STUDY OF COULOMB DIPOLE POLARIZATION EFFECTS ON REACTIONS INDUCED BY EXOTIC NUCLEI

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We present a parameter-free optical model analysis of the elastic scattering angular distributions and total reaction cross sections of the exotic nuclei ^{9,11}Li on ^{208}Pb, at energies below and above the Coulomb barrier. The bare part of the optical potential is constructed microscopically by means of a double folding procedure, using the São Paulo potential. This bare interaction is supplemented with a Coulomb dipole polarization (CDP) potential, which takes into account the effect of the dipole Coulomb interaction. For this CDP potential, we use an analytical formula derived from the semi-classical theory of Coulomb excitation. Within this formalism, an unusual long range absorption for the ^{11}Li+^{208}Pb system has been identified, which is dominated by the Coulomb interaction. We have compared the results obtained with the absorption mechanism observed for the ^{6}He+^{208}Pb reaction, which, unlike of ^{11}Li+^{208}Pb reaction, takes place at small interacting distances, where both Coulomb and nuclear interaction are important. The proposed approach shows to be a fundamental basis to study reactions involving exotic nuclei.