

# Minutes of the 84th Machine-Time Committee Meeting

Date and time: January 21, 2015; 10:30–12:25

Place: RIBF Bldg., Room 203

Attendees: Sakai<sup>a</sup>(Chair), En'yo<sup>a,†</sup>, Fukunishi<sup>a</sup>, Kase<sup>a</sup>, Kubo<sup>a</sup>, Miyatake<sup>c</sup>, Morimoto<sup>a</sup>, Okuno<sup>a</sup>, Shimoura<sup>b</sup>, Ueno<sup>a</sup>, Uesaka<sup>a</sup>, Uwamino<sup>a</sup>, Wakasugi<sup>a</sup>, Yamaguchi<sup>b</sup>, Imai<sup>d,†</sup>, Haba<sup>a,†</sup>, Motobayashi<sup>a,†</sup>, Tanaka<sup>a,†</sup>, Kishimoto<sup>a,†</sup>, A. Yoshida<sup>a,†</sup>, Yoneda<sup>a</sup>, Inabe<sup>a,†</sup>, Shimizu<sup>a,†</sup>, Nakamura<sup>e,†</sup>, Zenihiro<sup>a,†</sup>

Absent: Kamigaito<sup>a</sup>, Abe<sup>a</sup>, Sakurai<sup>a</sup>, Morita<sup>a</sup>, K. Yoshida<sup>a,†</sup>

<sup>a</sup>RNC / <sup>b</sup>CNS / <sup>c</sup>KEK / <sup>d</sup>RIBF-UEC / <sup>e</sup>Tokyo Tech. / <sup>†</sup>Observer  
(in random order)

## Reports

### 1. Current Status of the Machine Time Operation (Yoneda)

The current status of the machine time operation was reported. No machine time took place after the last machine time committee meeting in order to keep the electricity consumption low. During this week and the following week, the University of Tokyo student experiment, RI production, commissioning of Wacame, and the radiation biology experiment will be carried out.

### 2. Change of AVF Stand-Alone Beam-Time Schedule (Yoneda)

The machine time of ML1307-AVF14-02 originally assigned on January 5 and 6, was re-assigned on January 31 and February 1. This experiment was cancelled once due to a reason on the facility side, and was decided to be re-scheduled. The schedule before and after the change is as follows:

	before change	after change
ML1307-AVF14-02(Y. Kobayashi)	1/5 9:00 – 1/6 9:00	1/31 9:00 – 2/1 9:00

### 3. New Isotope Search Experiments (Inabe, Shimizu)

The status of the new isotope search experiments with <sup>48</sup>Ca and <sup>238</sup>U was reported. In the experiment of <sup>48</sup>Ca (Inabe), the new isotope search was performed in the light neutron-rich region around 3Z+6. The data was accumulated for 13 hours with 415 pA of <sup>48</sup>Ca on average. The off-line data analysis is ongoing to clarify the existence or non-existence of new isotopes using EPAX2.15 and systematics of production cross sections. In the <sup>238</sup>U experiment (Shimizu), the new isotope search was performed in the neutron-rich region around Z~33. The data was accumulated for about 98 hours with 10.8 pA of <sup>238</sup>U on average, and candidates of new isotopes have already been found. Presently, the off-line analysis is underway to confirm the new isotope events.

### 4. Plan of Super-Heavy Element Search Experiments (Morimoto)

A report was made concerning the plan of the super-heavy element search experiment. The next goal is to synthesize the Z=119, 120 elements using a <sup>248</sup>Cm target. To this end, beam development of V and Cr, and GARIS II are necessary. Before running the super-heavy element search experiment, some

previous-step measurements are to be done to confirm the excitation function of the reaction with  $^{48}\text{Ca}$  and the fusion cross section with  $^{50}\text{Ti}$ . Regarding the machine time, the current plan is to complete all the GARIS II experiments already approved at the PACs, such as the MR-TOF experiments, before the summer break, to change the GARIS II setup during the summer and to start the GARIS II commissioning experiments in September.

