

Study of the elastic breakup of weakly bound Lithium isotopes at near barrier energies

We have performed CDCC calculations for collisions of ${}^6,{}^7\text{Li}$ projectiles on ${}^{59}\text{Co}$, ${}^{144}\text{Sm}$ and ${}^{208}\text{Pb}$ targets at near-barrier energies, to assess the relative importance of the Coulomb and the nuclear couplings in the breakup of the two lithium isotopes, as well as the Coulomb-nuclear interference. We have also investigated scaling laws, expressing the dependence of the cross sections on the charge and the mass of the target. We explore the similarities and differences between the results for the two Lithium isotopes, both described as two-cluster nuclei, alpha plus deuteron or tritium. The relevance of the Coulomb dipole and quadrupole strengths at low energy for the two-cluster projectile is investigated in details.

Paulo R. S. Gomes