$$\omega+ = (IP + 3EA)2/16(IP - EA) \; (eV) \tag{8}$$

$$\omega- = (3IP + EA)2/16(IP - EA) \; (eV) \tag{9}$$

$$Eg = E_{LUMO} - E_{HOMO} \; (eV) \tag{10}$$

All the calculations were carried out in N,N- dimethylformamide (DMF) environment with the Polarizable Continuum Model (PCM) using the Integral Equation Formalism variant (IEFPCM) solvation model [1].

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SIMULATION OF INTERACTION OF HIGH ENERGY PROTON BEAM WITH HEAVY TARGETS

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The study of processes occurring in Accelerator Driven system (ADS) is of high interest in the development of innovative projects. The main reason for this interest is using the accelerator as an external source of neutrons which makes such systems safer to operate and makes it easy to control chain fission reaction. Furthermore, ADS seems to be a promising system for energy production and transmutation of spent nuclear fuel.

Keywords: Accelerator Driven system, Monte Carlo method.

An experimental study at potentially dangerous facilities is often costly and difficult to implement. To justify and plan experimental studies on a subcritical system, it is necessary to determine some of its characteristics. Neutronics of ADS can be calculated using modern simulation programs based on the Monte Carlo method.

In this research lead and tungsten targets exposed to high-energy protons were investigated. For this issue the model of the target was developed for calculation by Geant4 code. Standard physics list QGSP_BIC_HP was used for simulation. Different characteristics of radiation coming out of heavy targets were obtained and compared with relevant experimental data [1, 2].

Previously, the neutron yield from the lead and tungsten targets was calculated. Next, energy spectra of emitted secondary particles were obtained for both targets and different source energy. The simulation results are in good agreement with corresponding experimental data and similar calculations using other Monte Carlo codes [1, 2]. Also, the processes occurred in the targets exposed to proton beam were determined.

The development of a full-scale model of ADS is planned for studying its kinetics and experimental research at the Joint Institute for Nuclear Research (Dubna, Russian Federation).
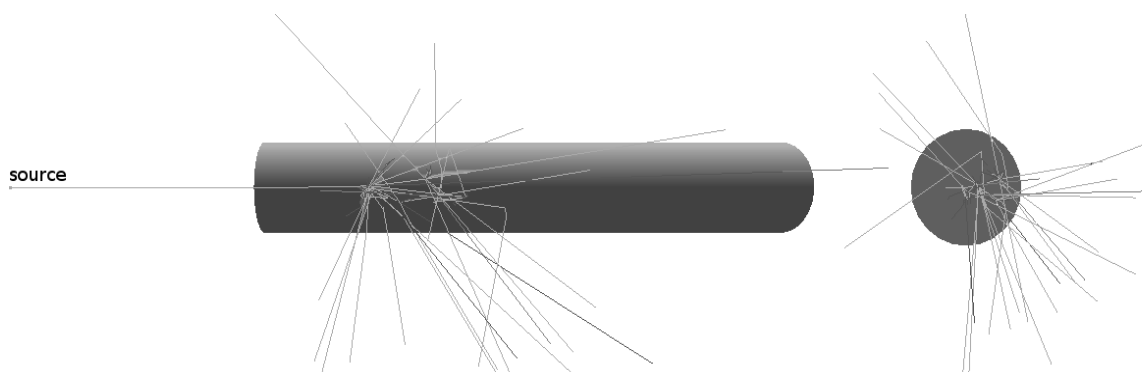

Fig. 1. – Model of lead target irradiated to proton with energy 1,4GeV

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THE USE OF INFORMATION TECHNOLOGY IN THE SALE OF FORESTRY PRODUCTS OF THE GRODNO SIFA

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For the implementation of forest products to the population, all products must be classified, systematized and presented in a convenient form for a consumer. It is advisable to divide all the products according to the following parameters:
– a forestry institution that sells the products;
– the variety of wood;
– the diameter of product;
– the wood species;
– the warehouse of a forestry institution.

Keywords: forestry institution, forest products, information technology.

There are 98 forestry institutions in the Republic of Belarus; 11 of them belong to the Grodno SIFA. Each sells their products to the population.
The main objectives of the Grodno SIFA are the following:
– public administration in the field of the use, reproduction, conservation and protection of forests;
– implementation of forest management activities;
– managing hunting, monitoring the compliance with the rules and terms of hunting;
– works on the wood harvesting of all types of felling (round wood);
– wood processing (sawn timber in assortment and rounded products);
– realization of forest products;
– foreign economic activity.
Each forestry institution has developed its own website since information technology appeared. You can find out about the products there. Nowadays, the information about the products sold and prices can be found only on the website of each forestry institution in the section PRODUCTS. For convenient search by potential buyers of information on product prices, it is advisable to create a common information Internet resource and to classify and systematize all products according to such criteria as
– a forestry institution that sells the products;
– the variety of wood;
– the diameter of product;
– the wood species;
– the warehouse of a forestry institution.