

Minutes of the 87th Machine-Time Committee Meeting

Date and time: April 28, 2015; 15:00–16:50

Place: RIBF Bldg., Room 203

Attendees: Sakai^a(Chair), En'yo^{a,†}, Fukunishi^a, Kamigaito^a, Kase^a, Kubo^a, Morimoto^a, Okuno^a, Shimoura^b, Ueno^a, Uesaka^a, Uwamino^a, Wakasugi^a, Yamaguchi^b, Imai^{d,†}, Haba^{a,†}, K. Yoshida^{a,†}, Otsu^{a,†}, Kishimoto^{a,†}, A. Yoshida^{a,†}, Nagatomo^{a,†}, Nishimura^{a,†}, Yoneda^a

Absent: Abe^a, Miyatake^c, Sakurai^a, Morita^a, Motobayashi^{a,†}, Tanaka^{a,†}

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

Reports

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

The current status of the machine time operation was reported. The SRC-BigRIPS experiments have been conducted with a ²³⁸U beam since March 26. Following the ImPACT experiment, the in-beam gamma spectroscopy experiments and BigRIPS machine studies took place. During the temporary suspension of the SRC-BigRIPS experiments due to the RIKEN open campus, radiation biology experiments were performed. The Tamegai-experiment using the ²³⁸U beam in the low-energy facility followed. From the evening of April 27, the SRC-BigRIPS experiments resumed. Due to a change in the start time of beam delivery and shortening of the BigRIPS tuning time, the MT schedule was changed as follows:

	(before change)	(after change)
IMPACT14-01(Sakurai)	3/26 9:00 – 4/7 9:00	3/26 21:00 – 4/7 21:00
NP1406-RIBF126-01(Sahin)	4/7 9:00 – 4/12 9:00	4/7 21:00 – 4/12 21:00
NP1306-RIBF98R1-01(Jungclaus)	4/12 9:00 – 4/15 9:00	4/12 21:00 – 4/15 16:00
MS-EXP15-03(Yoshida)	4/15 9:00 – 4/15 21:00	4/15 16:00 – 4/15 21:00
MS-EXP15-02(Ota)	4/16 9:00 – 4/17 9:00	4/16 9:00 – 4/17 10:00

2. Change of the Beam Species of RILAC Standalone Experiment (Yoneda)

Instead of using a ⁴⁸Ca beam as originally planned, a ⁴⁰Ar beam was used for the RILAC standalone experiment NP1306-LINAC7-07 (P. Schury) pursuant to a request from the experiment group.

3. Report on the RIBF accelerator operation (Fukunishi)

A status report was given on the ²³⁸U beam that has been provided to SRC-BigRIPS experiments. Prior to the temporary suspension of the experiments due to the open campus, the beam intensity was 31.4 pA at maximum, and the beam availability was 91.5%. This stable operation was made possible by a stable supply of the ion source which constantly provided about 100μA of ions, and the good quality of the new second stripper made of carbon (good uniformity and heat transfer). The beam has been provided to BigRIPS again from April 27. The maximum beam current of 38.1 pA was achieved, thanks to the injection buncher which was replaced with the cavity-type used before, and the improvement of the transmission through the gas stripper. With the degree of vacuum in RRC getting worse, its influence on

the future operation has become a concern.

4. Report on Accelerator Machine Study (Imao)

A report was given on an accelerator machine study. In order to look into the possibility of using fluid materials as the second charge stripper of ^{238}U for more stable accelerator operation, the charge distributions were measured for gas (CH_4 , He) and liquid (H_2O , $\text{C}_n\text{H}_{2n+2}$) installed as the stripper material. For gas, CH_4 provided highest charge, but the result obtained for He showed that thicker material may provide higher charge. It was confirmed that both can be used as the backup choices when the liquid lithium stripper is used as the first candidate. With regard to liquid, the charge distribution was not fully understood, thus further analysis will be made taking into consideration change in the thickness of the liquid materials sealed with Kapton foils.

5. Report on BigRIPS Machine Study (Ota, H.Sato)

Reports were given on BigRIPS machine studies. In the machine study which looked into the capability of separation and identification of high-rate secondary beams (Ota), the particle identification was tested with MWDCs and diamond detectors. By using secondary beams of ^{132}Sn and isotopes around at 100 MeV/u and 200 MeV/u, it was confirmed that the resolution almost as good as the case using an ion chamber can be achieved, and the detectors can be operated at a high rate of 2MHz. Further analyses will be made with detailed information including ion optics in order to deduce the limit of the resolution achievable and the rate dependence of the efficiencies. In the high-rate test of PPACs (H. Sato), PPAC were irradiated with the secondary beams of ^{132}Sn and the isotopes (100MeV/u and 200MeV/u) close by with rates gradually increased. It was confirmed that the detectors worked for several minutes at about 1MHz of beam rate. The proper high voltage (but not too high) applied to the detector may have been the key. In the next study, irradiation for a long time and with a smaller beam spot size will be tested.

