

LABORATORY UPDATE for ALUMNI



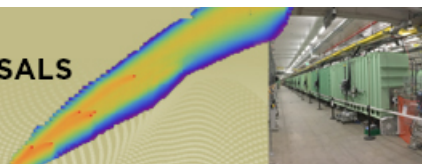
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Fall
2020



FRIB LABORATORY ADAPTS AND ADVANCES UNDER COVID CONSTRAINTS

We hope this newsletter finds you well during these ongoing uncertain times. As COVID-19 continues to impact how we live and work, we adjust FRIB Laboratory operations accordingly within the regulatory framework. Our mission remains the same — to complete FRIB and enable users to make discoveries. What's changed are the constraints COVID-19 has placed on how we deliver it. We're proud to report many exciting developments for the FRIB Laboratory amid these challenging times. [Read more](#)

FRIB ISSUES FIRST CALL FOR PROPOSALS FOR FRIB BEAM TIME



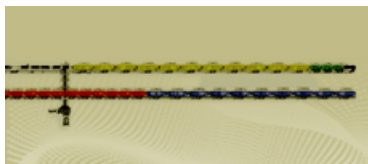
Marking an exciting step toward commencing scientific user operation, FRIB issued its first Call for Proposals on 13 November. With this call, we invite proposals for beam time to be considered at the first meeting of the FRIB Program Advisory Committee (PAC1) scheduled for May 2021. The call comes after the [FRIB First Experiments Proposal Preparation Workshop](#) in May, which 460 attendees participated in throughout the week. To learn more about the call process, we invite you to review the [Call for Proposals page](#).

U.S. DEPARTMENT OF ENERGY DESIGNATES FRIB AS DOE OFFICE OF SCIENCE USER FACILITY



Ahead of our first Call for Proposals, FRIB received an important federal designation. On 29 September, the U.S. Department of Energy designated FRIB as a DOE Office of Science user facility. U.S. Secretary of Energy Dan Brouillette announced the designation at a special ceremony held outdoors at MSU, under a tent adjacent to FRIB. [Read more](#)

TECHNICAL PROGRESS



FRIB ACCELERATES BEAM IN 37 OF 46 CRYOMODULES TO FULL BEAM ENERGY REQUIRED AT PROJECT COMPLETION

Capping ten years of work, FRIB accelerated an argon-36 beam through 37 of 46 superconducting cryomodules to 204 million electron-volts per nucleon or 57 percent of the speed of light on 19 March. FRIB was designed to accelerate heavy ions to more than 200 MeV/nucleon, and with this FRIB has now demonstrated the accelerator Key Performance Parameter (KPPs) required at project completion. [Read more](#)



FRIB COMPLETES ASSEMBLY, TESTING OF ALL BASELINE CRYOMODULES AND INSTALLS FINAL BETA=0.53 CRYOMODULE

FRIB completed assembly and testing of all baseline cryomodules on 11 June. The baseline cryomodules contain superconducting resonators that accelerate FRIB's heavy-ion beam while operating at temperatures a few degrees above absolute zero. On 23 June, the final beta=0.53 cryomodule was moved into the linear accelerator tunnel. It is the final of 46 cryomodules total in the tunnel. [Read more](#)

RESEARCH NEWS

SUPERNOVA SURPRISE CREATES ELEMENTAL MYSTERY: Michigan State University researchers have discovered that one of the most important reactions in the universe can get a huge and unexpected boost inside exploding stars known as supernovae. This finding also challenges ideas behind how some of the Earth's heavy elements are made. [Read more](#)

MSU RESEARCHERS TEAM WITH MULTI-INSTITUTIONAL COLLEAGUES IN \$3.7M PROJECT TO ADVANCE NUCLEAR PHYSICS EXPERIMENTS: Five MSU researchers from FRIB and the Department of Statistics and Probability are participating in a new \$3.7 million National Science Foundation project to advance nuclear physics experiments. [Read more](#)

BRINGING THE PROMISE OF QUANTUM COMPUTING TO NUCLEAR PHYSICS: The U.S. Department of Energy Office of Science awarded a grant to a team of researchers led by FRIB physicists. The team's work involves developing algorithms for quantum computers. [Read more](#)

MSU RESEARCHERS AWARDED GRANT TO DEVELOP INSTRUMENT THAT WILL ADVANCE NUCLEAR SCIENCE RESEARCH: MSU researchers were awarded a grant to develop an instrument that will enable breakthroughs in nuclear physics and nuclear astrophysics. [Read more](#)

FRIB RESEARCHERS DEVELOP NOVEL APPROACH TO MODELING YET-UNCONFIRMED RARE NUCLEAR PROCESS: Researchers from the FRIB Laboratory at MSU have taken a major step toward a theoretical first-principles description of neutrinoless double-beta decay. [Read more](#)

