

# Minutes of the 56th Machine-Time Committee Meeting

Date and time: June 15, 2012; 13:30–15:00

Place: RIBF Bldg., Room 203

Attendees: Sakai<sup>a</sup> (Chair), Abe<sup>a</sup>, En'yo<sup>a,†</sup>, Haba<sup>a,†</sup>, Henning<sup>a,†</sup>, Kamigaito<sup>a</sup>, Kase<sup>a</sup>, Kubo<sup>a</sup>, Miyatake<sup>c,†</sup>, Morita<sup>a</sup>, Nishimura<sup>a,†</sup>, Sakurai<sup>a</sup>, Shimoura<sup>b</sup>, Suda<sup>d,†,‡</sup>, Ueno<sup>a</sup>, Uwamino<sup>a</sup>, Wakasugi<sup>a</sup>, Yamaguchi<sup>b</sup>

Absent: Fukunishi<sup>a</sup>, Motobayashi<sup>a,†</sup>, Uesaka<sup>a</sup>, Yoshida<sup>a,†</sup>

<sup>a</sup> RNC / <sup>b</sup> CNS / <sup>c</sup> KEK / <sup>d</sup> RIBF-UEC / <sup>†</sup> Observer / <sup>‡</sup> TV Attendee  
(in random order)

## Reports

### 1. New MT Committee member from KEK (Sakai)

The KEK Isotope Separator System (KISS) project has reached the stage of R&D studies using beams. For smooth collaborative operation of RIBF, Professor Miyatake of KEK was appointed by the MT Committee Chair Sakai as a new regular observer from June, as provided in the Article 5 of RIBF MT Committee Bylaws.

### 2. Changes of the beam-time schedule (Ueno)

It was reported that the beam-time (BT) schedule had been changed as follows last month.

- NP1012-AVF12-1 (Ishiyama), scheduled for May 22 at 9:00 – May 24 at 9:00, was extended by 0.5 days and ended on May 24 at 21:00.
- MS-ACC12-02 (Imao), scheduled for Jun 6 at 21:00 – Jun 10 at 21:00, was shifted to Jun 8 at 17:30 – Jun 11 at 10:00. It was noted that this BT was also used to test the performance of RRC following the emergency repair (see below).

### 3. RIBF operation

- <sup>48</sup>Ca beam delivery (Kamigaito)  
Summary data of the <sup>48</sup>Ca beam delivery to the series of the BigRIPS-based experiments conducted from May to June were reported. The report includes the BT statistics of the experiments conducted after changing ion source material and the re-acceleration of the beam, which were not reported in the previous meeting. After the re-acceleration, the beam was stably delivered at the current as high as  $I \sim 200$  pA. In a performance test conducted just after the beam times, the maximum current of a <sup>48</sup>Ca beam, 415 pA, was recorded.
- RRC trouble (Kase)  
In addition to the layer-short problem of the RRC E-sector coil that has been occurring since early spring, another layer short occurred in the same place in the W-sector main coil that was damaged and repaired in 1999. At the same time, a vacuum leak occurred in the chamber containing the trim coil of the S sector. These problems were investigated and repaired. The RRC performance was tested following the repair using a part of MS-ACC12-02 (Imao) BT.

### 4. Charge-stripping system R&D (Imao)

The BT of MS-ACC12-02 (Imao), conducted to develop a gas charge-stripping system for high-current heavy-ion beam acceleration and stable beam deliveries, were reported. The development of high performance differential pumping part was the key to the system where it is essential to recycle a high-purity He gas without the contaminated admixture at a high gas flow rate. In the BT, a recycle rate of 98 % was achieved at a He gas flow rate of 200 l/min. Because of these high recycle and flow rates, i) a high charge state of a  $^{238}\text{U}$  beam,  $q = 64^+$ , was populated without being affected by the contaminants such as air,  $\text{H}_2\text{O}$ , and HC, and ii) the same equilibrium charge state was obtained even with a 10-pnA high-current  $^{238}\text{U}$  beam.

#### 5. Status of the SHE research (Kaji)

A performance evaluation test of GARIS was conducted with a  $^{48}\text{Ca}$  beam. Details were reported.

