

Minutes of the 63rd Machine-Time Committee Meeting

Date and time: February 15, 2013; 13:30–14:55

Place: RIBF Bldg., Room 203

Attendees: Sakai^a(Chair), Abe^a, En'yo^{a,†}, Fukunishi^a, Haba^{a,†}, Kamigaito^a, Kase^a, Kubo^a, Miyatake^{c,†}, Morita^a, Motobayashi^{a,†}, Nishimura^{a,†}, Shimoura^b, Ueno^a, Uesaka^a, Wakasugi^a, Yamaguchi^b, Yako^{d,†}(in lieu of Aoi)

Absent: Aoi^{d,†}, Sakurai^a, Uwamino^a, Yoshida^{a,†}

^aRNC / ^bCNS / ^cKEK / ^dRIBF-UEC / [†]Observer
(in random order)

Reports

1. Change of the beam-time schedule (Ueno)

The beam time (BT) of MS-ACC12-10 (Kuboki) was added to the schedule, and conducted on January 29, 2013. Other BTs were conducted as scheduled.

2. SLOWRI construction (Wada)

- Program outline: In the SLOWRI facility whose budget has been recently allocated, i) a gas cell system based on the RF-carpet ion-guide method will be installed at the exit of the BigRIPS D5 magnet, and ii) another gas cell system based on the laser resonance ionization method will be installed inside the BigRIPS F2 chamber. The facility allows for the delivery of a relevant radioactive isotope (RI) independently of atomic and chemical properties, to the experimental site as a slow RI beam, after the RIs produced at high energies using BigRIPS are stopped into and extracted from the gas cells. It was noted that the system ii), Parasitic RI-beam by Laser Ionization Source (PALIS) was designed to provide slow RI beams parasitically to other running BigRIPS experiment.
- Configuration: In addition to the RF-carpet ion guide, a newly developed RF ion guide will also be combined into the gas cell system i) in order to prevent the reduction in the extraction efficiency due to space charge effects. The configuration around the exit of D5 will be modified to install the system i). The BigRIPS F2 chamber will be modified to accept an Ar gas cell of the system ii) at the slit position inside the chamber. RIs stopped and neutralized in the Ar gas cell are carried to its exit by the gas flow. Then, the RIs are carried vertically at the height of 2200 mm after they are again ionized by means of laser resonance ionization method. To transport the RIs to the experimental site, a beam transport (BT) system consisting of a chain of electrostatic quadrupole lenses will be installed from F2 to the experimental site through the inner side of a post at F5. For this installation, it is necessary to make a hole in the radiation shielding concrete wall at the BigRIPS F2.
- Schedule: The installation of the SLOWRI facility will start from April, 2013. The detailed design of the systems will be completed by July. The modification of the F2 concrete shielding wall and the construction of the electrostatic-quadrupole BT line will be conducted from July to September. The main parts of the two gas cell systems will be installed from December, 2013 to February, 2014. Following the offline tests from the winter, 2013 to the fall, 2014, the beam commissioning of the

system i) and ii) will start in the winter and fall, 2014, respectively.

3. **Return Beam Line construction** (Fukunishi)

- Program outline: A new BT line transporting beams accelerated by IRC to the former RARF facility, the so-called Return Beam Line (RBL), will be installed in this program. The program aims at increasing ion ranges used in heavy-ion-induced mutation experiments such as argon and iron in comparison with those provided under the present acceleration mode. The budget requested from the collaboration group formed under RNC, RIKEN Innovation Center and RIKEN Food, Co. Ltd., has been approved. The installation of RBL will start from July, 2013, the second year in the approved four-year program.
- Configuration: Since most of the Q magnets of RBL, once constructed in the RIBF project have been already utilized effectively in the other parts of RIBF, they should be newly fabricated this time. The RBL, sharing its part with the existing IRC bypassing beam line, requires additional dipole magnet installed at the DMH62 site in order to make it unnecessary to change magnet configurations depending on operation modes.. In addition, two parts of the new BT lines connecting IRC→E1 and E1→RRC room will be constructed. The latter one, the E1→RRC part, will be connected to the stem beam line of the existing beam distribution system of the former RARF facility at DMA1 site. Therefore, beams transported from IRC can be delivered only to the E5 vault (i.e., the biological irradiation experimental room). For the installation of the E1→RRC part, a hole will be made in the radiation shielding wall. It was noted that SRC and RBL cannot be excited simultaneously since the power supplies will be shared in-between.
- Schedule: The IRC bypassing line, as well as the accompanying cooling water line, will be temporarily removed for the installation of the IRC→E1 part of the beam line next summer. It is under consideration to schedule BigRIPS beam service times using AVF-injected light ion beams through the bypassing line in mid-February, 2014. Provided that the construction of the DMH62 magnet will be completed by mid-January, 2014, the IRC bypassing line will be in operation in mid-February, 2014. However, if the DMH62 construction is delayed, the beam service times cannot be scheduled since the recovery of the bypassing line will take one month or longer. The beam commissioning of RBL will be conducted in FY2014, the third year of the four-year program.

