We present status, first results and upcoming updates of precision measurements of tritium beta-decay spectrum by the “Troitsk nu-mass” experiment. The goal is to find distortion in the spectrum which may be caused by the existence of a heavy sterile neutrinos. A signature would correspond to a kink in the spectrum with characteristic shape and end point shifted by the value of a heavy neutrino mass. We set a new upper limits to the neutrino mixing matrix element $U_{e4}$, which improve existing limits by a factor from 2 to 5 in the mass range 0.1-2 keV. More results on the collected statistics are underway. New collaboration TRISTAN-Troitsk with new Si multi pixel detector will open the road to higher and better quality data.

**Sterile neutrino in keV region in Tritium decay by Troitsk nu-vass**

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**Devil is in details - systematics**

- Insufficient accuracy of electron energy loss in gaseous source
- Electron trapping in “magnetic bottle” in the source
- Distortion of spectrometer transmission function
- Detector efficiency and electron scattering at different energy
- Electronics dead time and pile up
- Gas column density fluctuation
- High voltage stability

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**Recent published data**

- Raw tritium spectrum measured by one of the pixels in April 2018 Run. Data are been analyzed.
- JETP Lett. 105 (2017), 753, arXive:1703:10779