accelerating structures and other systems was commissioned at Budker Institute of Nuclear Physics. The aim of work at this facility is to demonstrate the performance of the basic system of the linear accelerator. First results of the test accelerator facility operation are presented together with the measured beam parameters.

Young scientist paper:

Yes

Posters I - Board: 046 / **70**

Compact accelerator source of fast neutrons for radiation testing of perspective materials

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The VITA accelerator neutron source based on a vacuum insulated tandem accelerator operates at the Institute of Nuclear Physics SB RAS. At the accelerator source, when transporting a powerful (up to 10 kW/cm2) beam of protons or deuterons to the target, neutrons with a wide range of energies are generated: cold, thermal, epithermal and fast. The transported beam or neutron flux is used for conducting researchers in the field of boron-neutron capture therapy, measuring the cross-section of nuclear reactions (7Li(p,p')7Li, 7Li(p,)4He, 6Li(d,), 7Li(d,)5He, 6Li(d,p)7Li 7Li(d,)n), conducting materials science research with INP, CERN, ITER and other applications.

The development of a separate compact facility for the generation of fast neutrons is an actual task, it will allow the treatment of malignant tumors with fast neutrons and radiation testing of perspective materials. The generation of fast neutrons on the VITA is complicated by the fact that a source of negative hydrogen ions and a bending magnet were calculated and produced for the generation and transportation of a proton beam. The facility being developed will be designed to generate and transport a deuteron beam, while the high-voltage and intermediate electrodes of the accelerator will be connected directly to the respective sections of the high-voltage power source located inside the vacuum part of the feedthrough insulator [1].

The paper presents the concept of a compact accelerator source of fast neutrons being developed; the results of numerical calculations, modeling and preliminary testing of the accelerator power source in air are presented and summarized; further steps of manufacturing and testing of the proposed power source are formulated.

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[1] S.Yu. Taskaev, I.N. Sorokin. Vacuum insulated tandem accelerator. Patent for the invention No. 2653840 dated 05/15/2018.

Young scientist paper:

Yes

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