

Call for Proposals of Nuclear-Physics Experiments at RI Beam Factory

September 9, 2020

Hiroyoshi Sakurai

*Director of RIKEN Nishina Center
for Accelerator-Base Science*

Susumu Shimoura

*Director of Center for Nuclear Study,
the University of Tokyo*

Katsuo Tokushuku

*Director of Institute of
Particle and Nuclear Studies, KEK*

This is a call for proposals for nuclear-physics experiments at the RI Beam Factory (RIBF) in the RIKEN Nishina Center for Accelerator-Based Science (RNC). The Program Advisory Committee (PAC) will review all nuclear physics proposals for the RIBF facilities, including SHARAQ and CRIB operated by the Center for Nuclear Study (CNS), the University of Tokyo, and KISS operated by Wako Nuclear Science Center (WNSC), Institute of Particle and Nuclear Studies (IPNS), KEK. The review will be made based on their scientific merits and feasibility. The PAC constituted by international members submits its recommendations to the Directors of RNC, CNS, and IPNS.

Since the date of the 21st PAC meeting has been set for December 14 – 16, 2020, we are now calling for proposals to be discussed at the 21st PAC meeting. All the spokespersons of the submitted proposals are requested to give an oral presentation (online) at the PAC meeting, which is open to the public. For each submitted proposal, specific PAC members will be assigned to review the proposal in detail prior to the PAC meeting. The PAC members may contact the spokesperson prior to the meeting if necessary.

In principle, approved experiments should be completed within two years. If an experiment does not finish within 4 years, a request for an extension or a new experimental proposal must be submitted.

We call for the following types of proposals:

1. Nuclear physics experiments at the RIBF accelerator facility
2. Updates of previously approved proposals
3. Development of experimental equipment that requires beam-time use

4. Construction of large-size instruments, such as a spectrometer, whose design study has been completed (Note: the 4-year rule does not apply to proposals of this type).

Please note that the use of the RIBF facility must be limited to non-military purposes.

Item 2 is for those who wish to make significant updates to their proposals. One can submit the updated version of the previously approved proposal, so that the PAC will review the proposal again. One should consider resubmission of the updated proposal if one of the following two cases applies:

- i) The approved experiment can be run by using a primary beam in the beam-plan list of fiscal year 2021 or 2022, which is different from the primary beam in the original proposal.
- ii) The priority granted to the approved proposal is not high enough, and the spokesperson aims at raising its priority. In particular, to be graded as S or A, spokespersons of proposals previously approved as B or A/B are encouraged to resubmit appropriately revised proposals.

The updated proposal should contain clear statements of what updates have been made in the proposal, including any change that may affect the physics aspects. Our tentative two-year plan of primary beams for BigRIPS-based experiments is as follows:

Fiscal Year 2021:	$^{238}\text{U} + (^{124}\text{Xe}, ^{78}\text{Kr}, ^{70}\text{Zn}, \text{light ions})$
Fiscal Year 2022:	(to be decided)

Please note that a fiscal year in Japan is from April through March. This beam plan is subject to change depending on the situation of the utility power which is still somewhat affected by the earthquake in 2011, the situation of the beam development, and the status of the accelerator operation. The ^{48}Ca beam will be unavailable until the ^{48}Ca ion source material becomes ready. As for the metallic ion beams from AVF, previously achieved currents will not be guaranteed due to the operational change of the ion source from next spring. You must contact Dr. Hidetoshi Yamaguchi (yamag@cns.s.u-tokyo.ac.jp) before your preparation of proposals using metallic ion beams from AVF.

A new type of proposal, called “proposals for scientific program”, has been started in the 13th PAC meeting. This category is for project-type experiments, such as surveying a broad range of nuclei for specific physics quantities with a certain detector setup. A collaboration led by RIKEN with partner institutes which, for example, introduce an experimental device to facilitate the measurements of interest, can initiate this category of proposal. Please contact one of the chief scientists at RIKEN if you are interested in this category.

The submitted proposal must contain (i) a cover sheet, (ii) a detailed description of the proposed experiment or construction, and (iii) a GDPR consent letter (for EU applicants). The main part of the proposal must be **within 10 pages** (cover sheet not included). Appendices can be added to

provide supplementary information. Those who propose experiments with BigRIPS are also requested to submit (iii) a LISE++ input file describing the secondary-beam setting in your proposal. For (i) and (iii), please use the latest versions available at:

<http://www.nishina.riken.jp/RIBF/NP-PAC/index.html> (updated in September 2020).

Detailed information on the experiment or construction can be given in a free format, and must be submitted with the cover sheet attached as the first page. It should include the following description:

1. Goals and methods of the proposed experiment or proposed development
2. Setup and conditions
3. Estimation of beam time requested
4. Readiness

Information on the facility, including the list of the available primary beams and the latest secondary-beam production cross sections, is given on the RIBF web page:

<http://www.nishina.riken.jp/RIBF> .

The deadline for proposal submission is **October 19, 2020**. Submission or replacement of submitted documents after the deadline will not be accepted.

The following is a list of contact persons of the experimental equipment and detectors. Those who plan to use the following equipment and/or detectors are requested to get in touch with the contact persons prior to the proposal submission.

Equipment

- | | | |
|------------------|---------------------|--------------------------------|
| ● GARIS : | Kouji Morimoto | (morimoto@riken.jp) |
| ● RIPS : | Yuichi Ichikawa | (yuichikawa@riken.jp) |
| ● BigRIPS : | Koichi Yoshida | (yoshida@ribf.riken.jp) |
| ● ZeroDegree : | Daisuke Suzuki | (daisuke.suzuki@ribf.riken.jp) |
| ● SHARAQ : | Kentaro Yako | (yako@cns.s.u-tokyo.ac.jp) |
| ● OEDO | Nobuaki Imai | (n.imai@cns.s.u-tokyo.ac.jp) |
| ● SAMURAI : | Hideaki Otsu | (otsu@ribf.riken.jp) |
| ● Rare RI Ring : | Yoshitaka Yamaguchi | (yamaguch@ribf.riken.jp) |
| ● CRIB : | Hidetoshi Yamaguchi | (yamag@cns.s.u-tokyo.ac.jp) |
| ● KISS : | Yoshikazu Hirayama | (yoshikazu.hirayama@kek.jp) |

Detectors

- | | | |
|-----------|-------------------|------------------------------|
| ● DALI2 : | Pieter Doornenbal | (pieter@ribf.riken.jp) |
| ● GRAPE : | Nobuaki Imai | (n.imai@cns.s.u-tokyo.ac.jp) |

The personal information given in the submitted proposal will be used for the PAC evaluation purpose only. Please note that the proposal title, name, and affiliation of the spokesperson will appear in the program of the NP-PAC meeting on the Nishina Center web site and other documents relevant to the PAC meeting.

Proposals should be sent to:

Dr. Ken-ichiro Yoneda
RIBF Users Office
RIKEN Nishina Center for Accelerator-Based Science
2-1, Hirosawa, Wako, Saitama, 351-0198, JAPAN
Email :UserSupportOffice@ribf.riken.jp .

Key dates:

Issuance of this Call for Proposals: September 9, 2020
Deadline of proposal submission: October 19, 2020
21st NP-PAC meeting: December 14 – 16, 2020

