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Determination of the density distribution of halo nuclei by proton elastic scattering SATORU SASABE, TAKUMA MATSUMOTO, Kyushu University, KOSHO MINOMO, Research Center for Nuclear Physics, Osaka University, NAOYA FURUTACHI, Nuclear Reaction Data Centre, Hokkaido University, MASANOBU YAHIRO, Kyushu University — A current issue in nuclear physics is how large the core excitation is in halo nuclei. It was recently shown in ^{31}Ne that ^{30}Ne as a core nucleus is highly excited. The angular distribution of proton elastic scattering is considered to be useful to investigate the core excitation, because it is reported that the position of the first diffraction minimum is sensitive to the density distribution of core nucleus. In this presentation, we concentrate our analysis on ^6He as a typical case of neutron halo. We use the $n + n + ^4\text{He}$ model to obtain the density distribution of ^6He and analyze elastic cross sections for ^6He scattering from a proton target at about 0.7 GeV/nucleon by using the single folding model. The calculated results are successful in reproducing the experimental data with no adjustable parameter. We also investigate the effects of core and valence neutron distributions on the angular distribution of elastic cross section.

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