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Astrophysical 26Si(a,p)29P nuclear reaction rate study

X-ray bursts are interesting astrophysical phenomena that occur in binary star systems of neutron stars and companion stars. As the results of the X-ray bursts, the heavy elements up to the Sn-Te region can be synthesized within only a few seconds. The ^{26}Si(α,p)^{29}P nuclear reaction rate plays a crucial role in understanding the X-ray burst phenomena, since the reaction rate significantly affects the X-ray light curves and the abundances of heavy nuclei. To estimate the reaction rate at stellar temperatures, the ^{26}Si + α scattering experiment was performed at Center for the Nuclear Study Radioactive Ion Beam Separator (CRIB) of the University of Tokyo. The 26Si radioactive ion beam was produced through the ^{3}He(^{24}Mg,^{26}Si)n reaction by In-flight method. The wide energy range in ^{30}S was investigated by adopting the thick target method. The ^{26}Si radioactive ion beams were monitored by two PPACs. The recoiling α particles were detected by silicon detector telescope. The detail of experiment will be discussed.

Primary authors: KIM, Minju (Sungkyunkwan University); CHAE, Kyungyuk; HAYAKAWA, Seiya

Co-authors: ADACHI, satoshi; Dr CHA, Soomi; CHILLERY, Thomas; FURUNO, tatsuya; GU, gyungmo; HANAI, Shutaro (CNS,the university of Tokyo); IMAI, Nobuaki (CNS); KAHL, david; KAWABATA, Takahiro; KIM, chanhee; Dr KIM, Dahee; KIM, sohyun; KUBONO, Shigeru (RIKEN Nishina Center); KWAG, minsik; LI, jiatai; MA, Nanru (Center for Nuclear Study); MICHIMASA, Shin'ichiro (Center for Nuclear Study, the Univ. of Tokyo); NGUYEN, Kim Uyen; NGUYEN, ngoc duy; OKAWA, Kodai; SAKANASHI, kohsuke; SHIMIZU, Hideki (CNS, Univ. of Tokyo); SIRBU, oana; YAMAGUCHI, Hidetoshi (Center for Nuclear Study, the University of Tokyo); YOKOYAMA, rin; ZHANG, qian

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