

# LABORATORY UPDATE for ALUMNI

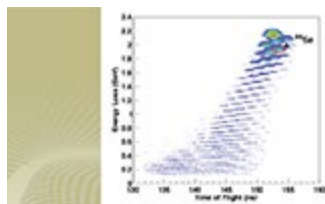


Winter  
**2021**



We hope all of you are doing well as we close 2021. As we head into the new year, we continue to focus on the remaining activity that will bring the FRIB Project to a close and begin the start of user operation in early 2022. [Read more](#)

## MAJOR DEVELOPMENT



FRIB PROJECT TEAM  
**PRODUCES AND IDENTIFIES  
FRIB'S FIRST RARE ISOTOPES**

On Saturday, 11 December, at 5:46 p.m., the FRIB Project team produced and identified the first rare isotopes in FRIB, including selenium-84 from a krypton-86 beam. This marks the demonstration of the last FRIB Key Performance Parameter required for project completion. [Read more](#)

## LABORATORY NEWS



FRIB CONNECTED  
**TO WORLD'S FASTEST SCIENCE NETWORK -  
DOE'S ENERGY SCIENCES NETWORK**

FRIB is now connected to the world's fastest science network, the U.S. Department of Energy's (DOE) Energy Sciences Network (ESnet). FRIB, Michigan State University Information Technology, and Lawrence Berkeley National Laboratory collaborated to connect FRIB to ESnet. The high-speed computer network is funded by the DOE Office of Science, serving DOE scientists and their collaborators around the world. [Read more](#).

**ISOTOPE HARVESTING AT FRIB:** Many useful unused isotopes will be created as byproducts of normal FRIB operation. Laboratory staff have researched the processes for recovering them and have shown it will be feasible. The experimental results allow them to model the processes and ensure safety in the design.

## SCIENCE NEWS



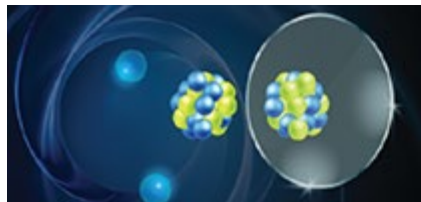
### A DOUBLY MAGIC DISCOVERY

Researchers, including scientists from FRIB and NSCL, have solved a nuclear mystery thanks to collaboration between theorists and experimentalists—with an assist from Albert Einstein. [Read more](#)



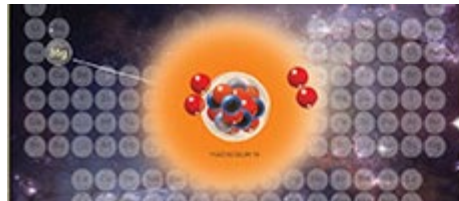
### STRESS-TESTING PHYSICS AT FRIB

Gentle nuclear reactions let researchers stress-test certain scientific models that account for how the universe's fundamental rules work. FRIB's Kaitlin Cook is creating new ways to study these reactions to further our understanding of science and medicine with the power of FRIB. [Read more](#)



### THROUGH THE NUCLEAR LOOKING GLASS

Theory and experiments developed at the FRIB Laboratory use "mirror nuclei" to probe fundamental physics of atoms and neutron stars. Scientists can use the charge radii of a pair of mirror nuclei as one way to study the nature of neutron stars. [Read more](#)



### SAY HELLO TO A RECORD-SETTING ISOTOPE

In collaboration with an international team of researchers, Michigan State University has helped create the world's lightest version, or isotope, of magnesium to date. The team, including FRIB's Kyle Brown, recently published their work in the journal Physical Review Letters. [Read more](#)

## INSTRUMENT UPDATES

FRIB is preparing to commence science with fast, stopped, and reaccelerated beams in the PAC1 period.

Equipment development continues and plans are in place to support all of the approved experiments. In preparation, two important milestones were met recently.

**SECAR:** The SEparator for CApture Reactions (SECAR) recoil separator project finished in 2020 and will be optimized for measurements of capture reactions of importance for nuclear astrophysics. The project has been completed and first experiments with ReA3 stand-alone operation have been performed.

**SOLARIS:** The SOLenoid spectrometer Apparatus for Reaction Studies (SOLARIS) solenoidal spectrometer system is ready for PAC1 experiments. First ReA stand-alone experiments in AT-TPC mode as well as in Si-array mode with Argonne National Laboratory's Helical Orbit Spectrometer (HELIOS) detectors have been successfully completed.

