neutrinos in the full beta decay spectrum of tritium using a novel detector system at the KATRIN experiment. This detector is now in production and the commissioning of the rst phase of the project is expected to begin in 2025. Thanks to the high tritium source activity of KATRIN a statistical sensitivity at the level of $\sin^2\theta \sim 10^{-6}$ can be reached.

In this talk, I will report the latest results of the KATRIN experiment and the on-going e orts to search for keV-sterile neutrino with TRISTAN.

Scientific topic

Fundamental interactions

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