

MNT2024 –Exploring the heavy exotic neutron-rich nuclides via multinucleon transfer reactions– 2 – 5 July, 2024

Room #201 of Nishina RIBF Bldg. (E01), RIKEN, Wako, Japan

2 July, Tuesday

9:20 – Check-in counter

Opening session Chair: Yutaka Watanabe (WNSC, IPNS, KEK)

10:00 – 10:05	Yutaka Watanabe	WNSC, IPNS, KEK	Opening address
10:05 – 10:10	Naohito Saito	IPNS, KEK	Welcome address
10:10 – 10:15	Hiroyoshi Sakurai	RIKEN Nishina Center	Welcome address

Session 1 Chair: Yutaka Watanabe (WNSC, IPNS, KEK)

10:15 – 10:45	Yoshikazu Hirayama	WNSC, IPNS, KEK	KISS for nuclear spectroscopy of MNT products
10:45 – 11:15	Timo Dickel	GSI	MNT experiments with stable and secondary beams at the FRS and Super-FRS Ion Catcher
11:15 – 11:45	Anu Kankainen	University of Jyväskylä	Production and studies of neutron-rich nuclei at IGISOL

11:45 – 13:15 **Lunch (90 min)**

Session 2 Chair: Andreyev (University of York)

13:15 – 13:45	Alexander Karpov	JINR	Status of MNT studies at JINR and perspectives
13:45 – 14:15	Katsuhisa Nishio	JAEA	Separation of evaporation residues produced in MNT reactions using JAEA-Recoil Mass Separator
14:15 – 14:45	Jonathan Bequet	CEA	Synthesis of heavy nuclei in multinucleon transfer reaction $^{136}\text{Xe} + ^{238}\text{U}$ close to 0 degree

14:45 – 15:10 **Break (25 min)**

Session 3 Chair: Timo Dickel (GSI)

15:10 – 15:40	Devaraja HM	JINR	MNT studies with Velocity Filters
15:40 – 16:05	Galina Knyazheva	JINR	The experimental study of properties of MNT fragments formed in the reactions with ^{238}U
16:05 – 16:25	Kris Hagel	Cyclotron Institute, Texas A&M University	Multi-Nucleon-Transfer and the production of Heavy Elements

16:25 – 16:50 **Break (25 min)**

Session 4 Chair: Alexander Karpov (JINR)

16:50 – 17:20	Jan Sarén	University of Jyväskylä	Studies of MNT reactions at the Coulomb barrier with Jyväskylä in-flight separators
17:20 – 17:50	Emanuele Vardaci	INFN, Naples	MNT studies with TOF methods at GSI, JYFL and Dubna
17:50 – 18:15	Sota Kimura	WNSC, IPNS, KEK	Current status and prospects of MNT study with helium gas-cell + MRTOF system towards $N = 126$ and 152

3 July, Wednesday

Session 5 Chair: Katsuhisa Nishio (JAEA)

9:10 – 9:40 Vyacheslav Saiko JINR

Theoretical investigation of multinucleon transfer reactions within the dynamic model based on Langevin equations

9:40 – 10:10 Julia Even University of Groningen

What is NEXT? A setup to study Neutron-rich, heavy, EXotic nuclei produced in multinucleon Transfer reactions

10:10 – 10:35 **Break (25 min)**

Session 6 Chair: Katsuhisa Nishio (JAEA)

10:35 – 11:05 Kazuyuki Sekizawa Tokyo Institute of Technology

Microscopic Approaches for Multinucleon Transfer Reactions Beyond TDHF: Future Perspective

11:05 – 11:35 Alexandra Zadornaya The University of Edinburgh

Development and commissioning of the MNT gas cell for IGISOL

11:35 – 13:05 **Lunch (90 min)**

13:05 – 14:45 Facility tour (100 min)

14:45 – 15:05 **Break (20 min)**

Session 7 Chair: Michiharu Wada (WNSC, IPNS, KEK)

15:05 – 15:30 Yutaka Watanabe WNSC, IPNS, KEK

Future plan of KISS for spectroscopy of neutron-rich actinoids

15:30 – 16:00 Paul Constantin ELI-NP/IFIN-HH

Simulation of MNT experiments with INCREASE (GSI) and IGISOL (JYFL)

16:00 – 16:20 Penghui Chen Yangzhou University

Shell effect in multinucleon transfer reactions

16:20 – 16:40 Zhaoqing Feng South China University of Technology

Cluster transfer and cluster emission in massive transfer reactions

16:40 – 17:05 **Break (25 min)**

Session 8 Chair: Julia Even (University of Groningen)

17:05 – 17:35 Maxime Brodeur University of Notre Dame

The $N = 126$ Factory

17:35 – 17:55 Adrian Valverde Argonne National Laboratory

Opportunities with the $N = 126$ Factory at Argonne National Laboratory

17:55 – 18:15 Guy Savard Argonne National Laboratory

Status of the Commissioning of the $N = 126$ factory at ANL

18:15 – 18:35 Teresa Kurtukian Nieto

Prospects of MNT studies at $N = 126$ for r-process nucleosynthesis with the ISOLDE Superconducting Recoil Separator

