Contribution ID: **53** Type: **not specified**

The ”Neutron Beta Decay” Installation for the Reactor PIK

The neutron instrument complex “Neutron Beta Decay” will be located on the beam of polarized cold neutrons on the GEK-3 N0 channel. The installation is designed to measure the asymmetries of neutron beta decay with a relative accuracy of 0.1%. The basis of the installation is a superconducting solenoid that creates a magnetic field in a uniform region of 0.35 T. Electrons and protons appeared during neutron decay move in a magnetic field along magnetic force lines. To select a given angle of electron emission, the magnetic mirror effect is used by creating an area with a stronger magnetic field with an induction value of 0.88 T. The area with high field homogeneity is formed by protons, which can be additionally accelerated by an electric field. An electrostatic system is used for this purpose, which allows raising the voltage in the decay area to 30 kV. Detectors at the input and output of the neutron beam are used to register electrons and protons. To detect electrons, the magnetic field created by the solenoid is deflected downwards to remove electrons from the beam region. A magnetic circuit mounted under the solenoid will be used for this purpose. To deflect protons, the effect of proton drift in crossed electric and magnetic fields is used. At the input of the solenoid are located: a supermirror polarizer, a collimator and a spin-flipper. At the output of the solenoid are located: a polarization analyzer, a neutron detector for beam monitoring, and a neutron beam trap.

Primary authors: SEREBROV, Anatolii (NRC “Kurchatov Institute” - PNPI); FOMIN, Alexey (NRC “Kurchatov Institute” - PNPI); Mr ZHEREBTSOV, Oleg (NRC “Kurchatov Institute” - PNPI); Mr KLYUSHNIKOV, Georgy (NRC “Kurchatov Institute” - PNPI); KOPTYUKHOV, Artem (NRC “Kurchatov Institute” - PNPI); LYAMKIN, Vitaliy (NRC “Kurchatov Institute” - PNPI); Mr MURASHKIN, Alexander (NRC “Kurchatov Institute” - PNPI); PRUDNIKOV, Dmitriy (NRC “Kurchatov Institute” - PNPI)

Presenter: FOMIN, Alexey (NRC “Kurchatov Institute” - PNPI)

Session Classification: Poster Session

Track Classification: Poster session