

Data analysis of OEDO day 0 experiment measuring $^{93}\text{Zr} + d$ transmutation reactions for the study of deuteron breakup

In Autumn 2017, the OEDO setup was commissioned during a series of day 0 experiments performed by the ImPACT 17-02-01 collaboration. One of these experiments measured $^{93}\text{Zr}+d$ transmutation reactions at ~ 28 MeV/u, the lowest energy to date. Deuterons have a low binding energy (2.224 MeV) and therefore undergo breakup whilst in the presence of Coulomb and nuclear fields. By comparing measured cross-sections of the $^{93}\text{Zr}+d$ reactions with theoretical calculations, the role of deuteron breakup on the production cross-sections may be better understood. During 2022 data analysis of the $^{93}\text{Zr}+d$ measurement has been performed and cross sections extracted. Comparisons with theoretical calculations such as DEURACs are now underway. We report the status of the analysis and results.

Primary author: CHILLERY, Thomas

Co-authors: IWAMOTO, Chihiro (Center for Nuclear Study, University of Tokyo); NAGAE, D; SUZUKI, D; AHN, D.S.; IDEGUCHI, Eiji (RCNP); MIYATAKE, H; SAKURAI, H; SUZUKI, H; TAKEDA, H; YAMADA, H; ONG, H.J.; WANG, He (RIKEN); OTSU, Hideaki (RIKEN Nishina Center); Mr SHIMIZU, Hideki (CNS, Univ. of Tokyo); YAMAGUCHI, Hidetoshi (Center for Nuclear Study, the University of Tokyo); Dr HWANG, Jongwon (Center for Exotic Nuclear Studies, Institute for Basic Science); KUSAKA, K; NAKANO, K; WIMMER, Kathrin; KAWATA, Keita (Center for Nuclear Study, University of Tokyo); YOSHIDA, Kenichi; MIKI, Kenjiro (Tohoku University); IRIBE, Kotaro (Department of Physics, Kyushu University); YANG, Lei (Center for Nuclear Study, University of Tokyo); NAKANO, M; OHTAKE, M; DOZONO, Masanori (Kyoto University); TAKAKI, Motonobu; CHIGA, N; FUKUDA, N; IMAI, Nobu (CNS); KITAMURA, Noritaka; BELIUSKINA, Olga (CNS); SCHROCK, Philipp (CNS); YANAGIHARA, R; TSUNODA, Rieko; KAWASE, S; NAKAYAMA, S; OHMIKA, S; TAKEUCHI, Satoshi (CNS); HAYAKAWA, Seiya; MICHIMASA, Shin'ichiro (Center for Nuclear Study, the Univ. of Tokyo); Prof. OTA, Shinsuke (RCNP, Osaka University); MASUOKA, Shoichiro (Center for Nuclear Study, the University of Tokyo); SATO, Susumu (JAEA); SHIMOURA, Susumu (Center for Nuclear Study, the University of Tokyo); TERANISHI, T; SUMIKAMA, T.; SUN, X; SHIMIZU, Y; YANAGISAWA, Y; WATANABE, Yosuke; WATANABE, Yutaka (KEK WNSC)

Track Classification: Experimental Nuclear Physics: Low and Intermediate Energies