4. **Status of PAC meetings** (Ueno)

- 12th NP-PAC (June 28–29): The call for proposals will open in mid-March (the deadline will be set to early May). Details will be discussed at the CNS–RIKEN Research Collaboration Liaison Meeting held on March 11.
- 10th ML-PAC: The PAC meeting schedule is being deliberated to be held sometime in June.
- 4th In-PAC: The PAC meeting will be held in June if new proposals are submitted.

Topics discussed

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

2. Tentative two-year primary beam plan for BigRIPS-based experiments (Sakai)

The tentative two-year primary beam plan for the BigRIPS-based experiments announced at the previous NP-PAC meeting, including modifications made later, is as follows.

- Spring 2013 : ^{238}U , ^{124}Xe , Light ions
- Fall–Winter 2013 : ^{238}U , ^{48}Ca , ^{78}Kr , Light ions
- Spring 2014 : (open)

The candidate primary beams to be delivered up until winter of 2014 were discussed. The final two-year plan will be determined at the next MT Committee meeting. It will be mentioned in the call-for-proposals of the 12th NP-PAC meeting.

3. Outline of the BT schedule for the FY2013 second half (Sakai)

An outline of the BT schedule for the second half of FY2013 under consideration was presented by the User Liaison Team (Ueno), and discussed by the MT Committee. The outline will be modified to represent the construction and maintenance schedule of the RIBF facility as well as electric-power use plan at the RIKEN Wako campus as soon as they are finalized. The outline of the second half-year BT schedule will be discussed furthermore until the start of BT scheduling for the second half.

4. Device and detector contact persons at the NP-PAC meeting (Sakai)

From the 8th NP-PAC meeting, the contact persons in charge of RIBF key equipment and detectors have been assigned to give advice on their usage and other relevant issues. It was determined that the following members be recommend as the contact persons at the 12th NP-PAC meeting from the MT Committee. The members will be finally determined at the next CNS–RIKEN Research Collaboration Liaison Meeting.

Equipment

- GARIS : Kouji Morimoto (new)
- RIPS : Hideki Ueno
- BigRIPS : Toshiyuki Kubo
- ZeroDegree : Hideaki Otsu
- SHARAQ : Kentaro Yako (new)
- SAMURAI: Hiromi Sato (new)

Detectors

- DALI2 : Pieter Doornenbal
- GRAPE : Susumu Shimoura (new)
- EURICA : Shunji Nishimura

5. Change of MT Committee members (Sakai)

It was determined that the MT Committee members be changed from April, 2013, the start of FY2013, as follows:

- The Article 4 of RIBF MT Committee Bylaws will be revised so that all Deputy Group Directors of the Accelerator Group are assigned as MT Committee members.

- Miyatake, Professor at KEK, and Morimoto, Team Leader of the GARIS Team, were appointed by the RNC director as new MT Committee members starting from April in accordance with the Article 4–(9) of RIBF MT Committee Bylaws.
- Morita, Associate Chief Scientist of the Superheavy Element Laboratory, was appointed by the MT Committee Chair as a regular observer starting from April in accordance with the Article 5 of RIBF MT Committee Bylaws.

6. Next meetings

- The next meeting will be held on Friday, March 15, 2013, at 13:30.
- The meeting after the next will be held on Friday, April 19, 2013, at 13:30.