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Nuclear astrophysics activities at CENS

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The IBS Center for Exotic Nuclear Studies (CENS) in Korea has a dedicated nuclear astrophysics group conducting experiments with both radioactive isotope (RI) and stable beams. The low-energy accelerator of the RI beam facility RAON is now in operation. The experimental facility KoBRA will utilize 20–30 MeV/u beams from the low-energy accelerator and is expected to conduct nuclear astrophysics experiments during the early phase of RAON. We are actively developing several major instruments such as active target TPC detectors, silicon detector array, and cryogenic gas target system. Some of our research focus on key reactions related to the HCNO cycle and the rp-process such as $^{14}\text{O}(\text{a,p})^{17}\text{F}$, which we performed a direct measurement using an active target TPC at the CRIB facility. We also plan to measure the $^{34}\text{Ar}(\text{a,p})^{37}\text{K}$ reaction. Current research activities, experimental development, and future plans for nuclear astrophysics experiments at RAON in Korea and other RI beam facilities will be presented

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