# REACTION CROSS SECTION OF THE 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 reaction cross section $\sigma_R$ ($1.338 \pm 0.274$ b) on a proton target at 40 MeV/nucleon. The estimated root-mean-squared matter radius $\tilde{r}_m$ of $5.4 \pm 0.9$ fm is much larger than known halo nuclei such as $^{11}$Li. $^{22}$C is important also in terms of the possible shell closure $N = 14$ and 16, which, for example, appears in $^{22}$O and $^{24}$O. If these shell closures are established in $^{22}$C the valence neutron configuration is $[2s_{1/2}]^2$, the optimal configuration for the halo formation. Due to the large uncertainties in both of $\sigma_R$ and the estimated $\tilde{r}_m$ of the previous measurement, it has been difficult to drawn definite picture of the halo structure through comparison with theoretical predictions. Therefore, more precise data for $\sigma_R$ of $^{22}$C was desired.

With this motivation, $\sigma_R$ of the neutron-rich carbon isotopes $^{19,20,22}$C on a carbon target at around 250 MeV/nucleon have been measured by using SAMURAI at RIBF. The $\tilde{r}_m$ value of $^{22}$C was deduced by analyzing the present $\sigma_R$ with a four-body Glauber reaction model. The extracted value is about $2\sigma$ smaller than the previous estimate ($5.4 \pm 0.9$ fm), while it has a smaller uncertainty.

We will present the details of the experiment and discuss $\sigma_R$ and the extracted $\tilde{r}_m$ of $^{22}$C along with those measured for $^{19}$C and $^{20}$C.