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Distinction between Proton- and Neutron-Density Distributions of Halo Nuclei at the Nuclear Surface via Reaction Cross Sections DAIKI NISHIMURA, Dpt. of Physics, Osaka Univ., M. FUKUDA, M. TAKECHI, M. MIHARA, D. ISHIKAWA, K. MATSUTA, R. MATSUMIYA, T. KUBOKI, T. SUZUKI, T. YAMAGUCHI, I. HACHIUMA, K. NAMIHIRA, T. OHTSUBO, Y. SHINBARA, Y. OHKUMA, T. IZUMIKAWA, K. TANAKA, A. OZAWA, Y. YASUDA, T. MORIGUCHI, S. MOMOTA, S. FUKUDA, S. SATO, M. KANAZAWA, A. KITAGAWA, HIMAC SIGMAR COLLABORATION — The halo and skin structures at the nuclear surface have attracted much interest for their exotic nature. By utilizing the isospin asymmetry of nucleon-nucleon total cross sections in the intermediate energy region, in principle, the proton- and neutron-density distributions can be determined independently. To demonstrate this isospin asymmetric effect, we have studied σ_R for the neutron-halo nucleus ^{11}Be and the proton-halo nucleus ^{8}B on proton targets. We measured σ_R for ^{11}Be and ^{8}B on C and proton targets by the transmission method in the intermidiate energy region using HIMAC heavy ion synchrotron at NIRS. The present result for ^{11}Be is consistent with that the tail of ^{11}Be density consists of a neutron. On the other hand, the experimental result for ^{8}B is in agreement with the calculation with a proton tail in ^{8}B. Thus, the proton and neutron density distributions at the nuclear surface can be distinguished successfully by the σ_R on C and proton targets.

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