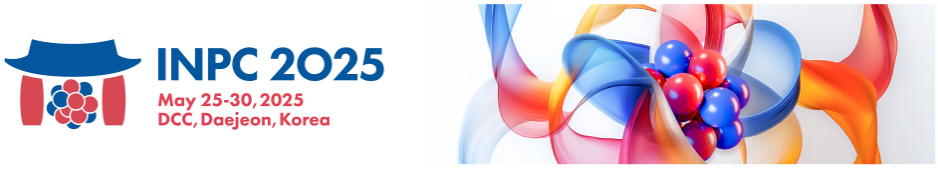

Contribution ID: **515** Type: **Invited Talk for Parallel Sessions (Invitation Only)**

Experimental Challenges in Studying r-Process Nucleosynthesis at RIBF

The synthesis of heavy elements such as gold and uranium remains one of the profound mysteries in astrophysics. These elements are believed to form through rapid neutron capture reactions (r-process) occurring in extreme astrophysical environments. To unravel this process, it is crucial to understand the properties of thousands of neutron-rich nuclei (RIs) produced during r-process nucleosynthesis. Key parameters such as RI masses, half-lives, and beta-delayed neutron emission probabilities are essential for elucidating elemental abundances in solar systems, metal-poor stars, and meteorites, as well as for identifying the astrophysical sites of r-process events, such as supernovae and binary neutron star mergers.

Over the past decades, significant experimental efforts have been dedicated to studying neutron-rich nuclei that play critical roles in the r-process. This talk will present a series of experimental programs conducted at the Radioactive Isotope Beam Factory (RIBF), focusing on the behavior of these nuclei and their impact on r-process nucleosynthesis.

Primary author: NISHIMURA, Shunji (RIKEN)

Presenter: NISHIMURA, Shunji (RIKEN)