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## Study of Three-Nucleon Dynamics in the $dp$ breakup collisions using the WASA detector at COSY-Juelich

*Monday, 31 July 2023 16:00 (15 minutes)*

An experiment to investigate the  ${}^1\text{H}(d, pp)n$  breakup reaction using a deuteron beam of 300, 340, 380 and 400 MeV (150, 170, 190, 200 MeV/nucleon) and the WASA (Wide Angle Shower Apparatus) detector, has been performed at the Cooler Synchrotron COSY-Juelich. Due to almost  $4\pi$  acceptance and moderate detection threshold of the WASA system, differential cross section data have been collected in a large part of the breakup reaction phase space. The set of proton-proton coincidences registered at Forward Detector at the beam energy of 170 MeV/nucleon has been analysed on dense grid of kinematic variables, giving in total around 5600 data points. The cross section data are compared to theoretical predictions based on the state-of-the-art nucleon-nucleon potentials, combined with three-nucleon force, Coulomb interaction or carried out in a relativistic regime. Quantitative analysis of the description of the cross section data provided by various theoretical calculations in terms of  $\chi^2$ -like variables will be discussed. In addition, first results for the differential cross sections for selected kinematical configurations defined by the polar angles  $\theta_1$  and  $\theta_2$  and the relative azimuthal angle  $\phi_{12}$  for the deuteron breakup at 190 MeV/nucleon will be presented.

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**Session Classification:** Monday Parallel Session: Few-body systems (Atrium Maximum)