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]

T. Nakamura, K. Ozeki, S. Fukuzawa, M. Hamanaka, S. Ishikawa, K. Kobayashi, R. Koyama, M. Nishida, M. Nishimura, J. Shibata, N. Tsukiori, K. Yadomi, T. Dantsuka, M. Fujimaki, T. Fujinawa, N. Fukunishi, H. Hasebe, Y. Higurashi, E. Ikezawa, H. Imao, O. Kamigaito, Y. Kanai, M. Kidera, M. Komiyama, K. Kumagai, T. Maie, T. Nagatomo, T. Nakagawa, M. Nakamura, J. Ohnishi, H. Okuno, N. Sakamoto, S. Kenji, A. Uchiyama, W. Shu, W. Tamaki, Y. Watanabe, K. Yamada, and H. Yamasawa, "Status report on the operation of RIKEN AVF cyclotron," Proceedings of the 18th Annual Meeting of Particle Accelerator Society of Japan, QST-Takasaki Online, Japan, August 9–12, 2021, TUP052, 575–579 (2021). https://www.pasj.jp/web_publish/pasj2021/proceedings/PDF/TUP0/TUP052.pdf.

S. Fukuzawa, K. Suda, A. Goto, J. Ohnishi, M. Hamanaka, S. Ishikawa, K. Kobayashi, R. Koyama, T. Nakamura, M. Nishida, M. Nishimura, J. Shibata, N. Tsukiori, K. Yadomi, M. Fujimaki, N. Fukunishi, H. Hasebe, Y. Higurashi, H. Imao, O. Kamigaito, M. Kase, M. Kidera, M. Komiyama, K. Kumagai, T. Maie, T. Nagatomo, T. Nakagawa, H. Okuno, K. Ozeki, N. Sakamoto, A. Uchiyama, S. Watanabe, T. Watanabe, Y. Watanabe, K. Yamada, K. Kamakura, and Y. Kotaka, "Status report on the operation of RIKEN AVF cyclotron," Proceedings of the 18th Annual Meeting of Particle Accelerator Society of Japan, QST-Takasaki Online, Japan, August 9–12, 2021, WEP052, 760–764 (2021). https://www.pasj.jp/web_publish/pasj2021/proceedings/PDF/WEP0/WEP052.pdf.

T. Ohki, H. Yamauchi, K. Oyamada M. Tamura, A. Yusa, K. Kaneko, N. Sakamoto, M. Fujimaki, E. Ikezawa, H. Imao, M. Kidera, T. Nagatomo, T. Nishi, K. Ozeki, K. Suda, A. Uchiyama, T. Watanabe, Y. Watanabe, K. Yamada, and O. Kamigaito, "Present status of RILAC," Proceedings of the 18th Annual Meeting of Particle Accelerator Society of Japan, QST-Takasaki Online, Japan, August 9–12, 2021, THP059, 983–985 (2021). https://www.pasj.jp/web_publish/pasj2021/proceedings/PDF/THP0/THP059.pdf.

Presentations

[International Conference/Workshops]

K. Yamada (invited), T. Dantsuka, M. Fujimaki, E. Ikezawa, H. Imao, O. Kamigaito, M. Komiyama, K. Kumagai, T. Nagatomo, T. Nishi, H. Okuno, K. Ozeki, N. Sakamoto, K. Suda, A. Uchiyama, T. Watanabe, Y. Watanabe, E. Kako, H. Nakai, H. Sakai, K. Umemori, H. Hara, A. Miyamoto, K. Sennyu, and T. Yanagisawa, "Successful beam commissioning of heavy-ion superconducting linac at RIKEN," 2021 International Conference on RF Superconductivity (SRF2021), East Lansing, MI, USA, Online, June 28–July 2, 2021.

K. Ozeki (poster), O. Kamigaito, N. Sakamoto, K. Suda, and K. Yamada, "FPC for RIKEN QWR," 2021 International Conference on RF Superconductivity (SRF2021), East Lansing, MI, USA, Online, June 28–July 2, 2021.

K. Suda (poster), O. Kamigaito, K. Ozeki, N. Sakamoto, K. Yamada, E. Kako, H. Nakai, H. Sakai, K. Umemori, H. Hara, A. Miyamoto, K. Sennyu, and T. Yanagisawa, "New frequency-tuning system and digital LLRF for stable and reliable operation of SRILAC," 2021 International Conference on RF Superconductivity (SRF2021), East Lansing, MI, USA, Online, June 28–July 2, 2021.

N. Sakamoto (poster), H. Imao, O. Kamigaito, T. Nagatomo, T. Nishi, K. Ozeki, K. Suda, A. Uchiyama, and K. Yamada, "Operation experience of the superconducting linac at RIKEN RIBF," 2021 International Conference on RF Superconductivity (SRF2021), East Lansing, MI, USA, Online, June 28–July 2, 2021.

[Domestic Conferences/Workshops]

仲村武志（ポスター発表）, 福澤聖児, 濱仲誠, 石川盛, 小林清志, 小山亮, 西田稔, 西村誠, 柴田順翔, 月居憲俊, 矢冨一慎, 大関和貴, 段塚知志, 藤巻正樹, 藤縄雅, 福西暢尚, 長谷部裕雄, 日暮祥英, 池沢英二, 今尾浩士, 上垣外修一, 金井保之, 木寺正憲, 込山美咲, 熊谷桂子, 真家武士, 長友傑, 中川孝秀, 中村仁音, 大西純一, 奥野広樹, 坂本成彦, 須田健嗣, 内山暁仁, 渡部秀, 渡邉環, 渡邉裕, 山田一成, 山澤秀行, 「理研 RIBF におけるリングサイクロトロンの運転報告」, 第 18 回日本加速器学会年会, オンライン, 2021 年 8 月 9–12 日.

福澤聖児, 須田健嗣, 後藤彰, 大西純一, 濱仲誠, 石川盛, 小林清志, 小山亮, 仲村武志, 西田稔, 西村誠, 柴田順翔, 月居憲俊, 矢冨一慎, 藤巻正樹, 福西暢尚, 長谷部裕雄, 日暮祥英, 今尾浩士, 上垣外修一, 加瀬昌之, 木寺正憲, 込山美咲, 熊谷桂子, 真家武士, 長友傑, 中川孝秀, 奥野広樹, 大関和貴, 坂本成彦, 内山暁仁, 渡部秀, 渡邉環, 渡邉裕, 山田一成, 鎌倉恵太, 小高康照, 「理研 AVF サイクロトロン運転の現状報告」, 第 18 回日本加速器学会年会, オンライン, 2021 年 8 月 9–12 日.

大木智則, 小山田和幸, 山内啓資, 田村匡史, 遊佐陽, 金子健太, 坂本成彦, 藤巻正樹, 池沢英二, 今尾浩士, 木寺正憲, 長友傑, 大関和貴, 須田健嗣, 内山暁仁, 渡邉環, 渡邉裕, 山田一成, 上垣外修一, 「理研重イオンリニアックの現状報告」, 第 18 回日本加速器学会年会, オンライン, 2021 年 8 月 9–12 日.

Outreach Activity

坂本成彦, 私立武蔵越生高校講演会, 「加速器入門」, オンライン, 2021 年 12 月 13 日.