

Minutes of the 94th Machine-Time Committee Meeting

Date and time: December 15, 2015; 15:00–17:05

Place: RIBF Bldg., Room 203

Attendees: Sakai^a(Chair), En'yo^{a,†}, Abe^a, Fukunishi^a, Kamigaito^a, Kase^a, Kubo^a, Morimoto^a, Okuno^a, Sakurai^a, Shimoura^b, Ueno^a, Uesaka^a, Wakasugi^a, Imai^{d,†}, Motobayashi^{a,†}, K. Yoshida^{a,†}, Otsu^{a,†}, Tanaka^{a,†}, A. Yoshida^{a,†}, Hirayama^c (in lieu of Miyatake), Hasebe^{a,†}, Sumikama^{a,†}, Takeda^{a,†}, Y.Yamaguchi^{a,†}, Yoneda^a

Absent: Miyatake^c, Uwamino^a, Yamaguchi^b, Haba^{a,†}, Morita^{a,†}, Kishimoto^{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, two machine study experiments, a PAC-approved experiment, and a facility inspection were conducted using the ⁴⁸Ca beam. The SRC-BigRIPS experiments finished at 9pm on December 4 as scheduled. Only low-energy branch experiments will be conducted until the end of March.

2. Change of MT Schedule (Yoneda)

Changes of the MT schedule were reported. A fare-paid experiment (IC14-02, ⁷Li@5.8MeV/u, E7A(CRIB)), which was scheduled to run from 9am, February 18, to 9pm, February 20, was cancelled as requested from the experiment group. Moreover, according to the original schedule plan either one of the two experiments, (⁵⁰Ti@6MeV/u, GARIS2, spokesperson: Morita), or ML1501-LINAC21 (²²Ne@6MeV/u, GARIS, spokesperson: Eichler) was supposed to be conducted in February and March, but it was decided that both be cancelled due to the request to cut back on operation cost.

3. Report on the RIBF Accelerator Operation (Fukunishi)

A status report was made concerning the beam provided to the SRC-BigRIPS experiments. The ⁴⁸Ca beam was provided to the SRC-BigRIPS experiments from November 17 to December 4. The beam delivery started 12 hours ahead of schedule with the beam availability of 95.1%. The beam intensity was increased to 689 pA at maximum, and 547 pA on average. The beam availability throughout the fiscal 2015 was 92.2%. To improve the availability, it is necessary to 1) secure sufficiently long warming-up period (~1 week), 2) schedule experiments requiring large intensity beams sequentially and 3) allocate sufficient resources to the maintenance and repair work.

4. Report on Accelerator Machine Study (Hasebe)

A report was made concerning the accelerator machine study. The characteristics of the newly introduced carbon discs as the charge strippers were checked with a uranium beam. The uniformity of the thickness was excellent, and there was no swing of the beam profile observed. The maximum yield of the charge

distribution was at 72+, and the ratio was sufficient. There was no problem after 2.5 hours of irradiation with a full intensity beam, and the rise in the cooling water temperature in the DMM1 chamber was only from 23-24 degrees to 27 degrees. In the next test, the tolerance with long-time irradiation will be checked.

5. Report on BigRIPS Machine Study (Sumikama, Takeda)

Reports on the BigRIPS machine study were made. In the machine study aimed at particle identification of an RI beam around the $Z\sim 80$ region (Sumikama), the ToF resolution between F3-F11 was improved which led to a better A/Q resolution. An isomer around this region was also identified which can be used for the isomer tagging. In the machine study for new ion optics in the BigRIPS (Takeda), changes of the isotope separation by using F5 degraders with several thicknesses were observed following to the previous test for optics with inverted F2-F3. The behavior was almost as expected in the simulation, and now further analysis is ongoing to search for optics which realizes better isotope separation.

6. Report on NeuLAND machine study (Otsu)

A report was made concerning the NeuLAND machine study. A set of data was obtained for the NeuLAND neutron detection efficiency as well as event separation between the multiple neutron detection and cross talk. The measurement was made using quasi-monoenergetic neutrons which were generated with the ${}^7\text{Li}(p,n)$ reaction using proton secondary beams made from ${}^{48}\text{Ca}$. The neutron energies were 250 MeV and 110 MeV. The data is now being analyzed, and no problem has been found so far.

7. Report on Rare RI Ring machine study (Sonoda)

A report was made concerning the Rare RI Ring machine study. In the previous machine study, a single primary-beam particle was successfully circulated, and this time, circulation of a secondary beam was attempted. A secondary beam near the ${}^{48}\text{Ca}$ primary beam was injected into the ring. The beam profile in the injection line was not visible due to detector troubles, but eventually the particle circulation and extraction were observed. In the next test, extraction of mass will be tried using nuclei with known mass.

8. Report on Radiation during Beam Time (Tanaka)

A report was made concerning the radiation during SRC-BigRIPS experiments. Since radiative ${}^{41}\text{Ar}$ were observed at the exhaust port during the experiment, additional shield will be necessary to keep the level of radiation under the limit stipulated by law and ordinances for use of larger-intensity beams. The Safety Division will consider some safety measures such as separating BigRIPS Main Hall and Experiment area with vinyl curtains by discussing with the BigRIPS Team.

9. Status of PAC Meetings (Yoneda)

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

The meeting was held without any problem. Now the committee members are preparing the PAC

reports. The approval ratio based on the number of days will be about 50% (40% for SRC-BigRIPS experiments). 26 proposals out of 34 requests will be approved as grade A

- 12th ML-PAC: to be held on February 16 and 17.
- 4th In-PAC: to be held on January 13.

Topics discussed

1. Approval of Minutes of Previous Meeting (Sakai)

2. FY2016 Yearly MT Schedule (Sakai)

An MT Schedule plan of the next fiscal year was shown by ULIC, and opinions were exchanged. ^{238}U , ^{124}Xe , ^{48}Ca , light ions were listed as candidates of beams to be used for the SRC-BigRIPS experiments in spring. The decision will be made after beam time scheduling requests are completed. It is still unclear how long the SRC-BigRIPS experiments can run for though almost the same length of time as the current fiscal year is assumed. The call for the next NP-PAC will be issued earlier, in July, with the deadline of proposals submission set for early October. No particular opinion was raised by the committee members on the matter.

3. Next Meetings

- The next meeting will be held on Tuesday, January 19, 2015, at 3pm.
- The meeting after the next will be held on Tuesday, February 23, 2016, at 3pm.
- The meeting in March will be held on Friday, March 18, at 10:30am.