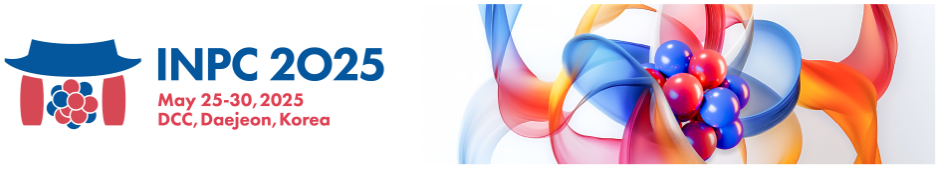

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RI beam production studies at RAON facility

Wednesday, 28 May 2025 09:30 (30 minutes)

The Rare Isotope Accelerator complex for ON-line experiments (RAON) has the unique feature of utilizing both Isotope Separation On-Line (ISOL) and In-Flight (IF) fragmentation systems for the production of rare isotope beams, and the combined ISOL+IF method can produce rare isotope beams different from the one produced by either ISOL or IF technique.
How many RI beams we can produce in RAON facilities is crucial for designing experiments. Accurate estimates of the RI beam intensities are required, and production cross sections and momentum distributions are the important factors. There are many ways to estimate the production cross-section and many models are used to estimate the production cross-sections and momentum distribution, but their results are inconsistent. They usually can provide a good prediction of RI beam productions, however, in some regions of the nuclear chart such as the vicinity of driplines or when using the low-energy beam, their results are not consistent with reality. Therefore, measuring production cross-sections for RI beams is necessary to build more reliable models for RI beam productions. Their systematic trends can give us hints of production cross-sections of very neutron-rich nuclei.
In this talk, we will report the first experimental results at RAON with the measurement of the production rates and cross sections of RI beams around Oxygen isotopes using the 40Ar primary beam and graphite target. The systematics of production cross-sections and momentum distribution for produced RIs will be presented. In addition, the current studies and plans for the rare isotope beam productions in very neutron-rich nuclei at RAON using a two-step method will be discussed.

Consent

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