

INVESTIGATION ON THE HALO STRUCTURE IN ^{15}C

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The one- and two-neutron removal reactions from ^{15}C , one-neutron removal reactions from ^{14}C and reaction cross sections for $^{14,15}\text{C}$ on carbon target have been studied by using 110A MeV ^{22}Ne primary beam on RIPS in RIKEN. The longitudinal momentum distributions of $^{13,14}\text{C}$ fragments from ^{15}C , and ^{13}C fragments from ^{14}C breakup have been measured at 83A MeV by means of direct time-of-flight (TOF) method[1,2]. Full Width at Half Maximum (FWHM) of the distributions have been determined to be 71 ± 9 MeV/c and 223 ± 28 MeV/c for ^{14}C and ^{13}C from ^{15}C , and 195 ± 21 MeV/c for ^{13}C from ^{14}C . The FWHM for ^{13}C fragments from ^{15}C and ^{14}C breakup are consistent with Goldhaber model's prediction. While the FWHM of ^{14}C fragments from ^{15}C is much smaller, which confirms the experimental results in MSU and GANIL. The σ_{-1n} of 146 ± 23 mb, σ_{-2n} of 117_{-49}^{+93} mb for ^{15}C and σ_{-1n} of 67 ± 14 mb for ^{14}C were obtained. An anomalous enhancement from its neighbors has been observed in the measured reaction cross section of ^{15}C . The experimental data are discussed in the framework of the Glauber model. The analysis of both the fragment momentum distributions and reaction cross sections indicate a dominant s-wave component in the ground state of ^{15}C .

[1] R. Kanugo *et al.*, Phys. Rev. Lett. **88**, 142502 (2002).

[2] T. Suzuki *et al.*, Phys. Rev. Lett. **89**, 012501 (2002).