

Pre-bunching and re-bunching systems at RAON for nuclear science experiments

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Rare Isotope Accelerator complex for ON-line experiments (RAON) is currently under construction in Korea. The low-energy experimental facilities in RAON include the Korea Broad Acceptance Recoil spectrometer and Apparatus (KoBRA) and the Nuclear Data Production System (NDPS). One of the objectives at RAON is to provide rare isotope and stable ion beams with a wide energy range, up to a few hundreds of MeV/nucleon, to the low-energy experimental facilities for diverse nuclear physics experiments and other applications.

In order to ensure accurate particle identification of the produced RI beams in KoBRA, the bunch length of the primary beam at the KoBRA production target should be less than 0.5 ns in standard deviation (σ). Therefore, a re-bunching system has been designed, developed, manufactured, and installed at the RAON site. Additionally, a pre-bunching system has been implemented upstream of the Radio-Frequency Quadrupole (RFQ) of RAON, utilizing a fast chopper and a Double Gap Buncher (DGB). This system reduces the repetition rate, enabling precise time-of-flight measurements of secondary particles at KoBRA and NDPS.

In this presentation, we will provide information about the pre-bunching and re-bunching systems for nuclear science experiments at the low-energy experimental facilities of RAON.

Presentation type

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