Study of Gamow-Teller transitions from ^{132}Sn via the inverse kinematics (p,n) reaction

M. Sasano[1], J. Yasuda[2], R. G. T. Zegers[3], H. Baba[1], W. Chao[1], M. Dozono[1], N. Fukuda[1], N. Inabe[1], T. Isobe[1], G. Jhang[1,13], D. Kamaeda[1], T. Kubo[1], M. Kurata-Nishimura[1], E. Milman[1], T. Motobayashi[1], H. Otsu[1], V. Panin[1], W. Powell[1], H. Sakai[1], M. Sako[1], H. Sato[1], Y. Shimizu[1], L. Stuhl[1], H. Suzuki[1], S. Tangwancharoen[1], H. Takeda[1], T. Uesaka[1], K. Yoneda[1], J. Zenihiro[1], T. Kobayashi[4], T. Sumikama[4], T. Tako[4], T. Nakamura[5], Y. Kondo[5], Y. Togano[5], M. Shikata[5], J. Tsubota[5], K. Yako[6], S. Shimoura[6], S. Ota[6], S. Kawase[6], Y. Kubota[6], M. Takaki[6], S. Michimasa[6], K. Kisamori[6], C.S. Lee[6], H. Tokieda[6], M. Kobayashi[6], S. Koyama[7], N. Kobayashi[7], T. Wakasa[2], S. Sakaguchi[2], A. Krasznahorkay[8], T. Murakami[9], N. Nakatsuka[9], M. Kaneko[9], Y. Matsuda[10], D. Mucher[11] S. Reichert[11] D. Bazin[3], and J.W. Lee[12]

[1]RIKEN Nishina Center, Wako, Saitama 351-0198, Japan
[2]Department of Physics,Kyushu University, Higashi, Fukuoka, 812-8581, Japan
[3]National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing, Michigan 48824-1321, USA
[4]Department of Physics, Tohoku University, Sendai, Miyagi 980-8578 Japan
[5]Department of Physics, Tokyo Institute of Technology, Oh-Okayama,Tokyo 152-8551 Japan
[6]Center for Nuclear Study, University of Tokyo, Wako, Saitama 351-0198, Japan
[7]Department of Physics, University of Tokyo, Hongo, Tokyo 113-0033 Japan
[8]Institute for Nuclear Research, Hungarian Academy of Sciences (MTA Atomki), H-4001 Debrecen, P.O. Box 51, Hungary
[9]Department of Physics, Kyoto University, Kyoto 606-8502, Japan
[10]Department of Physics, Konan University, Kobe, Hyogo 658-8501 Japan
[11]Technical University Munich
[12]Department of physics, Korea university, Seoul 02841, Republic of Korea

The Gamow-Teller (GT) transition is one of the basic excitation modes in nuclei. In medium or heavier mass region, the spin-isospin collectivity in this mode exhibits the GT giant resonance (GTGR), which gives information critically important for understanding the isovector part of effective nucleon-nucleon interaction. Employing a new experimental technique in inverse kinematics developed recently, we performed the measurement of the charge-exchange 132Sn(p,n) reaction at 220 MeV/u in inverse kinematics at RIBF in order to extract GT transitions from the key doubly-magic nuclei 132Sn. The experiment was carried out by using the Wide-angle Inverse-kinematics Neutron Detectors for SHARAQ (WINDS) and the large acceptance SAMURAI spectrometer. The reconstructed excitation energy spectrum shows spin-isospin collective modes up to high excitation energy including the GTGR and spin-dipole resonances, from which the behavior of the spin-isospin collectivity far from the stability will be discussed, in conjunction with the existing data on a long chain of stable Sn isotopes.