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Reliable operation of the rf system for Heavy Ion Cyclotrons at RIBF

This paper describes our effort to achieve reliable operation of RF system for Cyclotrons at RIKEN Radio Isotope Beam Factory (RIBF).
The accelerator complex of RIBF which consists of superconducting ring cyclotron (SRC), intermedeiate-stage ring cyclotron (IRC) and Fixed-frequency booster ring cyclotron (FRC) provides heavy ion beams like uranium with a energy of 345 MeV/u.
Beam loss in the acceleration by cyclotrons mainly occurs at the electric static deflector at extraction and damages the deflector septum. In order to reduce the loss at deflectors, high voltage acceleration with a harmonic flattop field play an important role. For the SRC, four acceleration single-gap cavities and a third harmonic flattop cavity are installed. The maximum voltage is 600 kVp at 36.5 MHz. A long term stability is also important and the obtained stablity of voltage and phase are +-0.5 % and +-0.1 deg.
In the case of uranium acceleration 25 cavities are employed. It is crucial to have reliable operation of all the cavities to handle high power beams. Discussion will be made on what we do for operation of the cavities and how we confirm the reliable operation of the rf system.

Primary author: Dr SAKAMOTO, Naruhiko (RIKEN Nishina Center)

Co-authors: Dr GOTO, Akira (RIKEN Nishina Center); Dr YAMADA, Kazunari (RIKEN Nishina Center); Dr SUDA, Kenji (RIKEN Nishina Center); Mr FUJIMAKI, Masaki (RIKEN Nishina Center); Dr KASE, Masayuki (RIKEN Nishina Center); Dr KAMIGAITO, Osamu (RIKEN Nishina Center); Mr KOYAMA, Ryo (Sumitomo Accelerator Service Co.); Dr YOKOUCHI, Shigeru (RIKEN Nishina Center)

Presenter: Dr SAKAMOTO, Naruhiko (RIKEN Nishina Center)