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Coulomb barrier scattering of the proton halo nucleus ^{17}Ne

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Abstract

^{17}Ne is a proton drip-line nucleus and a candidate for a Borromean two-proton halo with a ^{15}O core. Elastic scattering and the inclusive ^{15}O production on a ^{208}Pb target were measured for the first time at the SPIRAL1 facility at GANIL [1]. The experiment was carried out using the GLORIA detector array [2], a compact DSSSD array able to provide a continuous angular distribution of relevant reaction channels in the angular range from 20° to 120° Lab. The new data reveal the suppression of the Coulomb rainbow peak in ^{17}Ne scattering, a surprising result since the rainbow peak persists in the scattering of the proton-halo ^8B [3]. The angular distribution of the cross-section for inclusive ^{15}O production seems compatible with the inelastic excitation of ^{17}Ne . In this contribution the experimental details will be given, and the results discussed in the framework of the Optical Model and Coupled Channel Calculations [4].

References

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