## 5. Status of PAC Meetings (Yoneda)

- 16th NP-PAC: (12/3 - 5, still tentative)

The meeting will be 3 days. Half of the PAC members will be replaced.

- 11th ML-PAC: (1/8 - 1/9):

7 proposals that use the RIBF old facility are to be approved. It is under consideration if the next PAC will be held based on a mail review system. The next PAC will be held in July.

- 4th In-PAC: nothing has been finalized about the next PAC. One proposal is being reviewed via mail.

## Topics discussed

### 1. Approval of Minutes of Previous Meeting (Sakai)

### 2. Application of Machine Study

Two applications of machine study were reviewed.

- NeuLAND commissioning (Nakamura)

The application for the commissioning runs of the neutron detector NeuLAND, which was brought for the SAMURAI experiments from GSI, Germany, was reviewed. NeuLAND is constituted from plastic scintillators, stacked in 4 layers, each of which has two planes with a sensitive area of 250 cm x 250 cm and with a thickness of 5 cm. NeuLAND is suitable for multi-neutron coincidence measurement such as the  $^{28}\text{O}$  resonant state search experiment. The detection efficiency of this detector will be measured by using Coulomb breakup reaction of  $^{19}\text{C}$  which is produced from a  $^{48}\text{Ca}$  primary beam. Two-day measurement is desired, based on a statistic estimation of 60k events per day. The decision was pending, as the requirement of the measurement was not convincing.

- Tests of detectors and particle identification methods for large-intensity secondary beams (Zenihiro)

The application for the test runs of the BigRIPS detectors and particle identification methods was reviewed. The purpose is to explore a new method which makes available large-intensity secondary beams of about 1 Mcps in BigRIPS. Diamond detectors are used for time-of-flight measurements, and LP-MWDCs are used as focal-plane position detectors. The energy loss is determined from the difference between the time-of-flights before and after an energy degrader at F5. The test runs will be led by the BigRIPS Team, in collaboration with experiment groups in CNS and in the Uesaka Spin-Isospin Laboratory, which plan to use large-intensity secondary beams in their own experiments. 0.5 days for the BigRIPS tuning, and 0.5 days for the measurement, are requested. 0.5 days of on-site work time before and after the test runs are also required in order to replace the detectors in the beam line. The decision of

the review was to approve 1 day machine study.

### **3. Machine Time Schedule of January-March 2015 (Sakai)**

A machine time schedule plan from January to March 2015 was discussed. In the last machine time committee meeting, it was decided to make the most of the scheduled pending experiments, and to make a decision later again when the budget status of this fiscal year would be clear. It was proposed that all the pending experiments would be cancelled, as there is no outlook to secure sufficient operation budget. There was no objection on this proposal.

### **4. FY2015 Machine Time Schedule (Sakai)**

A plan of machine time schedule in the next fiscal was discussed. The outline of the plan is to run the SRC/BigRIPS experiments for 5 months in total (3 months from April to June, and 2 months from October to December), as was done in this fiscal year. The beam plan starts with  $^{238}\text{U}$  for both spring and autumn, followed by one or two other beam species. The machine time allocation request for spring was called based on this plan, and 22 experiments requested 109.5 days of machine time in total. A proposal from Prof. Sakurai on the spring machine time plan was introduced. The contents of the proposal are: 1)  $^{60}\text{Ca}$  new isotope search with  $^{70}\text{Zn}$  should be performed in the early stage, considering competition with another facility. 2) the SAMURAI experiments will be conducted not in spring, but in autumn. 3) the ImPACT experiments will be performed with ZeroDegree Spectrometer in spring and with SAMURAI in autumn. While some committee members pointed out that  $^{60}\text{Ca}$  search may not be so urgent, no particular comments were raised concerning the other two points.

### **5. Next meetings**

- The next meeting will be held on Wednesday, February 25, 2015, at 10:30.
- The meeting after the next will be held on Wednesday, March 18, 2015, at 10:30.