FRIB
LABORATORY UPDATE for USERS
March 2016

## NSF conducts five-year operating-grant site visit

In September 2015, NSCL submitted a proposal for renewal of the cooperative agreement between the National Science Foundation and Michigan State University to operate NSCL as a national user facility and for research funding for the local nuclear experimental and accelerator research groups. The proposal is to continue NSCL operations until FRIB is ready for connection into the existing beam lines. This will minimize the downtime of the user program and keep the transition period as short as possible, perhaps six to nine months. On 21-23 October 2015, the NSF conducted a site visit to review the proposed plans. The next major step is for the NSF Science Board to review the recommended funding level at its meeting in May 2016. The new grant period will begin in October 2016. A priority at NSCL is to operate for as many hours per year as possible for the user program; the amount will depend on the funding provided by the NSF.

## ReA6-12 upgrade presents exciting science opportunities; whitepaper in progress

*A group picture taken during the one-day ReA3 upgrade workshop held at MSU in August 2015.*

In conjunction with the 2015 Low-Energy Community Meeting, a one-day workshop to discuss the ReA3 energy upgrade was held on 20 August on the campus of Michigan State University. A high-energy upgrade to ReA6 and eventually to ReA12 in the future is one of the flagship projects at the National Superconducting Cyclotron Laboratory and future Facility for Rare Isotope Beams. A timely construction of ReA12 was strongly endorsed in the 2014 Low-Energy Nuclear Physics Division of Nuclear Physics town meeting, and the longstanding interest of the community was again recognized by the large number of participants in the workshop. Following the opening and overview talks of the ReA facility, 14 speakers presented science opportunities that will open up with upgrades to ReA6-12.

The workshop kicked off the preparation for a whitepaper that will summarize exciting science opportunities for the energy upgrade up to 12 MeV/nucleon. Contributions to 16 different science cases have been received. They encompass a broad range of science at ReA6-12 covering nuclear structure and reactions, nuclear astrophysics and applications. Currently, a conceptual layout plan for the future ReA6-12 highbay is being developed to accommodate a diverse set of experimental equipment such as GRETINA (GRETA), the Active Target Time Projection Chamber (AT-TPC), a solenoidal spectrometer, the Isochronous Spectrometer with Large Acceptance at FRIB (ISLA), as well as a variety of complementary detection systems. The preparation of the whitepaper is in progress and completion is anticipated for spring 2016.

## Nuclear Physics DC Day set for 14 March

In the past few years, it has become a tradition for members of the nuclear physics community to participate in Nuclear Physics DC Day, where they get the chance to visit with members of their congressional delegations and discuss the importance of nuclear science.

This year, the NP DC Day is scheduled for 14 March, and you can find further information about the event on the Nuclear Physics DC Day website. Overall, more than 70 nuclear physicists participate with about 25 from the low-energy nuclear physics community.

User participation in this event is very important and although it is too late for this year, we encourage all members of the community to consider taking the time to go next year.

## Collaboration gathers to plan FRIB decay station

*Nearly 40 researchers attended the Decay Station Collaboration meeting.*

Almost 40 researchers attended a two-day Decay Station Collaboration meeting in Oak Ridge, Tennessee, on 21-22 January. The meeting was led by the FRIB Decay Community leaders Robert Grzywacz (UTK-ORNL), Sean Liddick (MSU), and Darek Seweryniak (ANL). The attendees confirmed these leaders and added Nick Scielzo (LLNL). In addition, the collaboration agreed that Robert Grzywacz would serve as the lead principle investigator with the others as co-PIs. ORNL will be the "lead lab" and provide the required level of project management and technical support to the collaboration.

The program included eight sessions with presentations and discussions that covered essential components of the future decay station, such as implantation and charge-particle detectors, gamma-ray detectors, and neutron detectors. Reviews of leading decay-station developments were presented. The MSU representatives presented the FRIB capabilities and reviewed the possible sites and infrastructure for the future decay station. Several presentations provided the science context for the decay station when FRIB becomes operational. Perspectives for science discoveries with decay spectroscopy methods relevant for nuclear structure and astrophysics were presented and discussed.

