Contribution ID: **486**   Type: **Poster new technologies**

Silicon drift detector prototypes with the IDef-X readout for the keV-scale sterile neutrino search with TRISTAN and analysis of first tritium data

The TRISTAN project is an extension of the KATRIN experiment to search for the signature of keV-scale sterile neutrinos in the tritium beta decay spectrum. The KATRIN focal plane detector that counts electrons within a controlled energy range close to the spectral end point to investigate the effective neutrino mass will be replaced by a novel 3500-pixel silicon drift detector (SDD) array that measures the entire electron spectrum with a few hundred eV resolution at rates as high as 10^9 cps. As of now 7-pixel prototype SDDs were developed, tested and demonstrated the suitability of the SDD technology. The results of the characterization of prototypes with the IDeF-X BD ASIC, developed by CEA, are presented. Such a prototype was installed at the Troitsk ν-mass experiment, a predecessor of KATRIN, to be characterized with electrons and to take tritium data. We present methods for the spectral analysis and the sterile neutrino search that we developed and tested with this data.

Session and Location

Monday Session, Poster Wall #116 (Auditorium Gallery Left)

Poster included in proceedings:

yes

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