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**RESONANCE PROTON SCATTERING USE FOR THE BEAM PARAMETERS CONTROL
OF THE ELECTROSTATIC ACCELERATORS**

The paper discusses peculiarities of the resonance proton scattering use for the beam parameters control of the electrostatic accelerators. The expediency of the use has been confirmed by experiment. Peculiarities are caused because elastic resonance scattering through the stage of compound nucleus is always accompanied by potential and Coulomb scattering. These three components interfere and for that reason the resonance form depends on a scattering angle and total angular momentum of a compound nucleus level. However, possessing necessary information in the given field of nuclear spectroscopy enables the selection of resonance with the characteristics suitable for the calibration purpose. Considerable increase of the scattering cross section in the resonance region saves the time and simplifies the experiment technical maintenance. The experiments were performed at the 10 MeV tandem accelerator of the Institute for Nuclear Research, National Academy of Sciences of Ukraine, Kyiv, after its modernization. Silicon and oxygen were used as the targets. Silicon targets were of two types of thickness: 1) the target of complete absorption, 2) the target with the thickness in which the loss of protons energy exceeded the width of the selected resonance. The elastic and non elastic scattering from silicon were used in region of the 3,100 MeV proton energy resonance. Oxygen target, as component of the surface oxidizing layer on beryllium had the thickness which in terms of the loss of proton energy was less than the width of the selected elastic narrow resonance at 3,470 MeV proton energy. As result of the measurement the corrections concerning the energy scale of the accelerator and protons energy spread in the beam were proposed.

Keywords: electrostatic accelerator, proton, experiment, resonance protons scattering use, silicon and oxygen targets, beam parameters control.