



Contribution ID: 122

Type: Poster

## Elastic scattering of $^{17}\text{O}$ ions from $^{58}\text{Ni}$ at near-barrier energies

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A powerful tool for the study of weakly bound nuclei is the elastic scattering process, which provides a first information on the overall reactivity of the collision participants. We measured the elastic scattering angular distributions for the reaction  $^{17}\text{O}+^{58}\text{Ni}$  in order to compare the reactivity of  $^{17}\text{O}$  ( $S_n = 4.143$  MeV) with its mirror nucleus  $^{17}\text{F}$  ( $S_p = 0.600$  MeV). The experiment was performed at the Laboratori Nazionali di Legnaro with an  $^{17}\text{O}$  beam in the energy range 40.0-50.0 MeV impinging on a  $^{58}\text{Ni}$  (150ug/cm<sup>2</sup>) target with a  $^{208}\text{Pb}$  (50ug/cm<sup>2</sup>) backing. Three Eres DSSSDs modules of the EXPADES [1] array were placed at  $\pm 50^\circ$  ( $45^\circ < \theta < 80^\circ$ ) and  $+110^\circ$  ( $111^\circ < \theta < 140^\circ$ ). Data were analyzed within the frame of the Optical Model using both Woods-Saxon and M3Y double-folding potentials. Fig. 1 shows the elastic scattering angular distributions and the optical model best fits for the two approaches. The resulting fit parameters agree with a model describing the  $^{17}\text{O}$  nucleus as a  $^{16}\text{O}$  core with a valence neutron orbiting in a  $d_{5/2}$  state [2]. The reduced total reaction cross sections, shown in the inset of Fig. 1, result to be slightly lower than those of  $^{16}\text{O}+^{58}\text{Ni}$  system [3], but higher than those of  $^{17}\text{F}+^{58}\text{Ni}$  system [4]. This outcome suggests that, for the pair  $^{17}\text{O}$ - $^{17}\text{F}$ , nuclear structure effects play a more relevant role than the projectile binding energy in the reaction dynamics at Coulomb barrier energies.

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**Track Classification:** Reactions and Structure - Unstable Nuclei