



国立研究開発法人理化学研究所 仁科加速器研究センター
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Interaction cross section of two-neutron halo nucleus ^{22}C at 235 MeV/nucleon

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The most neutron-rich carbon isotope ^{22}C has drawn considerable attention due to its possible enhanced halo structure, as suggested by the huge interaction cross section (1.338 ± 0.274 b) on a proton target at 40 MeV/nucleon [1]. The estimated root-mean-squared matter radius of 5.4 ± 0.9 fm is much larger than known halo nuclei such as ^{11}Li . Due to the large uncertainties in both of the interaction cross section and the estimated matter radius of the previous measurement, it has been difficult to draw definite picture of the halo structure through comparison with theoretical predictions. Therefore, more precise data for ^{22}C were desired.

With this motivation, the interaction cross sections of the neutron-rich carbon isotopes $^{19,20,22}\text{C}$ on a carbon target at around 250 MeV/nucleon have been measured by using SAMURAI at RIBF. The root-mean squared radius of ^{22}C was deduced by analyzing the present interaction cross section with a four-body (three-body projectile plus target) Glauber reaction model. The extracted value is about 2σ smaller than the previous estimate (5.4 ± 0.9 fm), while it has 7 times smaller uncertainty.

We will present the details of the experiment and discuss the extracted root-mean-squared radius of ^{22}C along with those measured for ^{19}C and ^{20}C .

[1] K. Tanaka et al., Phys. Rev. Lett. 104, 062701 (2010).

* The talk will be given in English language..

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