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Experimental studies of d(1H,pp)n and d(2H,dp)n reactions at beam energy of 160 MeV

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A series of experiments studying a few nucleon systems in continuum of 3-body final states was performed at KVI Groningen with the use of BINA detector. The studies were mainly devoted to the system of three nucleons. The differential cross section data obtained for d(1H,pp)n reaction at beam energy of 160 MeV (80 MeV/nucleon)will be presented and compared to the state-of-the-art calculations, in particular with the aim to conclude on the role of the so-called three-nucleon force (3NF). The 4N ensemble reveals already the complexity of heavier systems, e.g.~variety of entrance and exit channels, various total isospin states etc. This feature poses challenges, but also introduces an enhanced sensitivity to certain aspects of the nuclear dynamics, manifested in various channels and configurations. Expected enhancement of 3NF effects was the motivation to extend the experimental studies to the 4N systems. The first results obtained d(2H,dp)n reaction at 160 MeV beam energy will be shown. In the first place, the differential cross section for configurations "not far" from quasi-free deuteron-proton scattering are considered.

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