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A model for a keV-scale sterile neutrino search with KATRIN: SSC-sterile

The KATRIN experiment can perform a comparably low-statistics search for keV-scale sterile neutrinos with the first tritium measurements, improving the current laboratory limits on the squared sterile-to-active mixing angle by about one order of magnitude. For the keV-scale sterile neutrino search a wider energy range of tritium β-decay spectrum has to be measured, as the "postulated"neutrinos would manifest themselves as a kink in the spectrum at an a priori unknown energy.

For this reason a precise model of the entire spectrum is necessary. In this poster we present a novel technique to simulate the full spectrum, taking into account experimental effect appearing in KATRIN-like experiments. The model is constructed from the responses of each individual experimental component: the tritium source, the spectrometer and the detector. The influence of systematic uncertainties is discussed.

Session and Location

Monday Session, Poster Wall #133 (Hölderlin-Room)

Poster included in proceedings:

yes

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