4 July, Thursday

Session 9 Chair: Yoshikazu Hirayama (WNSC, IPNS, KEK)

9:10–9:40 Andrei Andreyev University of York ISOLDE studies of the neutron-rich nuclides east of ^{208}Pb
9:40–10:10 Praveen Srivastava Indian Institute of Technology-Roorkee Shell model study of allowed and forbidden beta decay in the Pb region

10:10–10:35 **Break (25 min)**

Session 10 Chair: Yoshikazu Hirayama (WNSC, IPNS, KEK)

10:35–11:00 Momo Mukai WNSC, IPNS, KEK The progress of in-gas-cell laser ionization spectroscopy of neutron-rich tungsten isotopes
11:00–11:20 Cenxi Yuan Sun Yat-sen University Configuration-Interaction Shell Model (CISM) Understanding of Medium and Heavy Mass Nuclei
11:20–11:40 Menglan Liu Sun Yat-sen University Exploration on the effective nuclear force for the $N > 126$ nuclei

11:40–13:10 **Lunch (90 min)**

Session 11 Chair: Momo Mukai (WNSC, IPNS, KEK)

13:10–13:40 Rafael Ferrer-Garcia KU Leuven High-resolution resonance ionization spectroscopy at the S3-Low Energy Branch of the GANIL-SPIRAL2 facility
13:40–14:00 Arno Claessens KU Leuven Laser ionization of thorium via Rydberg states in hypersonic gas jets
14:00–14:20 Fedor Ivandikov KU Leuven Simulation-aided offline optimization of the JetRIS apparatus

14:20–15:45 **Break (25 min)**

Session 12 Chair: Hironobu Ishiyama (RIKEN Nishina Center)

15:45–15:10 Toshitaka Kajino Beihang University Origin of the r-process elements in cosmic evolution and nuclear physics
15:10–15:30 Filip Kondev Argonne National Laboratory Studies of K Isomers using Multi-nucleon Transfer Reactions and Gammasphere
15:30–15:50 Anabel Morales IFIC Discovery of new ms-isomers in ^{213}Tl and ^{215}Tl at RIBF-RIKEN

15:50–16:15 **Break (25 min)**

Session 13 Chair: Sota Kimura (WNSC, IPNS, KEK)

16:15–16:45 Masato Asai JAEA Study of neutron-rich Fm and transfermium nuclei with ^{254}Es target and MNT
16:45–17:05 Yoshihiro Aritomo Kindai University Systematic study of fission process in heavy and superheavy mass regions related to multinucleon transfer reactions

18:00–20:00 **Social dinner at Hirosawa Club (C72)**

5 July, Friday

Session 14: Chair: Marco Rosenbusch (RIKEN Nishina Center)

- 9:10–9:40 Zsolt Podolyák University of Surrey ^{208}Pb fragmentation at BigRIPS vs MNT reactions to produce $N \sim 126$ nuclei
- 9:40–10:10 Oleg Tarasov FRIB/MSU Production and discovery of high- Z neutron-rich isotopes at NSCL and FRIB

10:10–10:35 **Break (25 min)**

Session 15: Chair: Marco Rosenbusch (RIKEN Nishina Center)

- 10:35–11:05 Dan Watts University of York Photoinduced many proton knockout – a new method to access neutron rich nuclei?
- 11:05–11:35 Zhong Liu IMP, CAS Status of the MNT program and its future plan at IMP

11:35–13:05 **Lunch (90 min)**

Session 16: Chair: Peter Schury (WNSC, IPNS, KEK)

- 13:05–13:30 Jason Holt TRIUMF Ab initio calculations of heavy, exotic nuclei for r-process nucleosynthesis
- 13:30–13:55 Gheorghe Iulian IPN Orsay NEWGAIN project
- Stefan
- 13:55–14:15 Gonika Inter-University Accelerator Center, New Delhi Coupled reaction channel description of single-nucleon transfer in $^{40}\text{Ca} + ^{96}\text{Zr}$
- 14:15–14:35 Chandra Kumar Inter-University Accelerator Center, New Delhi Study of transfer reactions in $^{28}\text{Si} + ^{140,142}\text{Ce}$ using a recoil separator

14:35–15:00 **Break (25 min)**

Session 17: Chair: Anu Kankainen (University of Jyväskylä)

- 15:00–15:20 Franziska Maier FRIB/MSU Highly selective and high-flux MR-ToF mass separation
- 15:20–15:50 Marco Rosenbusch RIKEN Nishina Center The mrtof mass measurement project at BigRIPS
- 15:50–16:15 Jinn Ming Yap The University of Hong Kong Operation and Perspectives of the ZeroDegree Helium Gas Catcher at RIKEN

16:15–16:20 Closing