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Beam Commissioning and First User Experiments at the RAON Low-Energy Experimental Systems

Friday, 24 October 2025 08:30 (30 minutes)

The RAON accelerator facility in Korea has recently initiated low-energy nuclear physics experiments using ion beams accelerated by the superconducting linear accelerator SCL3. As part of the Phase-1 operation, three major experimental systems for low-energy experiments—KoBRA (Korea Broad acceptance Recoil spectrometer and Apparatus), NDPS (Nuclear Data Production System), and CLaSsy (Collinear Laser Spectroscopy)—have been successfully installed and commissioned. In 2024, beam commissioning was carried out for each experimental system, and a total of five user experiments were conducted. At KoBRA, secondary rare isotope beams with atomic numbers up to $Z \leq 17$ were produced via projectile fragmentation and successfully identified using the Bρ–ΔE–TOF method. At NDPS, the first fast neutron production and detection experiment was performed using a 40Ar beam and EJ-301 detectors, and its performance was verified by measuring neutron-induced gamma rays from activation foils. At CLaSsy, laser spectroscopy experiments were carried out using Na beams produced from the ISOL facility. This presentation reports on the beam commissioning results and technical progress of these low-energy experimental systems, demonstrating RAON's readiness to support advanced rare isotope beam science.

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