6. Report on Confirmation Measurement for Fare-Paid MT (A.Yoshida)

A report was given on the confirmation measurements for a fare-paid experiment performed on April 2. In the previous fare-paid experiment, the rate of the secondary beam produced in CRIB was not high enough which has d to the gas not being circulated at the gas target. In the current measurement, it was confirmed that the high enough beam rate can be achieved as expected by circulating the gas, and the rate decreases when the circulation stops. The next fare-paid experiment using CRIB will not be performed in the first half of this fiscal year, but hopefully it will be scheduled to take place during the second half of this fiscal year.

7. Preservation of Research Record (Yoneda)

A report was given on the procedures for preserving research records which started from April. According to the change in the RIKEN regulations, it was decided that the records of researches obtained from using accelerator facility be saved by the stipulated method. An email instructing how and where to

save the research results is sent from the User Support Office to the experiment spokesperson and contact person in RIKEN. Following to the instruction, the experiment group uploads the experiment data and copy of log books. The data obtained from the SRC-BigRIPS experiments will be saved after contacting the Computing and Network Team.

8. Status of PAC Meetings (Yoneda)

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

The eight new NP-PAC members are as follows:

Thomas Rauscher - University of Hertfordshire

Kazuyuki Ogata - RCNP

Ikuko Hamamoto - RNC

Yuhu Zhang - IMP

Andreyev Andrei - The University of York

Haik Simon - GSI

Angela Bracco - INFN

Piet Van Duppen - K.U. Leuven

- 12th ML-PAC: (to be held in July):

The schedule is under consideration, based on the backlog of experiments using the low-energy facility and status of RAL experiments.

- 4th In-PAC: nothing has been finalized about the next PAC. An in-house review took place for a fare-paid experiment.

Topics discussed

1. Approval of Minutes of Previous Meeting (Sakai)

2. Application of Machine Study

- Commissioning of SAMURAI-TPC (Isobe)

Commissioning of SAMURAI-TPC will take place. SAMURAI-TPC is a TPC detector placed in the gap of the SAMURAI magnet for measurements of particle tracks produced in heavy-ion collisions. The experiment group has made a request to perform their main run in autumn this year, and prior to it, to confirm 1) if the detector works with heavy-ion irradiation, 2) if the high-voltage control with the gating grid works, and 3) capability of the particle identification and its resolution. Three days of commissioning measurements are being requested, which includes about half a day for startup, 1.5 days for trigger tuning and tests of gating grid, and 1 day for peripheral detector startup and resolution check. At least a week is required between commissioning and main run.

While the committee well understood the necessity for the commissioning, it was decided that its approval/disapproval will be finalized later when the status of the autumn MT becomes more clear.

3. MT Plain in FY2015 (Sakai)

The MT plan of FY2015 was discussed. ULIC presented the outline of the MT plan, including proposals for the autumn MT as follows: since the ImPACT experiment will be conducted, the autumn MT will start with the use of ^{238}U beam followed by ^{48}Ca , ^{70}Zn , or light ions depending on the requests from users. The ^{70}Zn MT tentatively allocated late in June will be cancelled since the status of the operation budget for the current fiscal year is still too unclear. No particular comments were raised on these proposals.

4. Earlier Call for MT Allocation Request for the Latter Half of FY2015 (Yoneda)

It was proposed by ULIC that call for MT allocation request for the latter half of FY2015 be announced earlier. Previously, the call has been made in July after the result of NP-PAC came out in June, and the MT plan was made in August. This fiscal year, NP-PAC will not be held in June, and the RIBF Users Group has requested to come up with the MT schedule earlier. The proposed new timeline suggests announcing the call late in May with the deadline in mid-June, and finalizing the MT allocation schedule at the MT committee meeting in July. With no objection, it was decided that the scheduling will be made as proposed by ULIC.

5. Next Meetings

- The next meeting will be held at 3pm on Tuesday, May 26, 2015.
- The meeting after the next will be held at 3pm on Tuesday, June 16.