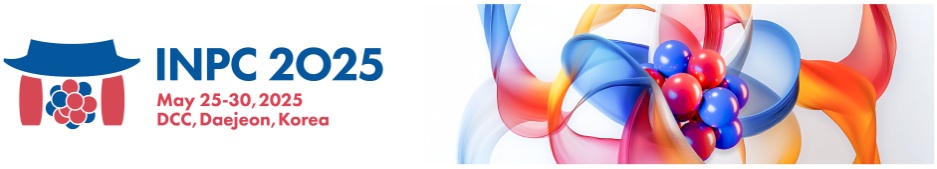

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The RIBF Facility Upgrade Project

Monday, 26 May 2025 12:00 (30 minutes)

We introduce the facility upgrade project of "Radioactive Isotope Beam factory" (RIBF). The project was discussed extensively in 2022-2023, and the discussions were summarized in a report [1]. RIKEN started experimental programs with fast radioactive isotope (RI) beams at an inflight separator RIPS in 1990 [2]. RIPS was designed to give intense RI beams for reaction studies. Indeed, the intense beams encouraged developments of several experimental methods to study the nuclear structure via reactions. Because of high demands to access more neutron-rich nuclei and more heavier nuclei, the RIBF facility was constructed in 2006. Combination of the superconducting cyclotron SRC and an inflight separator BigRIPS has produced more than 170 new isotopes and has contributed to nuclear physics with programs at three spectrometers for shell evolution, the r-process path nucleosynthesis, nucleon-nucleon correlation in the vicinity of the drip lines, and equation of state in asymmetric nuclear matter. Excellent achievements have been made under international collaborations up to the region of medium mass region. The RIBF upgrade aims to access a heavier mass region where interplay between strong force and Coulomb force becomes dominant, and discover new quantum phenomena associated with the interplay.
In this talk, We present the history of developments for fast RI beams at RIPS as well as RIBF, and show recent achievements obtained at RIBF. Special emphasis is given to recent highlights. We discuss the upgrade project.

[1]https://www.nishina.riken.jp/researcher/RIBFupgrade/RIBF_Upgrade_NCAC.pdf
[2]T.Kubo et al., Nucl. Instrum. Meth. B 70, 309 (1992).
[3]Y.Yano, Nucl. Instrum. Meth., B {\bf 261}, 1009 (2007).

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