#### 6. Role of the accelerator-operation contact on duty for a week (Kamigaito)

In the Accelerator Group, a member is assigned to be on duty for a week as the accelerator-operation contact. It was reported that rights and duties of the weekly duty were redefined in the Accelerator Group. The duties related to users are as following: i) The weekly duty is required to recognize the BT situation of the low-energy branch (up to RRC) not of the high-energy branch (SRC), where ii) he/she is not in charge of the BT coordination such as extension and re-scheduling (the BT coordination is under the jurisdiction of the User Liaison and Industrial Cooperation Group). However, iii) he/she can extend BT by 0.5 days at most in order to compensate for a lost BT due to accelerator trouble, if the extension does not affect the BT schedule that follows.

#### 7. Status of PAC meetings (Ueno)

- 11th NP-PAC (June 18–19): All procedures regarding i) in-house technical review (May 9–21), ii) collection of the follow-up status reports on the conducted BTs (May 11–31), iii) activity report on the BTs conducted in the last half year, and iv) documentary pre-review by the PAC (May 22–June 11) were completed.
- 9th ML-PAC: The PAC meeting schedule is being deliberated to be held in early September.
- 3rd In-PAC (July 2): One proposal was submitted.

### Topics discussed

#### 1. Approval of the minutes of the previous meeting (Sakai)

#### 2. Review of proposals in the Machine Study category (Sakai)

The following proposals in the Machine Study (MS) category were reviewed through interviews and presentations by the experiment spokespersons.

- KISS R&D (Hirayama)

Two MSs were proposed: they involve studying the space-charge effect on the efficiency/selectivity of KISS as a function of the beam current using a  $^{59}\text{Co}$  beam at  $E/A = 8$  MeV with RRC for 2 days and a  $^{124}\text{Xe}$  beam at  $E/A = 10$  MeV with RRC for 2 days. After discussions, the proposal was deferred. The spokesperson was requested to re-submit the proposal with modifications reflecting

further consideration of the beams and the timing of implementation.

- Charge-stripping system R&D (Kamigaito, Okuno)

The following three MS proposals were approved:

- Development of the second-stage charge stripping system (fRC, 2 days)
- Study of charge-stripping foils for Xe beam deliveries, which was scheduled for June but has been canceled (fRC, 4 days)
- Development of a gas charge stripping system for Kr beam deliveries (RILAC, 1.5 days)

### 3. Official BTs provided to the BigRIPS-based experiments (Sakai)

Details of the BT statistics in the  $^{48}\text{Ca}$  beam series conducted from May 5 to June 4 were reported (Ueno). After discussions, the official BT provided from the facility to each experimental program was counted as follows:

- NP1106-SAMURAI03-01 (Nakamura) : 7 days
- NP1106-SAMURAI04-01 (Orr) : 3 days
- NP1106-SAMURAI05-01 (Kondo) : 2 days
- NP1006-SHARAQ04-01 (Uesaka) : 7.5 days

### 4. Outline of the BT schedule for the second half-year of FY2012 (Sakai)

Continuing from the previous meeting, the list of primary beams and the outline of their time allocations for the second half of FY2012 were discussed for the BigRIPS-based experiments. It was determined that their BTs will be scheduled in line with the following policy:

- BigRIPS-based experiments will be scheduled from October to January. Unlike normal procedures, only the BT for this period will be scheduled. The BT from February to March will be separately scheduled later, where only the low-energy branch (up to RRC) will be available due to the maintenance of the Co-Generation System (CGS).
- In accordance with the tentative two-year primary-beam plan, experiments using the beams of  $^{238}\text{U}$  (October–November),  $^{124}\text{Xe}$  (December), and light charged ion (January) will be scheduled.
- The maximum number of BTs possibly allocated to the EURICA experiments will be scheduled as stipulated in the agreement.

### 5. Next meetings

- The next meeting will be held on Friday, July 20, 2012, at 13:30
- The meeting after the next will be held on Friday, September 21, 2012, at 13:30 (it will be adjourned during August unless an extraordinary meeting is convened.)