

Minutes of the 90th Machine-Time Committee Meeting

Date and time: July 14, 2015; 15:00–16:50

Place: RIBF Bldg., Room 203

Attendees: Sakai^a (Chair), En'yo^{a, †}, Abe^a, Fukunishi^a, Kamigaito^a, Kase^a, Kubo^a, Okuno^a, Shimoura^b, Ueno^a, Uwamino^a, Wakasugi^a, H. Yamaguchi^b, Imai^{d, †}, Haba^{a, †}, Motobayashi^{a, †}, K. Yoshida^{a, †}, Otsu^{a, †}, Tanaka^{a, †}, Kishimoto^{a, †}, A. Yoshida^{a, †}, Nishimura^a (in lieu of Sakurai), Kaji (in lieu of Morimoto), Kidera^{a, †}, Y. Yamaguchi^{a, †}, Doornenbal^{a, †}, Yoneda^a

Absent: Miyatake^c, Morimoto^a, Sakurai^a, Uesaka^a, Morita^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. After the last MT committee meeting, a new-isotope search experiment and a machine study of the Rare RI Ring were conducted with a ⁷⁸Kr beam as scheduled. A series of SRC-BigRIPS experiments scheduled in this spring was completed on June 22.

2. Report on the RIBF accelerator operation (Fukunishi)

A status report was given on the beam provided to the SRC-BigRIPS experiments. A ⁷⁸Kr beam was provided to the experiments until June 22 followed by half a day of machine study which took place to confirm the largest intensity of the ⁷⁸Kr beam. The availability of the ⁷⁸Kr beam was 90.1%, and the availability of the beams through the entire series of the SRC-BigRIPS experiments was 92.9%.

3. Report on the current status of ⁵⁰Ti ion source (Kidera)

A status report was given on the ⁵⁰Ti ion source. The ion source tuning was started on May 22 to provide ⁵⁰Ti ions to the RILAC-standalone experiment scheduled to go on June 5. Since the beam current was smaller than expected, it was decided that the beam species be changed to ⁴⁸Ti from June 9. The reason for the inadequate ⁵⁰Ti current was that the ion source material, organic compound of Ti used as the ion source material was too old and changed its property. When the ⁴⁸Ti organic compound was used immediately after it was produced, 20-day continuous operation was possible with the 0.5 pA beam current.

4. Report on Rare RI Ring machine study (Y. Yamaguchi)

A status report was given on the machine study of the Rare RI Ring that was conducted on June 19 – 22. The ⁷⁸Kr beam which was decelerated down to 168 MeV/u was injected to the Rare RI Ring. The circulation of the individual particles was confirmed about 1.5 days after the start of the machine study, followed by the success of the circulation of the particle for 9.5 ms extraction with the kicker magnet.

With regard to the test of the accumulation mode using Schottky pickup, the signal readout from one event was achieved. It was confirmed that the isochronous magnetic field was realized, and that the entire system works as designed.

5. Report on ^{41}Ar background at F8 (Doornenbal)

A report was made concerning the background gamma rays from ^{41}Ar observed at the in-beam gamma-ray spectroscopy experiment (NP1106-RIBF94). When the beam was stopped, the beta-delayed gamma rays of ^{41}Ar were strongly observed with the NaI(Tl) array DALI2 at F8. The gamma rays appear when the air is radio-activated but has not been observed significantly in the experiments so far. Time-dependent change of the strength was also observed. The intensity was large enough to disturb the detector calibration measurements using standard calibration sources, and the possible existence of these gamma rays should be taken into account when calibration measurements are scheduled hereafter.

6. Report on preserving research records (Yoneda)

A status report was made concerning research record preservation. An instruction on the method of copying experimental data and log books was sent to all the experiment groups which conducted experiments after April this year. This time the status report on the experiments conducted before June was made. Most of the experimental groups copied their research records as instructed, but there were still some groups which have not copied them yet. The progress will be observed continuously hereafter.

7. Status of PAC Meetings (Yoneda)

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

The call for proposals will be issued in September, with the deadline of proposal submission late in October.

- 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.

