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Differential Cross Section for Proton Induced Deuteron Breakup at 108 MeV

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Research in the domain of few-nucleon systems is the basis for understanding of nuclear interactions and properties of nuclei.

The precision theoretical calculations for three nucleon systems should be confronted with a rich set of systematic experimental data. For this purpose a series of measurements of deuteron breakup in collision with proton was conducted in KVI Groningen and FZ-Jülich. These studies confirmed the important role of the Three-Nucleon Force (3NF) and huge influence of Coulomb interaction between protons [1, 2, 3]. However, some discrepancies persist, indicating that our present understanding of the problem is not yet perfect [4, 5, 6].

Continuation of the studies in a wide range of energies, at the regions of the maximum visibility of the certain effects are necessary. For this purpose, the BINA (Big Instrument for Nuclear-polarization Analysis) detection system has been installed at CCB (Cyclotron Center Bronowice). The BINA detection setup is especially dedicated to study various aspects of the dynamics in three nucleon system at intermediate energies. Moreover, allows to register coincidences of two-charged particles in nearly 4π solid angle, making it possible to study almost full phase-space of breakup and elastic reactions [4, 7].

The data analysis and preliminary results of the measurement of proton-induced deuteron breakup at beam energy of 108 MeV performed at Cyclotron Center Bronowice PAS in Cracow will be presented.

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Selected session

Few body systems

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