



Contribution ID: 71

Type: poster

Comparison of the JISP16 and the AV18 forces based predictions for the differential cross section and the nucleon analyzing power in $d(n, nn)p$ reaction

Tuesday, 25 June 2019 13:30 (1h 30m)

The JISP16 nucleon-nucleon potential [1] is applied to investigate the nucleon induced deuteron breakup reaction at energies $E=13$ and 65 MeV. We use the formalism of Faddeev equation [2] and proceed like in the case of the application of the JISP16 potential to the elastic scattering process [3].

Our study reveals that this force delivers, in general, qualitatively a similar description of the exclusive cross-section and analyzing power for the studied reaction to the one based on the standard realistic nucleon-nucleon AV18 interaction [4]. However, in some regions of the phase space, the differential cross sections based on the JISP16 and on the AV18 forces differ by more than 100% and 50% at $E=13$ and $E=65$ MeV, respectively. In the case of analyzing power – there is a difference of more than 100% at $E=65$ MeV. Such specific parts of the phase space can be used to fine-tune the JISP16 potential parameters.

References list:

- [1] A. M. Shirokov, J. P. Vary, A. I. Mazur, and T. A. Weber, Phys. Lett. B644, 33 (2007)
- [2] W. Glöckle et al., Phys. Rept. 274, 107 (1996)
- [3] R. Skibiński et al., Phys. Rev. C97, 014002 (2018)
- [4] R. B. Wiringa, V. G. J. Stoks, and R. Schiavilla, Phys. Rev. C51, 38 (1995)

Primary authors: SOLOVIOV, Volodymyr (Jagiellonian University, Marian Smoluchowski Institute of Physics); Prof. GOLAK, Jacek (Jagiellonian University, Marian Smoluchowski Institute of Physics); Prof. SKIBIŃSKI, Roman (Jagiellonian University, Marian Smoluchowski Institute of Physics); Prof. WITAŁA, Henryk (Jagiellonian University, Marian Smoluchowski Institute of Physics)

Presenter: SOLOVIOV, Volodymyr (Jagiellonian University, Marian Smoluchowski Institute of Physics)

Session Classification: Poster session