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Silicon detectors with boron converters of different geometrical modifications for fast neutrons registration

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The development of model for neutron detectors for measurements of fast neuron fluxes. The construction of detectors is based on alternating layers of silicon as detector and boron (enriched with 10B) as neutron converter located in moderator. The efficiency of fast neutron registration of detectors with one layer of boron and silicon modeled by GEANT4 is very low (approximately 4%). The investigation of possible simple technologically optimization of detectors geometry to increase efficiency is presented. It is shown the efficiency is depended on numbers of layers and their locations in the materials of detectors or moderator. The optimal location is one where the numbers of layers boron-silicon are angularly related to each other.

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Poster

Primary author(s) : Mrs. RYABEVA, Elena (NRNU MEPhI)

Co-author(s) : Mr. DEDENKO, Grigory (NRNU MEPhI); Mr. KADILIN, Vladimir (NRNU MEPHI)

Presenter(s) : Mrs. RYABEVA, Elena (NRNU MEPhI)

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