COULOMB BREAKUP OF HALO NUCLEI

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The work is devoted to a theoretical study of the Coulomb breakup of halo nuclei in a quantum mechanical approach. Exotic nuclei are the subject of intensive experimental and theoretical research. Coulomb breakup are relevant for interpretation and planning of experiments in radioactive beams.

The halo is one of the most intensively studied objects in modern low-nucleus physics. The mean radii of certain nucleons orbits may be larger than nuclear interaction range. A characteristic feature of halo nuclei physics is correlations between the mechanism of nuclear reaction and structure [1].

The breakup is one of the important tools for studying halo properties. In these reactions, the information from dissociation of projectile into fragments could be used to conclude about the properties of halo part of wave function. With a good approximation, the breakup could be regarded as a transition from the bound state of two (three) particles to the continuum, due to the changing Coulomb field [2].

The ^{11}Be nucleus is regarded as a neutron halo consisting of ^{10}Be core and one neutron. Energy levels of ^{11}Be were calculated solving Schrodinger equation by means of numerical methods. This work is the initial stage of the work on the investigation of the breakup of halo nuclei. A detailed investigation is planned to research the breakup of the halo nucleus, using the numerical method for solving the nonstationary Schrodinger equation.

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