



Contribution ID: 140

Type: Oral Presentation

Slow neutron detector WINDS for (p,n) reaction in inverse kinematics with SAMURAI spectrometer

Friday, 15 May 2015 14:50 (20 minutes)

Charge exchange (CE) reactions at intermediate energies have long been used to investigate isovector spin-transfer excitations in stable nuclei[1]. Recently, significant progress has been made to employ CE reactions to the study of unstable isotopes. The most important step was the development of the (p,n) reaction in inverse kinematics[2,3].

To efficiently perform (p,n) reaction experiments in inverse kinematics, we have developed a new setup of the WINDS + SAMURAI spectrometer[4] at RIKEN RIBF. In the setup, the WINDS (Wide-angle Inverse-kinematics Neutron Detectors for SHARAO) is used for the detection of recoil neutrons and the SAMURAI spectrometer is used for tagging the (p,n) reactions. The main advantage of the setup is as follows. All the heavy fragments with different rigidities can be detected with the large acceptance of the SAMURAI spectrometer at the same time, i.e. without changing the setting of the magnetic field. This is important especially for tagging the decay channels with multi-nucleon emission, because the momentum spread of the heavy fragments rapidly becomes larger with the increase of the number of the emitted nucleons.

The first experiment by using the WINDS + SAMURAI was performed in April 2014 at RIKEN RIBF to study Gamow-Teller transition in ^{132}Sn by using (p,n) reaction. Details of the experimental setup and the current status of the data analysis will be reported.

Reference

- [1] F. Osterfeld, Rev. Mod. Phys. 64, 491 (1992).
- [2] M. Sasano et al., Phys. Rev. Lett. 107, 202501 (2011).
- [3] M. Sasano et al., Phys. Rev. C 86, 034324 (2012).
- [4] T. Kobayashi et al., Nucl. Instr. Meth. B 317, 294 (2013).

Primary author: Mr YASUDA, Jumpei (Department of Physics, Kyushu University)

Co-authors: Prof. KRASZNAHORKAY, Attila (MTA, Atomki, Debrecen, Hungary); Mr LEE, C.S. (CNS, University of Tokyo); Dr KAMEDA, Daisuke (RIKEN Nishina Center); Prof. BAZIN, Daniel (NSCL, Michigan State University); Dr MUCHER, Dennis (Technical University Munich); Mr MILMAN, Evgenly (RIKEN Nishina Center); Dr JHANG, Genie (RIKEN Nishina Center); Prof. OTSU, Hideaki (RIKEN Nishina Center); Dr BABA, Hidetada (RIKEN Nishina Center); Prof. SAKAI, Hideyuki (ULIC, RIKEN Nishina Center); Dr SATO, Hiromi (RIKEN Nishina Center); Dr SUZUKI, Hiroshi (RIKEN Nishina Center); Mr TOKIEDA, Hiroshi (CNS, University of Tokyo); Dr TAKEDA, Hiroyuki (RIKEN Nishina Center); Mr TSUBOTA, Junichi (Tokyo Institute of Technology); Dr ZENIHIRO, Juzo (RIKEN Nishina Center); Mr KISAMORI, Keiichi (CNS, University of Tokyo); Prof. YONEDA, Ken-Ichiro (RIKEN Nishina Center); Prof. YAKO, Kentaro (CNS, University of Tokyo); Dr STUHL, Laszlo (RIKEN Nishina Center); Dr SASANO, Masaki (RIKEN Nishina Center); Dr SAKO, Masami (RIKEN Nishina Center); Dr DOZONO, Masanori (CNS, University of Tokyo); Mr KANEKO, Masanori (Kyoto University); Dr NISHIMURA-KURATA, Mizuki (RIKEN Nishina Center); Ms SHIKATA, Mizuki (Tokyo Institute of Technology); Mr KOBAYASHI, Motoki (CNS, University of Tokyo); Mr TAKAKI, Motonobu (CNS, University of Tokyo); Dr FUKUDA, Naoki (RIKEN Nishina Center); Dr INABE, Naoto (RIKEN Nishina Center); Dr KOBAYASHI, Nobuyuki (University of Tokyo); Mr NAKATSUKA, Noritugu (Kyoto University); Prof. ZEGERS, R.G.T (NSCL Michigan State University); Dr SAKAGUSHI, Satoshi (De-

partment of Physics, Kyushu University); Mr REICHERT, Sebastian (Technical University Munich); Prof. MICHIMASA, Shin'ichiro (CNS, University of Tokyo); Dr OTA, Shinsuke (CNS, University of Tokyo); Mr KAWASE, Shoichiro (CNS, University of Tokyo); Mr KOYAMA, Shumpei (University of Tokyo); Prof. SHIMOURA, Susumu (CNS, University of Tokyo); Dr ISOBE, Tadaaki (RIKEN Nishina Center); Mr TAKOU, Tadashi (Department of Physics, Tohoku University); Prof. NAKAMURA, Takashi (Tokyo Institute of Technology); Mr SUWAT, Tangwancharoen (RIKEN Nishina Center); Prof. MURAKAMI, Tetsuya (Kyoto University); Prof. UESAKA, Tomohiro (RIKEN Nishina Center); Prof. WAKASA, Tomotsugu (Department of Physics, Kyushu University); Prof. MOTOBAYASHI, Toru (RIKEN Nishina Center); Prof. KOBAYASHI, Toshio (Department of Physics, Tohoku University); Prof. KUBO, Toshiyuki (RIKEN Nishina Center); Dr SUMIKAMA, Toshiyuki (Department of Physics, Tohoku University); Dr PANIN, Valeri (RIKEN Nishina Center); Ms CHAO, Wen (RIKEN Nishina Center); Dr POWELL, William (RIKEN Nishina Center); Dr TOGANO, Yasunori (Tokyo Institute of Technology); Dr MATSUDA, Yohei (Konan University); Dr SHIMIZU, Yohei (RIKEN Nishina Center); Dr KONDO, Yosuke (Tokyo Institute of Technology); Mr KUBOTA, Yuki (Center for Nuclear Study, The University of Tokyo)

Presenter: Mr YASUDA, Jumpei (Department of Physics, Kyushu University)

Session Classification: Session 18