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Systematics of reaction cross sections from double folding and single folding optical potentials

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The study of knockout reactions in which exotic nuclei are used as projectiles, is a hot research topic. We evaluate the accuracy of the description of the core-target interaction, by comparing theoretical and experimental reaction cross sections for a large dataset of knockout reactions carried out with light projectiles on a 9Be target. Our results show that single-folded potential, derived from a phenomenological optical potential and projectile densities, lead to cross sections which are larger and in better agreement with data, compared with double-folded potentials. Moreover, the absorption radius parameter extracted from S matrices has a stable value for all projectile masses, indicating a clear separation between the region of surface reactions and the region of strong absorption.

I will also briefly describe my contribution to the development of the "Theo4Exp Virtual Access Infrastructure" in the framework of the EU project EuroLabs. This aim of the project is the creation of user-friendly open-access platform for a variety of computer codes to be used by the physics community, and in particular by experimental nuclear physicists. I am presently working at the Theo4Exp Milano node. I have just completed the installation of a spherical HF plus RPA code that allows studying multipole excitations, and I plan to extend the platform by installing other codes like a shell-model one.

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