



Progress Report for NRDC Meeting 2024

ATOMKI

S. Takács

14-17 May, 2024, Vienna

Staff and changes

New name of the institute: HUN-REN Institute for Nuclear Research (ATOMKI)

Nuclear technology group: Number of active staff member: 2+3 persons.

Nuclear astrophysics group: Number of active staff member: 4+3 persons.

Experimental nuclear physics group: Number of active staff member: 4+2 persons.

In general the staff number is decreasing in every group.

Nuclear technology group

The research program:

- Experimental determination of cross sections for light charged particle induced reaction on various target materials. (targetry, cross sections, and yields)
- Compilation, evaluation of low and medium energy data. (production of recommended cross sections for selected reactions)
- Research of medical radioisotopes (targetry, production, chemistry, low level applications)
- Contribution to international collaborations
- Thin Layer Activation (TLA methodology and applications)

Activity in 2023-24

- Measurements of reaction cross sections ($\text{Sc}+\text{p}$, $\text{Sb}+\alpha$, $\text{Ta}+\alpha$, $\text{Re}+\alpha$, $\text{Re}+\text{d}$, $\text{Pt}+\alpha$, $\text{Dy}+\alpha$...)
- EXFOR data compilations (All the new associated articles were compiled, + correction of old entries)
- Evaluations of experimental cross section data of nuclear reactions for production of therapeutic medical isotopes. (63 reactions)
- Thin layer activation (TLA) of machine parts for applications (diamond like carbon and steel and different alloy materials)

Collaborations

- Nishina Center for Accelerator-Based Science, RIKEN, Wako, Saitama, Japan,
- Faculty of Science, Hokkaido University, Sapporo, Japan,
- Institute of Physics and Power Engineering (IPPE), Obninsk, Russia.
- Austrian Competence Center for Tribology, AC²T Wiener Neustadt, Austria

Nuclear Astrophysics Group

- The research program is to measure cross section of charged particle induced reaction near threshold and at low energies relevant for various astrophysical processes.
- Experimental work was done at the tandetron and cyclotron laboratory of ATOMKI, and in international collaborations (LUNA, Department of Physics and Astronomy, University of Notre Dame,...)
- Publications: About ~40+ papers were published during the last period. The published papers containing experimental nuclear data measured in international collaborations have variety of compilation responsibilities regarding EXFOR database.

Experimental nuclear physics group

- Measurements and evaluation of new nuclear structure and decay data.
- Collaboration work with research groups at RIKEN, GANIL, GSI, Gammasphere, Exogam, Jurogam
- Mass-chain evaluation work for ENSDF and compilation work for XUNDL.
- Most of their papers were published in international collaborations. Compilation responsibility is not of ATOMKI.



Thank you