

# Reaction cross section of ${}^6\text{He}$ and ${}^6\text{Li}$ ions with silicon

V.Yu. Ugryumov<sup>1,2</sup>, Z. Dlouhý<sup>2</sup>, I.V. Kuznetsov<sup>1</sup>, A. Kulko<sup>1</sup>, I.N. Kuhtina<sup>1</sup>, V.F. Kushniruk<sup>1</sup>, Yu.E. Penionzhkevich<sup>1</sup>, Yu.G. Sobolev<sup>1</sup>, T.K. Zholdybaev<sup>3</sup>

<sup>1</sup> Joint Institute for Nuclear Research, FLNR, Dubna, Russia

<sup>2</sup> Institute of Nuclear Physics, ASCR, CZ-25068, Řež, Czech Republic

<sup>3</sup> Institute of Nuclear Physics, Alma-Ata, Republic of Kazakhstan

One of the most exciting recent events in nuclear physics has been the discovery of extended neutron distributions in exotic neutron-rich nuclei. Reaction cross sections ( $\sigma_R$ ) of these nuclei have been widely studied and have shown a remarkable sensitivity to the nucleon distribution [1] of the nucleus under study. Particularly, this is due to the behaviour of nucleon-nucleon cross sections at low energies.

The energy dependence of  $\sigma_R$  for the  ${}^6\text{He}$  and  ${}^6\text{Li}$  at energies up to 5 AMeV has been measured by the transmission technique. In our experiments we have used a silicon multi-layer telescope. The first thin detector has measured an energy-loss of incoming particles. The next detector used as active target where various nuclear reactions takes place has measured their deposition energy. Thus we may separate the ions undergoing the reaction on the target from those which do not interact. The results of measurements, data from literature [2,3] and optical model calculations [4] are presented in Figure 1.

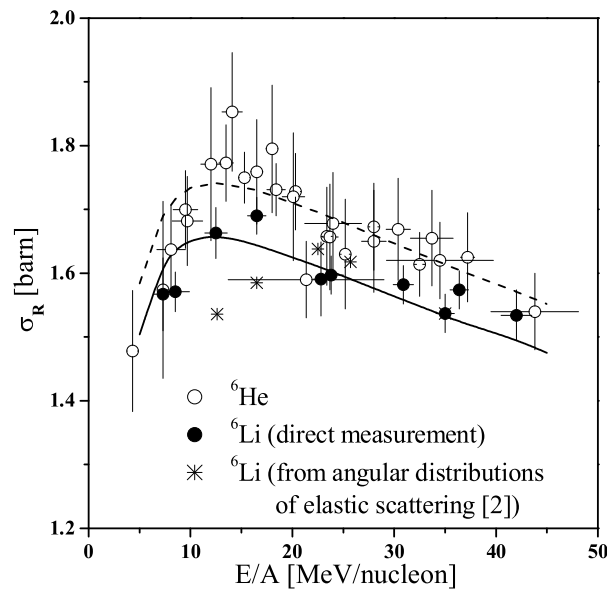


Figure 1: Energy dependence of reaction cross section on silicon.

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- [2] M. El-Azab Farid and M.A. Hassanain, Nucl. Phys. A 678, 39 (2000);
- [3] R.E. Warner et al., Phys. Rev. C 54, 1700 (1996);
- [4] S.A. Fayans, O.M. Knyazkov et al., Phys. Lett. B 357, 509 (1995).