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TRISTAN: a novel detector for keV sterile neutrino search with KATRIN

The KATRIN (Karlsruhe Tritium Neutrino) experiment investigates the energetic endpoint of the tritium beta-decay spectrum to determine the effective mass of the electron anti-neutrino. The high source luminosity of KATRIN allows to extend the physics reach from probing the neutrino mass to searching for sterile neutrinos. To assess the signature of a keV-scale sterile neutrinos, the entire tritium beta decay spectrum has to be measured with high precision. To this end, a new detectors system, names TRISTAN, is being developed. A novel multi-pixels silicon drift detector and read-out are being designed to handle rates up to 100 Mcps with an energy resolution of about 300 eV (FWHM) at 20 keV.

This poster will present the first TRISTAN prototype characterization as well as the assembly of the first TRISTAN module.

Mini-abstract

Characterization of the TRISTAN detector for the keV-sterile neutrino investigations with KATRIN.

Experiment/Collaboration

TRISTAN

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