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STUDY OF COULOMB BREAKUP OF 11BE WITHIN THE NON-PERTURBATIVE SEMICLASSICAL AND QUANTUM-QUASICLASSICAL TIME-DEPENDENT APPROACHES

Friday, 15 July 2022 16:20 (20 minutes)

We investigate the Coulomb breakup of 11Be halo nuclei on a heavy target

(208Pb) from intermediate (70 MeV/nucleon) to low energies (5 MeV/nucleon) within the non-perturbative semiclassical and quantum-quasiclassical time-dependent approaches.

To quantify how good the semiclassical approach with decreasing the projectile energy is, we also performed calculations with quantum-quasiclassical approach, which includes the effect of deformation of the projectile trajectory and the transfer of energy from target to projectile and vice versa

during a collision. We also analyse in the frame of this model the influence of the 11Be resonant states 5/2+, 3/2- and 3/2+ on the breakup processes. This analysis demonstrates the possibility of studying low-lying resonances in halo nuclei using their breakup reactions. The method can potentially be useful for interpretation of low-energy breakup experiments on different targets in studying the halo structure of nuclei.

The speaker is a student or young scientist

Yes

Section

1. Nuclear structure: theory and experiment

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Session Classification: Nuclear structure: theory and experiment