Measurements of the three-body break-up channel observables for a part of the phase space of deuteron-deuteron scattering at 65 MeV/nucleon

A Ramazani Moghaddam Arani and F Karimian Arani
Department of Physics, University of Kashan, Kashan, Iran
Email: ramezamo@kashanu.ac.ir

(Received 1 December 2013; in final form 31 December 2015)

Abstract
Information obtained from nucleus as a bound system of nucleons and from nucleon-nucleon scattering experiments is a strong tool for studying various aspects of nuclear forces. Deuteron-deuteron scattering as a four-nucleon system can provide useful information. So, scattering experiment of a polarized beam of deuterion with kinetic energy of 65 MeV/nucleon from a liquid-deuterium target was done at Kernfysisch Versneller Instituut (KVI) and the Big Instrument for Nuclear-polarization Analysis (BINA) was utilized. The obtained data from this experiment were analyzed and presented in this paper. Some results for vector and tensor analyzing powers for a part of the phase space of the Three-Body Break-up channel in d-d scattering are discussed herein. This dataset will be used to test the upcoming theoretical calculations for a four nucleon system, especially for studying the three-nucleon force effects.

Keywords: analyzing power, three-nucleon force, three-body break-up channel

For full article, refer to the Persian section