

# MNT2024—Exploring the heavy exotic neutron-rich nuclides via multinucleon transfer reactions

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The international workshop “MNT2024—Exploring the heavy exotic neutron-rich nuclides via multinucleon transfer reactions,” co-organized by Wako Nuclear Science Center (WNSC), IPNS, KEK, University of York in the UK, JAEA Advanced Science Research Center, and RIKEN Nishina Center (RNC), was held at RIKEN Nishina Center on July 2–5, 2024.

The multinucleon transfer reactions have attracted worldwide attention as a method to produce unexplored heavier nuclides such as those around rare-earth elements, nuclides with the neutron magic number  $N = 126$ , and nuclides with  $N = 152$ . Currently, the KEK Isotope Separation System (KISS) at RNC of RIKEN is being operated to produce such nuclides using MNT reactions, *e.g.*,  $^{136}\text{Xe} + ^{198}\text{Pt}$ , using either an Ar gas catcher and a resonant laser ionization scheme, or a He gas catcher and a multiple-reflection time-of-flight mass spectrograph (MRTOF-MS). There exist several devices or facilities that can be planned or prepared for use to create the MNT reactions that produce unexplored nuclides: for example, at GSI, University of Jyväskylä, Argonne, University of Groningen, and IMP and among others.

The workshop was attended by 74 participants from 16 countries such as Belgium, Canada, China, Finland, France, Germany, India, Italy, the Netherlands, Roma-

nia, Spain, the United Kingdom, the United States, and Uzbekistan.

We discussed the following topics:

- Production of heavy exotic neutron-rich nuclides via multinucleon transfer reactions
- Techniques of experimental studies relevant to multinucleon transfer reactions
- Projects and facilities focusing on multinucleon transfer reactions
- Decay, mass, and laser spectroscopy of heavy exotic neutron-rich nuclides
- Theoretical studies on multinucleon transfer reactions
- Alternative methods to produce heavy neutron-rich nuclides

The four-day workshop consisted of 48 talks which include invited talks. Further details on the MNT2024 workshop, such as the program and participants list, can be found on the webpage.<sup>1)</sup>

Reference

- 1) <https://indico2.riken.jp/event/4644/>.



Fig. 1. Group photograph for MNT2024 international workshop.

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