

Study of the $^{11}\text{Li}+^{64}\text{Zn}$ reaction at energy around the Coulomb barrier

Tuesday, 22 March 2022 10:30 (15)

Abstract

We present preliminary new data of the reaction $^{11}\text{Li}+^{64}\text{Zn}$, recently measured at the radioactive nuclear beam facility of TRIUMF (Vancouver, Canada) at the energy of 22.5 MeV. The halo nucleus of ^{11}Li is composed of a core nucleus of ^9Li and two loosely bound neutrons. Due to the weakly bound structure, the dipole Coulomb polarizability strongly affects the elastic scattering at energies around the Coulomb barrier, producing a strong reduction of the elastic cross section with respect to the Rutherford cross section and a high breakup probability. During this talk, we discuss in detail the detection system and the analysis of the experimental data. Finally, we compare the preliminary experimental data with an optical model calculation, which includes a coulomb dipole polarization potential, and with Continuum-Discretized Coupled-Channels (CDCC) calculations considering a three-body model of ^{11}Li .

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Session Classification : Red FNUC (Red Temática de Física Nuclear)

Track Classification : Red Temática de Física Nuclear (FNUC)