国立研究開発法人理化学研究所　仁科加速器研究センター
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RIKEN Nishina Center for Accelerator Based Science
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The Multi-Reflection Time-Of-Flight Mass Spectrographs at RIBF: Present and Future

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The exotic isotopes 249-253Md [1] as well as many other rare isotopes of heavy- [2,3] and intermediate-mass nuclei [4] - 80 isotopes in total - have successfully been measured with a multi-reflection time-of-flight mass spectrograph (MRTOF-MS) at the GARIS-II facility. In the series of experiments, we showed that the mass spectrograph can precisely and accurately measure atomic masses with high efficiency even for very short-lived isotopes having a half-life of 10 ms. After successful completion of the first campaign, we are expanding to have mass spectrographs at multiple facilities such as the new GARIS-II, KISS, and BigRIPS+SLOWRI, to perform comprehensive mass measurements of all available nuclides at RIBF. The flagship experiment will be for hot-fusion superheavy nuclides, in particular 288Mc and 284Nh. The mass spectrograph can be used not only for mass measurements, but also for many other applications: MRTOF assisted resonant laser ionization spectroscopy, MRTOF assisted decay spectroscopy, delayed neutron emission probability studies without neutron detection, the simultaneous identification of A and Z in multiple fission fragments, and so on.

In this seminar, we review the present status and discuss the ongoing projects and future prospects.

[1] Y. Ito et al., Phys. Rev. Lett. 120, 102501 (2018) [2] M. Rosenbusch et al., Phys. Rev. C 97, 064306 (2018) [3] P. Schury et al., Phys Rev. C 95, 011305R (2017) [4] S. Kimura et al., Int. J. Mass Spectom. 430, 134-142 (2018)

＊ The talk will be given in English language.

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