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Measurement of Proton Transfer Reaction for Single-Particle States in ²³F S. MICHIMASA, N. AOI, H. BABA, M. KUROKAWA, T. MINE-MURA, T. MOTOBAYASHI, S. TAKEUCHI, Y. YANAGISAWA, A. YOSHIDA, RIKEN, S. SHIMOURA, M. TAMAKI, S. KUBONO, A. SAITO, CNS, Univ. of Tokyo, H. IWASAKI, H.J. ONG, H. SAKURAI, Univ. of Tokyo, S. OTA, Kyoto Univ., N. IWASA, Tohoku Univ., S. KANNO, K. KURITA, E. TAKESHITA, Rikkyo Univ., M. NOTANI, ANL — We have studied excited states in neutron-rich 23 F using a one-proton transfer reaction onto 22 O at 35 MeV/nucleon. The experiment was performed at RIKEN Accelerator Facility, where an intense RI beam bombarded a liquid helium target in inverse kinematics. Incident and outgoing particles were identified for tagging the secondary reaction channel, and de-excitation γ rays from reaction products were detected by an array of 150 NaI(Tl) scintillators (DALI2) surrounding a secondary target in order to identify excitated states of reaction products. In addition to the transfer reaction, we could simultaneously measure the inelastic scattering of 23 F at 41.5 MeV/nucleon and the neutron-knockout reaction of ²⁴F at 36 MeV/nucleon, because the RI beam contained several nuclei around 23 F and induced several reactions which populated excited states in 23 F. We identifiled proton single-particle states in ²³F by comparing population strengths in the different reactions. In the present talk, we will report details of the experiment and discuss the proton shell structure in neutron-rich 23 F.

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