

Entrance channel effects in medium mass nuclear systems at 25 MeV/nucleon

I. Lombardo^{1*}, L. Acosta⁷, C. Agodi², F. Amorini², A. Anzalone², L. Audatore⁵, I. Berceanu⁹, G. Cardella³, S. Cavallaro², M.B. Chatterjee¹⁰, E. De Filippo³, E. Geraci⁴, G. Giuliani¹¹, L. Grassi⁸, J. Han¹², E. La Guidara³, G. Lanzalone^{2,6}, D. Loria⁵, C. Maiolino², A. Pagano³, M. Papa³, S. Pirrone³, G. Politi^{3,4}, F. Porto², F. Rizzo^{2,4}, E. Rosato¹, P. Russotto³, A. Trifirò⁵, M. Trimarchi⁵, G. Verde³, M. Vigilante¹

¹ *Dipartimento di Fisica, Università di Napoli Federico II, and INFN - Sezione di Napoli, Italy*

² *INFN - Laboratori Nazionali del Sud, Via S. Sofia, Catania, Italy*

³ *INFN - Sezione di Catania, Via S. Sofia, Catania, Italy*

⁴ *Dipartimento di Fisica e Astronomia, Università di Catania, Via S. Sofia, Catania, Italy*

⁵ *Dipartimento di Fisica, Università di Messina, and INFN-Gr.Coll. Messina, Italy*

⁶ *Facoltà di Ingegneria ed Architettura, Università Kore di Enna, Enna, Italy*

⁷ *Dep. Física Aplicada, Universidad de Huelva, Huelva, Spain*

⁸ *Ruder Boskovic Institute, Zagreb, Croatia*

⁹ *Institute for Physics and Nuclear Engineering, Bucharest, Romania*

¹⁰ *Saha Institute of Nuclear Physics, Kolkata, India*

¹¹ *Texas AM University, College Station, TX, United States of America and*

¹² *Institute of Modern Physics, CAS, Lanzhou, Peoples Republic of China*

Various aspects of nuclear dynamics concerning medium-mass collisions $^{40,48}\text{Ca}+^{40,48}\text{Ca}$ (pure+mixed systems) and $^{40}\text{Ca}+^{46}\text{Ti}$ at 25 MeV/nucleon have been investigated by using the 4π multi-detector Chimera [1, 2]. Effects related to the different neutron to proton ratio values of entrance channels (N/Z of the projectile and target combination) have been found both in central and peripheral collisions, and will be discussed [3, 4]. These effects represent an useful tool to investigate the behavior of the symmetry energy at near-saturation densities [3, 5]. We will report also on the preliminary data obtained by analyzing the $^{42}\text{Ca}+^{54}\text{Fe}$ system at the same bombarding energy. This system has the same total mass of the $^{48}\text{Ca}+^{48}\text{Ca}$ one, but a much smaller total neutron to proton ratio (N/Z=1.087 vs N/Z=1.4). In this way, size effects due to the different total mass of the investigated systems can be properly taken into account in the interpretation. All the obtained results will be discussed on the light of possible new experimentations at radioactive ion beam facilities.

References

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* e-mail address: ivlombardo@na.infn.it