Title: Simultaneous calculations for elastic scattering, fusion, breakup and other direct cross sections for reactions of exotic nuclei

Abstract:

Starting for our recent calculations of the Coulomb dynamical polarization potential [1,2,3], simultaneous analyses are performed of cross section data for elastic scattering, fusion, Coulomb breakup, and other direct yields for the 6He+209Bi system at near Coulomb-barrier energies [4]. The bare and dynamical polarization potentials are constructed microscopically from the structure of the colliding nuclei with only one adjustable parameter and they reproduce all the data well. This method of calculation can be successfully applied to the reactions of weakly-bound and exotic projectiles with heavy targets.

References:

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[3] H.M. Maridi, K. Rusek, and N. Keeley, “Calculation of Coulomb breakup cross sections using a new Coulomb dynamical polarization potential”, Phys. Rev. C 106, 054613 (2022). <https://doi.org/10.1103/PhysRevC.106.054613>

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