Topics discussed

1. Approval of Minutes of Previous Meeting (Sakai)

2. Application of Machine Study

- Machine study for NeuLAND efficiency measurement (Otsu)

A machine study of a neutron detector NeuLAND was proposed. NeuLAND is a plastic scintillator produced for GSI FAIR, and is to be used for the collaboration experiments at SAMURAI until FAIR starts. The detector has four walls of scintillators, each with two layers of scintillators (250cm x 250cm, 5cm thick), and will be used soon in the ^{28}O resonant state search etc. The purpose is to calibrate the

efficiency using (p,n) reaction on a ${}^7\text{Li}$ target within 5% precision. Proton beams with the energies of 250 MeV/u and 100 MeV/u will be produced from the ${}^{48}\text{Ca}$ primary beam (0.5d), and neutrons produced with the (p,n) reactions will be measured at forward angles for efficiency calibration (0.5d).

As a result of the review, one day of machine study was approved.

- Commissioning of Rare RI Ring part 2 (Y. Yamaguchi)

The second commissioning of the Rare RI Ring was proposed. The first commissioning was conducted with a single nuclide, and as the next step multiple nuclides will be measured at the same time. A secondary beam containing multiple nuclides will be produced from ${}^{48}\text{Ca}$, and will be injected to the Rare RI Ring. Time-of-flight information in BigRIPS will be used to extract nuclear masses precisely. One day is required for tuning of injection, 0.5 days for extraction, and 0.5 days for time-of-flight measurements. Two days of machine study are requested.

As a result of the review, two-days of machine study were approved as requested.

3. MT schedule in latter half of FY2015 (Sakai)

The MT schedule plan of the second half of FY2015 was proposed by ULIC where opinions were exchanged. The acceleration of ${}^{238}\text{U}$ will be started after the scheduled power outage on October 11, and the experiments including an ImPACT experiment will be conducted for about a month. Then, the beam will be switched to ${}^{48}\text{Ca}$, and the S-rated experiment NP1312-SAMURAI21 will be performed. As for the low-energy part of RIBF, the MT is allocated to as many experiments as possible. The schedule of the RILAC-standalone experiments still is uncertain. Depending on the status of the development of a ${}^{50}\text{Ti}$ beam, it will be decided whether the superheavy element search or the PAC-approved experiments will be performed. The decision will be made later in December.

Some changes were proposed, one being that an AVF beam will be required for the facility inspection early in December. It was decided that the plan including corresponding changes will be carried out.

4. Yearly MT plan in FY2015-16 (Sakai)

The outline of the MT schedule plan in FY2015-16 was shown by ULIC, and opinions were exchanged. It was reported that RRC is not available from mid- February to mid-March due to update of the RF controlling system. It is scheduled to start using ${}^{238}\text{U}$ next spring. No objection was raised on the matter.

5. Official BTs provided to SRC-BigRIPS experiments in FY2014 (Yoneda)

Details of the BT statistics of the experiments conducted in FY2014 were reported. The BTs provided from the facility to each experimental program approved are as follows:

- ML1307-RIBF112(Yamauchi) 0.125 days
- NP1306-SAMURAI17(Sasano) 6 days
- NP1306-SAMURAI14(Muecher) 0.5 days
- NP1306-RIBF31R1(Wang/Aoi) 3.5 days
- NP1312-RIBF118(Doornebal) 10 days

NP1312-SHARAQ3R1(Michimasa) 8.5 days
NP1312-RIBF54R1(Itahashi) 10.5 days
NP1312-SHARAQ08(Dozono) 4 days
NP1012-RIBF63(Sumikama) 1 day
NP1012-RIBF61(Aumann) 4.5 days
NP1306-RIBF51R1(Wieland) 2.0 days
NP1112-RIBF88R1(Watanabe/Soderstrom/Regan/Walker) 5.5 days
NP1312-RIBF56R1(Baba) 7.5 days
NP1312-SAMURAI18R1(Corsi/Kubota) 6 days

6. Next Meetings

- The next meeting will be held at 1:30pm on Wednesday, September 2, 2015.
- The meeting after the next will be held at 3pm on Tuesday, October 20, 2015.