

WEAKLY BOUND AND UNBOUND NUCLEI NEAR THE NEUTRON DRIP LINE

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Recent experimental results on exotic nuclei near/beyond the neutron drip line using the multi-purpose large acceptance spectrometer SAMURAI at RIBF at RIKEN are presented. Main focus is put on the recent experimental results on the beyond-drip-line nucleus ^{26}O produced by the one-proton removal reaction of ^{27}F at 201 MeV/nucleon. We have found that the ^{26}O ground state is “barely unbound” by only 18(5) keV with respect to the 2n emission. In addition, we have observed for the first time the 1st excited state of this nucleus. We discuss the implications of the findings. In addition, we show preliminary results on the kinematically-complete measurement of Coulomb breakup of the drip-line nuclei ^{19}B and ^{22}C at SAMURAI, which may provide a key to understanding the two-neutron-halo properties of these nuclei. Characteristic features of weakly-bound and weakly unbound nuclei near the neutron drip line are discussed. We also show the perspectives on the on-going and near-future projects at SAMURAI on the neutron drip-line nuclei.