

Referee Report on Theme 5

«Modernization of the EG-5 accelerator and development of its experimental infrastructure»

The availability of an easy-to-use and cheap-to-use source of intense, monoenergetic, absolutized beams of low-energy p-, d-, and alpha-particles and a pulsed secondary fast neutron beam is necessary for an international multidisciplinary nuclear center.

The EG-5 electrostatic accelerator of FLNP is the basis of such studies. But in this today form, it can provide only a part of such studies, and the available experimental equipment is significantly inferior to modern analogues.

The authors of this project compare future opportunities of the modernization of the EG-5 “through repair” and with the purchase of a new foreign accelerator for the same energy (Table 3; Table 4, columns 1 and 2).

During the modernization of the EG-5 it is planned: a new accelerator tube and ion source, a new vacuum pumping system, a new insulation gas system, new experimental equipment for physical and applied research, etc.

At the same time, in the modernized EG-5 will be absent pulse mode and acceleration of heavy ions.

In practically, pulse mode is the simplest equipment that electrostatically removes the beam from the acceleration axis before accelerating tube for a certain time. The passing part of the beam is additionally grouped in time by single electrostatic lens voltage that depends on time. According to available examples, such equipment is designed by the staff, for example in the IAP (Sumy) or IPPE (Obninsk).

The possibility of accelerating heavy ions (for example, oxygen with an energy of 4 - 12 MeV) does not have a tasks and customers, perhaps, so far.

Therefore, I support the modernization of the EG-5 “by repair” (Table 3) with the first priority.

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