

Experimental studies of few-nucleon systems

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The understanding of nuclear systems and their interactions needs a thorough studies of the few-nucleon system dynamics. Modern nucleon-nucleon (NN) interaction models are able to reproduce the bulk of all NN data with an utmost precision. The comparison of these high quality calculations with precision experimental data for three nucleon systems strongly suggests that additional dynamics, like three-nucleon and Coulomb forces need to be included in theoretical description.

Even if the theoretical and experimental improvements are both impressive, there still remain unresolved puzzles which indicate that our understanding of the complexity of forces acting in the few-body system is not complete.

During my talk I will present the status of experimental studies of the few-nucleon interaction dynamics. As a sample reference the cross section results from a series of present-generation studies of the Nd breakup reaction at intermediate energies will be used with a focus on the ongoing project conducted at the Cyclotron Center Bronowice, PAS, Cracow. New possibilities for continuation of that research program will be emphasized.