INSTRUMENT UPDATES

The FRIB community eagerly anticipates the impending completion of FRIB and building of the instrumentation necessary to realize FRIB's tremendous scientific potential. There were several significant instrument developments in 2020, including:

GRETA: The U.S. Department of Energy Office of Science has approved the project baseline (Critical Decision 2, the integrated scope, cost, and schedule) and the start of construction (Critical Decision 3) for the Gamma-Ray Energy Tracking Array (GRETA) project, a new high-resolution gamma-ray detector system that will be used at FRIB. [Read more](#)

HRS: The U.S. Department of Energy Office of Science (DOE-SC) Office of Project Assessment conducted a DOE-SC Independent Project Review of the High Rigidity Spectrometer (HRS) project 28-30 April. The review was held through remote participation. The review's purpose was to determine if the project has fulfilled the requirements for Critical Decision 1 (CD-1), the second step in the DOE's staged project approval process. [Read more](#)

SECAR: The U.S. Department of Energy Office of Nuclear Physics Facilities and Project Management Division and the National Science Foundation Nuclear Physics Program held the annual progress review of the SEparator for CAPture Reactions (SECAR) recoil separator project 11-12 June. SECAR will be a recoil separator that is optimized for measurements of capture reactions of importance for nuclear astrophysics. [Read more](#)

SOLARIS: In January, FRIB partnered with Argonne National Laboratory to plan the development of SOLARIS, a dual-mode spectrometer for a broad range of reactions studies at FRIB using reaccelerated beams. SOLARIS brings together two demonstrated technologies developed for the FRIB era over the last decade. [Read more](#)

ALUMNI SPOTLIGHT



ALUMNI SPOTLIGHT CHUNLI ZHANG

ALUMNI SPOTLIGHT: CHUNLI ZHANG: Chunli Zhang earned a PhD in nuclear physics at MSU, and was at NSCL from 2014 to 2017. She is currently working at Google in Mountain View, California.

[Read more](#)

CONGRATULATIONS TO OUR LAB COMMUNITY

Several members of the FRIB Laboratory community have earned honors and awards this year. Such recognitions include:

FRIB RESEARCHERS NAMED AAAS FELLOWS: Three scientists who will perform research at FRIB have been named Fellows of the [American Association for the Advancement of Science](#) (AAAS). Election as an AAAS Fellow is an honor bestowed upon AAAS members by their peers. Honorees include Alexandra Gade, professor of physics at FRIB and the MSU Department of Physics and Astronomy. [Read more](#)

STUDENT RESEARCH ASSISTANT EARNS JEFFERSON LAB ASSISTANTSHIP: Maya Watts, a student research assistant at the FRIB Laboratory, earned the 2019-2020 Jefferson Science Associates Minority/Female Undergraduate Research Assistantship. [Read more](#)

FRIB GRADUATE RESEARCH ASSISTANTS EARN NATIONAL SCIENCE FOUNDATION GRADUATE FELLOWSHIPS: Jacob Watkins and Erin White, both graduate research assistants at the FRIB Laboratory, earned three-year fellowships from the National Science Foundation Graduate Research Fellowship Program. [Read more](#)

FRIB VISITING SCHOLAR PROGRAM FOR EXPERIMENTAL SCIENCE 2020: Ronald Fernando Garcia Ruiz from the Massachusetts Institute of Technology and Mark Spieker from Florida State University are the scholarship recipients for the FRIB Visiting Scholar Program for Experimental Science 2020. FRIB initiated the FRIB Visiting Scholar Program for Experimental Science in 2016. The goal of the program is to encourage and help junior researchers to establish a research program at FRIB.

[Read more](#)

FRIB LABORATORY HAPPENINGS

FRIB SUMMER SCHOOLS AND SEMINARS: FRIB hosted a number of online summer schools and seminars to allow students and early-career scientists the opportunity to explore the world of science.

[Read more](#)

DR. CHRIS FALL VISIT: On 13 February, FRIB hosted Dr. Chris Fall, director of the U.S. Department of Energy's Office of Science. Dr. Fall visited Michigan State University (MSU), where he was welcomed by MSU President Samuel L. Stanley Jr., M.D. While at FRIB, Dr. Fall toured FRIB with Laboratory Director Thomas Glasmacher and Senior Vice President for Research and Innovation Stephen Hsu, and he met laboratory graduate students. [Read more](#)

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Michigan State University establishes and operates FRIB as a user facility for the [Office of Nuclear Physics](#) in the [U.S. Department of Energy Office of Science](#).