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Dynamical effects in deuteron-proton reaction at 100 MeV

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For the BINA collaboration between

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Experimental studies of the deuteron-proton system at medium beam energies expose various dynamical ingredients, like three-nucleon force (3NF) and Coulomb force, which play an important role in correct description of observables (e.g. cross section). The experimentally determined differential cross sections for elastic scattering and breakup constitute the basis for testing various theoretical approaches [1 - 4] to model the interaction in three-nucleon systems. Moreover, studies of the dp breakup reaction at low energy are very crucial for testing The Chiral Perturbation Theory [5] (as soon as calculations for the nucleon-deuteron breakup reaction at low energies became available).

During presentation the differential cross sections for two main reaction channels (elastic scattering and breakup) of deuteron-proton system at beam energy of 100 MeV will be presented. The experiment has performed at KVI in Groningen, with the use of the forward part of the BINA detector [6]. The data will be compared to theoretical calculations with including the 3NF and Coulomb force effects.

[1] H. Witała, et al., Phys. Rev. Lett. 81 (1998) 1183.

[2] A. Deltuva, et al., Phys. Rev. C 68 (2003) 024005.

[3] S.A. Coon, et al., Few-Body Syst. 30 (2001) 131.

[4] A. Deltuva, et al., Phys. Rev. C 80 (2009) 064002.

[5] E. Epelbaum, et al., Eur. Phys. J. A 19 (2004) 125; *ibid.* A 19 (2004) 405.

[6] N. Kalantar-Nayestanaki et al., Rep. Progr. Phys. 75 (2012) 016301.

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