

Minutes of the 93rd Machine-Time Committee Meeting

Date and time: November 17, 2015; 15:00–16:35

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, Uwamino^a, Wakasugi^a, Yamaguchi^b, Imai^{d,†}, Haba^{a,†}, Motobayashi^{a,†}, K. Yoshida^{a,†}, Otsu^{a,†}, Tanaka^{a,†}, A. Yoshida^{a,†}, Hirayama^c (in lieu of Miyatake), Imao^{a,†}, Satou^{a,†}, Isobe^{a,†}, Sonoda^{a,†}, Yokkaichi^{a,†}, Yoneda^a

Absent: Miyatake^c, Morita^{a,†}, Motobayashi^{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, an ImPACT experiment and two PAC-approved experiments were conducted using the ²³⁸U beam. Due to RF troubles etc., the MT schedule has been changed as follows. The ²³⁸U MT was terminated due to the ion source trouble on November 14.

	(before change)	(after change)
ImPACT15-01(SAKURAI)	9am, 21Oct – 9pm, 31Oct	9am, 21Oct – 9am, 3Nov
NP1412-RIBF124R1-01(Ichikawa)	9pm, 3Nov – 9pm, 9Nov	9am, 4Nov – 9am, 10Nov
NP1306-RIBF99-01(Daugas)	9pm, 9Nov – 9am, 13Nov	9am, 10Nov – 5:40am, 14Nov

2. Report on the RIBF Accelerator Operation (Fukunishi)

A status report was made concerning the beam provided to the SRC-BigRIPS experiments. The ²³⁸U beam was provided to the SRC-BigRIPS experiments from October 19 to November 14. The beam intensity reached 48.8pnA, thanks to the big gain achieved by the improvement of the RRC vacuum. The beam availability was 88.3%, and the troubles related to RF occurred frequently. At the end, there was a vacuum leak on the ion source which took a long time to recover, thus the beam delivery had to be discontinued. Now the beam tuning is ongoing to provide the ⁴⁸Ca beam to SRC-BigRIPS from November 18 as scheduled, while the RILAC RFQ vacuum tube was exchanged to deal with the breakdown.

3. Report on Accelerator Machine Study (Imao)

A report was made concerning the accelerator machine study. While the machine study was aimed at investigating causal relationship between the light emission of the helium gas stripper and suppression of temperature increase during the beam irradiation, the correlation of light signal in with the beam cycle was not observed this time. In the next trial, the detector will be placed closer. After the next measurement, this machine study can be performed in a parasite mode.

4. **Report on BigRIPS Machine Study (Satou)**

A report was made concerning the BigRIPS machine study performed on November 4. This machine study was aimed at checking the tolerability of PPACs against high count rates. Since there was no problem with a short-time irradiation, the tolerance for a long-time irradiation was checked this time. The high voltage was tuned carefully not to be too high, as was done in the last test, and the PPACs were irradiated with a secondary beam with isotopes around ^{132}Sn . There was no trip observed after 70-minutes irradiation with 600kcps, and 60-minutes irradiation with 1Mcps. The detection efficiency changed depending on the rate, but recovered when the rate became low. This suggests that the detector was not damaged with the discharge. The electric circuit which lowers the voltage when there is discharge worked as expected. After this circuit is triggered, the detector does not work for approximately 16 minutes.

5. **Report on SAMURAI-TPC machine study (Isobe)**

A report was made concerning the SAMURAI-TPC machine study. The basic performance of SAMURAI-TPC was checked by placing the detector downstream of SAMURAI. The gating grid which is triggered by a heavy ion injection worked as expected. The data was taken by using the GET circuits and the 1200ch flash ADC with the noise level suppressed to about 80% of the MIP signal level, and some reaction events with multiple particles generated in the collision on an aluminum plate were observed. The trigger test with detectors out of SAMURAI-TPC was also completed without any problem. The next test will be made with the detector in the magnetic field.

6. **Report on PALIS machine study (Sonoda)**

A report was made concerning the PALIS machine study. PALIS is an experimental device which captures gas cell particles abandoned on the F2 slits, and measures their physics quantities without disturbing the main beam in the BigRIPS. This was the first performance test with a beam. The interference with the main beam was checked by moving the gas cell, and it was confirmed that there was almost no beam loss with $\pm 5\text{cm}$ away from the central trajectory. Although there was a concern that the laser used at PALIS might cause significant noise signal in the detectors downstream, it was found that there was no such problem. The ion extraction with the RF ion guide did not succeed, but an effect was seen with the extraction with an electrode, and the decay curves with the unstable Cu isotopes were observed. In the next test, the ion extraction with the ion guide which broke down during the test will be tested and particle bunching will also be tested.

7. **Report on Radiation Measurement during ^{238}U Beam Time (Tanaka)**

A report was made concerning the radiation measurement during the ^{238}U beam time. The radiation level was measured when a $50\mu\text{A}$ ^{238}U beam was stopped in a Faraday cup at the exit of SRC (G01). It was confirmed that the radiation level was still lower than the dose limitation set for the boundary of the radiation-controlled area, but a request has been made that the beam with intensity larger than $50\mu\text{A}$ not

be allowed to be stopped in the Faraday cup until the radiation shield is fortified.

8. Status of PAC Meetings (Yoneda)

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

34 proposals have been submitted. The total requested beam time is 382 days. The breakdown is as follows:

low-energy branch: 12 proposals 174days: GARIS 4proposals 89.5 days,

CRIB 5 proposals 55.5 days, KISS 3 proposal 29 days

high-energy branch: 22 proposals 208days: BigRIPS/ZDS 11proposals 101days,

SHARAQ 1 proposal 15days, SAMURAI 9 proposals 81days,

PSP (report & next plan) 1 proposal 11days

- 12th ML-PAC:

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

- 4th In-PAC: to be held until the end of this year.

Topics discussed

1. Approval of Minutes of Previous Meeting (Sakai)

2. Request of Parasite Experiment (Yokkaichi)

A parasite experiment at AVF was requested. A GEM detector with CsI vapor-deposited photocathode will be placed in an AVF room during an RI-production experiment, and its performance under high-dose neutron radiation will be checked. During the RI-production experiment, the radiation level is about 40 mSv/h, and is suitable for the test.

After deliberation, the request was approved as proposed.

3. FY2015 First Half SRC-BigRIPS Official Beam Time (Yoneda)

Details of the lengths of the SRC-BigRIPS experiments performed from March to June in 2015 were presented. After discussions, the official BTs provided from the facility to each experimental program were set as follows:

NP1406-RIBF126(E.Sahin) 5 days

NP1306-RIBF98R1(A.Jungclaus) 3 days

NP1312-RIBF118R1(P.Doornenbal&A.Obertelli) 9 days

NP1106-RIBF65(K.Sekiguchi) 4 days

NP1112-RIBF94(W.Korten&P.Doornenbal) 6 days

NP0702-RIBF4R1(B.Blank) 5 days

NP1112-RIBF82(B.Rubio and others) 5 days

NP1112-RIBF93(A.Algora and others) 5 days

4. Next Meetings

- The next meeting will be held on Tuesday, December 15, 2015, at 3pm.
- The meeting after the next will be held on Tuesday, January 19, 2016, at 3pm.