

## DETERMINATION OF THE OPTIMAL INTERACTION PARAMETERS OF $^{14}\text{N}$ IONS WITH $^{10}\text{B}$ NUCLEI AT ENERGIES 21 - 93.6 MeV

Thursday, October 15, 2020 6:55 PM (20 minutes)

The experiments at the DC-60 heavy ion accelerator in nuclear physics are focused, on obtaining the missing information on the internuclear interaction potentials, with the contribution of the elastic transfer process in the region of the rear angles. In this work, we measured the angular distributions of elastic scattering of  $^{10}\text{B}(^{14}\text{N}, ^{14}\text{N})^{10}\text{B}$  at energies  $E_{lab} = 21$  and  $24.5$  MeV in the range of angles  $30^\circ$ - $165^\circ$  in the center of mass system. In the experiment, self-sustaining  $^{10}\text{B}$  films with a thickness of  $30$ - $40 \mu\text{g}/\text{cm}^2$  were used as target [1]. The measurements were carried out using the  $\Delta E$ - $E$  method of registration and identification of nuclear reaction products.

The analysis of angular distributions together with literature data [2, 3] was carried out in the framework of the optical model and folding model using the FRESKO program. The optimal values of potential parameters are found. It should also be noted that we introduced two additional potentials in a phenomenological way, exploring the sensitivity of scattering to the optical potential.

[1] Alimov D.K., Burtebayev N., Boztosun I., Kerimkulov Zh.K., Amangeldi N., Mukhamejanov Ye., Janseitov D., Nassurlla M., Kurahmedov A., Khojayev R., Sabidolda A. Investigation of the process of elastic scattering of nitrogen ions on  $^{10}\text{B}$  nuclei at  $24.5$  -  $93.6$  MeV // II International Scientific Forum Nuclear Science and Technologies. Abstracts. Almaty. -2019. -P.40

[2] Motobayashi T., Kohno I., Ooi T., and Nakajima S.  $\alpha$ -Transfer reactions between light nuclei // Nuclear Physics A, -1979. -P.193-212.

[3] Takai H., Koide K., Bairrio Nuevo A., Dietzsch Jr.O. Dietzsch  $\alpha$ -transfer contribution to  $^{10}\text{B}+^{14}\text{N}$  elastic scattering // Phys. Rev. C. -1988. -Vol.38, №2. -P.741-747.

**Primary authors:** ALIMOV, Dilshod (Institute of Nuclear Physics, Almaty, Kazakhstan); Prof. BURTEBAYEV, Nassurlla (Institute of Nuclear Physics, Almaty, Kazakhstan); BOZTOSUN, Ismail (A); Dr AMANGELDI, Nurlan (L.N.Gumilyov ENU, Nur-Sultan, Kazakhstan); JANSEITOV, Daniyar (Joint Institute for Nuclear Research); Dr NASSURLLA, Maulen (Institute of Nuclear Physics, Almaty, Kazakhstan); Mr KURAHMEDOV, A (L.N.Gumilyov ENU, Nur-Sultan, Kazakhstan); Mr KHOJAYEV, Ramazan (al-Farabi KazNU, Almaty, Kazakhstan); Mr SABIDOLDA, Aaganbek (Institute of Nuclear Physics, Almaty, Kazakhstan);

**Presenter:** ALIMOV, Dilshod (Institute of Nuclear Physics, Almaty, Kazakhstan)

**Session Classification:** Poster session 2 (part 3)

**Track Classification:** Section 2. Experimental and theoretical studies of nuclear reactions.