

## Research Facility Development Division

### Accelerator Group

### Cyclotron Team

#### 1. Abstract

Together with other teams of Nishina Center accelerator division, maintaining and improving the RIBF cyclotron complex. The accelerator provides high intensity heavy ions. Our mission is to have stable operation of cyclotrons for high power beam operation. Recently stabilization of the rf system is a key issue to provide 10 kW heavy ion beam.

#### 2. Major Research Subjects

- (1) RF technology for Cyclotrons
- (2) Operation of RIBF cyclotron complex
- (3) Maintenance and improvement of RIBF cyclotrons
- (4) Single turn operation for polarized deuteron beams
- (5) Development of superconducting linac

#### 3. Summary of Research Activity

- Development of the rf system for a reliable operation
- Development of highly stabilized low level rf system
- Development of superconducting linac
- Development of the intermediate-energy polarized deuteron beams.

#### Members

##### Team Leader

Naruhiko SAKAMOTO

##### Research/Technical Scientists

Kazutaka OZEKI (Senior Technical Scientist)

Kenji SUDA (Technical Scientist)

#### List of Publications & Presentations

##### Publications

###### [Proceedings]

西隆博, 内山暁仁, 上垣外修一, 坂本成彦, 長友傑, 福西暢尚, 藤巻正樹, 渡邊環, 渡邊裕, 「理研超伝導線形加速器ビームラインのためのエミッタンス測定及び光学系調整」Proc. PASJ2020, online meeting, THOO08, 116–119 (2020).

N. Sakamoto, M. Fujimaki, E. Ikezawa, H. Imao, O. Kamigaito, T. Nagatomo, T. Nishi, K. Ozeki, K. Suda, A. Uchiyama, T. Watanabe, Y. Watanabe, and K. Yamada, “Commissioning of superconducting-linac booster for RIKEN heavy-ion linac,” Proc. PASJ2020, online meeting, FRPP05, 679–683 (2020).

##### Presentations

###### [International Conferences/Workshops]

K. Suda, O. Kamigaito, K. Ozeki, N. Sakamoto, K. Yamada, E. Kako, H. Nakai, K. Umemori, H. Hara, A. Miyamoto, K. Sennyu, and T. Yanagisawa, “Compact tuner designed to minimize the intervals of QWRs for RIKEN heavy-ion linac,” Tesla Technology Collaboration Meeting 2020 (TTC 2020), Geneva (CERN), Switzerland, February 4–7, 2020.

K. Yamada, “Cryomodule design, assembly and installation utilizing “KOACH” system,” Tesla Technology Collaboration Meeting 2020 (TTC 2020), Geneva (CERN), Switzerland, February 4–7, 2020.

N. Sakamoto, K. Yamada, K. Suda, K. Ozeki, O. Kamigaito, Y. Watanabe, H. Imao, T. Nagatomo, E. Ikezawa, K. Kumagai, S. Dantsuka, E. Kako, H. Nakai, and K. Umemori, “Commissioning and operation of RIKEN heavy ion superconducting linac,” Tesla Technology Collaboration Meeting 2021 (TTC 2021), online (Hosted by DESY), January 19–21, 2021.

K. Ozeki, “Power coupler issues in CM operation from RIKEN,” Tesla Technology Collaboration Meeting 2021 (TTC 2021), online (Hosted by DESY), January 19–21, 2021.

###### [Domestic Conferences/Workshops]

西隆博, 内山暁仁, 上垣外修一, 坂本成彦, 長友傑, 福西暢尚, 藤巻正樹, 渡邊環, 渡邊裕, 「理研超伝導線形加速器ビームラインのためのエミッタンス測定及び光学系調整」(THOO08), 第 17 回日本加速器学会年会, オンライン開催, 2020 年 9 月 2–4 日.

##### Others

坂本成彦, 「理研 RIBF における低速重イオン用超伝導線形加速器の開発」, 「加速器」 **17**, 70–80 (2020).