The members agreed to prepare and submit brief summaries for instrument components, which will become a part of the decay station. These summaries include the instrument description, budget, development timeline, and description of the key science topics that the instrument will enable. Based on the topical interest, the collaboration will organize sub-groups, which will be responsible for developing the specific components of the decay station. A short document with the brief summary of the essential decay station components and the first draft of the budget and project organization will be presented to the DOE and the FRIB Science Advisory Committee. That will be followed by a comprehensive description of the project with articulated science case, which will be presented at the 2016 Low-Energy Committee Meeting.

## FRIB Theory Alliance to hold inaugural meeting 31 March

A meeting marking the creation of the FRIB Theory Alliance (FRIB-TA) will be held from 31 March to 1 April at Michigan State University. The meeting will begin at 2 p.m. on Thursday, 31 March, and will end after lunch on Friday, 1 April. The first day will be devoted to the goals of FRIB-TA and planned activities in the context of FRIB science and theory programs at the DOE and NSF. A panel discussion involving the FRIB-TA Steering Committee will cover the

organizational aspects, including the charter, FRIB-TA Fellows program, FRIB-TA Bridge Faculty program, education, international collaboration, and communications.

The second day will review the current status of the field and showcase the opportunities in a broad FRIB theory, ranging from Lattice QCD to stellar explosions and complex systems. Visit the meeting website for the agenda, registration, and lodging. We hope to see you at the FRIB-TA meeting.

# FRIB civil construction continues 10 weeks ahead of schedule

*A view of the FRIB construction site. Civil construction is 10 weeks ahead of schedule.*

*A view of the linac tunnel, one area where mechanical, electrical, and plumbing work is underway.*

FRIB construction continues to move along 10 weeks ahead of schedule, with more than 200 tradespeople working on site.

Overhead mechanical, electrical, and plumbing work is underway on all levels of the linac-support building, as well as within the tunnel and lower subfloor in the target facility. Overhead cranes have been set in the front end. Exhaust fans and chillers have been installed on the upper second floor and lower second floor. Painting is progressing on the ground floor as well as the upper second floor. Cable-tray installation is 21-percent complete, with 8,736 feet having been placed thus far. Non-conventional utilities installation is 35-percent complete. Additionally, temporary protection is ongoing to continue to heat more of the building during the cold winter months.

As for exterior progress, the support building is almost fully enclosed, with masonry and metal panel installation continuing on the south elevation. Structural steel erection is ongoing at the west end of the linac-support building.

Additionally, a self-supported concrete slab has been placed in the target area, and overall concrete placement is 82-percent complete, with 35,115 yards placed. Above ground level, construction continues on the hot cell wall and target wall. Target area backfill is nearing completion, with 73,763 tons placed.

## 2016 Low-Energy Community Meeting set for 11-13 August

This year the annual Low-Energy Community Meeting will take place on 11-13 August at the Conference Center of the University of Notre Dame. The local organizer is Maxime Brodeur. The tentative plan is that as in the past there will separate workshops on Thursday (11 August) with the community meeting program beginning on Friday morning. More details about the meeting will be posted on the meeting website.

Broad user participation in these meetings is important as they offer members of the community to build collaborations and consensus, share their latest ideas and results and discuss future plans.

## Contributors this issue

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# LOOKING AHEAD

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| **14 March** | Nuclear Physics DC Day |
| **16-17 March** | Meeting of the FRIB Environmental, Safety, and Health Advisory Committee (ESHAC) |
| **31 March – 1 April** | FRIB Theory Alliance inaugural meeting |
| **25-26 April** | FRIB Earned Value Management System (EVMS) review |
| **24-26 May** | FRIB Accelerator Systems Advisory Committee (ASAC) meeting |
| **1-3 June** | FRIB Experimental Systems Advisory Committee (ESAC) meeting |
| **28-30 June** | DOE Office of Project Assessment Review of FRIB |
| **24-29 July** | Nuclear Structure 2016 Conference, Knoxville, TN |
| **11-13 August** | Low Energy Community Meeting in South Bend, IN |
| **6-8 December** | DOE Office of Project Assessment Review of FRIB (tentative) |

The FRIB Laboratory Update for Users is published by the FRIB Laboratory and distributed via email.
Please email questions, comments, and contributions to communications@frib.msu.edu.

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*Michigan State University is establishing FRIB as a scientific user facility for the Office of Nuclear Physics in the U.S. Department of Energy Office of Science.*