

RIBF ULIC Symposium/mini-WS Report

* English only

Date: March 26, 2015

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| Title | [RIBF-ULIC-miniWS:033] Plan for Ni Reaction Cross Section Measurement and Related Topics |
| Date | March 16, 2015 |
| Place | Room 401, RIKEN Nishina Center RIBF Bldg. |
| Language | [] English [O] Japanese |
| HP address | https://indico2.riken.jp/indico/conferenceOtherViews.py?view=standard&confId=1781 |
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| Financial support from ULIC (Users Office Use Only) | Total : | 138,050 | JPY |
| | [Breakdown] | Kazuki Sawahata: 3,600 JPY Akira Ozawa: 3,600 JPY Takeshi Suzuki: 1,000 JPY Shin Watanabe: 35,820 JPY Maya Takechi: 10,510 JPY Takashi Ohtsubo: 22,520 JPY Masaomi Tanaka: 30,500 JPY Shintaro Yamaoka: 30,500 JPY | |
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Summary of discussions and its (expected) results:

Following subjects related to the approved experiment at RIBF to study the neutron skin thickness of Ni isotopes are presented and discussed.

- + Introduction to the meeting (M. Fukuda, Osaka Univ.)
- + Outline of the Ni experiment, expected results, and possible problems to be solved (M. Takechi, Niigata Univ.)
- + Current status of developments and preparations of detectors (D. Nishimura, Tokyo U. Sci.)

Several points including the connection between proton density and charge changing cross section were heavily discussed to obtain the following conclusions.

1. An accurate prescription to calculate the charge changing cross section (CCCS) from the proton density is needed.
2. Glauber calculation (optical-limit) can be used with a correction factor.
3. The accuracy of the correction factor has been updated and improved by the accumulation of experimental data at HIMAC.
4. However, the factor should get an account or warrant from a theory.
5. Nuclear theory group at Kyushu Univ. will make an effort to find them or to construct a new prescription to calculate CCCS.
6. Detector developments and preparations for the Ni experiment have been almost completed except for a work to reduce electric noises in the new ionization chamber.

In addition to the discussions on Ni experiment, following topics are presented.

- + Results of reaction and interaction cross sections for Na isotopes (S. Suzuki, NIRS)
- + Results of Al isotopes and perspectives of summarizing the results (D. Nishimura, Tokyo U. Sci.)
- + Ground state properties of Na and Mg isotopes probed by reaction cross sections - from the theoretical view point (S.

Watanabe, Kyushu Univ.)

- + Nuclear structure calculation by AMD: deformations, radii, and energies (M. Kimura, Hokkaido Univ.)
- + Odd-even staggering of reaction cross sections and the partial shell inversion (M. Yahiro, Kyushu Univ.)
- + Charge changing cross sections of Si and Ar isotopes and proton distribution radii (K. Sawahata, Tsukuba Univ.)
- + Reaction cross sections for neutron-rich nuclei and extraction of nucleon, proton and neutron distributions (M. Tanaka, Osaka Univ.)

For every subject, various interesting points were shown and problems were pointed out. These points will be very useful in summarizing the experimental data taken at RIBF, and also in planning the next future plan of the experiment that will be carried out at RIBF.

Participants list(Name, Affiliation):

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|------------------------------|------------------------------|----------------------------|
| M. Fukuda (Osaka Univ.) | Y. Kanke (Tokyo U. Sci.) | S. Shinji (NIRS) |
| M. Tanaka (Osaka Univ.) | T. Ohtsubo (Niigata Univ.) | S. Watanabe (Kyushu Univ.) |
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Please attach other documents as needed.