## TRAINING THE NEXT GENERATION



Charlie Hultquist, an undergraduate research assistant at FRIB and the National Superconducting Cyclotron Laboratory, has been nominated by MSU for three nationally competitive graduate-school scholarships. [Read more](#)



The U.S. Department of Energy Office of Science selected three FRIB graduate students at MSU for the Office of Science Graduate Student Research program: Scott Essenmacher, Gabriel Given, and Caleb Hicks. [Read more](#)

**PHYSICS OF ATOMIC NUCLEI PROGRAM HELD REMOTELY 26-30 JULY:** The 28th Physics of Atomic Nuclei (PAN) program remotely hosted 36 high-school students from 18 states 26-30 July. The Joint Institute for Nuclear Astrophysics - Center for the Evolution of the Elements (JINA-CEE) organized the intensive online workshop to give future scientists a taste of nuclear astrophysics. [Read more](#)

**NS3 NUCLEAR SCIENCE SUMMER SCHOOL HELD REMOTELY 2-6 AUGUST:** FRIB/NSCL remotely hosted 16 undergraduate students from across the country for the 2021 Nuclear Science Summer School (NS3) from 2-6 August. NS3 introduces the field of nuclear physics to science students enrolled in smaller institutions that do not offer dedicated courses on this topic. [Read more](#)

**FRIB STUDENT RESEARCH ASSISTANT NAMED TO MSU NAT SCI'S DEAN'S RESEARCH SCHOLARS GROUP:** FRIB Student Research Assistant Cade Dembski has been named as one of the Dean's Research Scholars in MSU's College of Natural Science. The program is currently in its tenth year, and this select group of students participates in special events and speaking engagements to showcase current student success to generations of alumni. [Read more](#)

## CONGRATULATIONS TO OUR LAB COMMUNITY

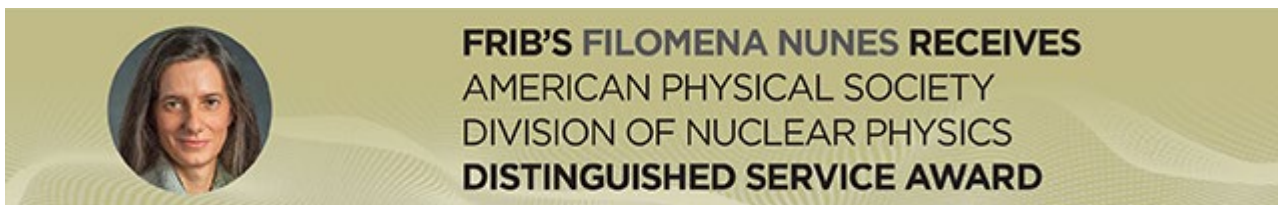




Four members of the FRIB user community have been named 2021 Fellows of the American Physical Society (APS): Jason Clark, Christian Forssen, Yury Litvinov, and Artemis Spyrou. Fellows are selected for their outstanding contributions to physics. [Read more](#)



The American Physical Society (APS) selected FRIB faculty member Paul Guèye as the 2022 Edward A. Bouchet Award winner. APS recognized Guèye for his "many seminal experimental contributions to understanding the structure of nuclear particles and decades of service to physics outreach, diversity and inclusion." [Read more](#)



Filomena Nunes has received the American Physical Society (APS) Division of Nuclear Physics (DNP) Distinguished Service Award. According to APS DNP, Nunes won for "her exceptional and rich contributions toward making the DNP a place where all members can thrive, especially those from traditionally underrepresented groups, including service as the inaugural chair of the subcommittee on harassment prevention and the creation of the DNP Allies program." [Read more](#)

**FRIB THEORY ALLIANCE BRIDGE FACULTY MEMBER EARNS NSF CAREER AWARD:** Sebastian König, an assistant professor of physics at North Carolina State University and FRIB Theory Alliance bridge faculty member, has received a Faculty Early Career Development Award from the National Science Foundation. [Read more](#)

DO YOU HAVE ADDITIONAL GOOD NEWS? LET US KNOW! Email [communications@frib.msu.edu](mailto:communications@frib.msu.edu)

## ALUMNI SPOTLIGHT



**ALUMNI SPOTLIGHT: AMY LOVELL:** Amy Lovell earned a PhD in physics from Michigan State University, and was at NSCL from 2013 to 2018. She is currently working at Los Alamos National Laboratory. [Read more](#)

## IN THE NEWS

FRIB and FRIB scientists have been featured in a number of articles at several different news outlets, including:

**MSU VIDEO FEATURES FRIB:** MSU has released a [new video](#) showcasing the university as one of the nation's leading research institutions. The FRIB Laboratory and several of its team members are featured throughout the video as it highlights MSU's commitment to addressing global challenges, educating the next generation, and partnering with communities. FRIB is shown in the video at the following approximate times: 0:17, 0:28, 0:37, 0:54, 1:02, 1:20, 1:23, 1:26, and 1:27. MSU's University Communications produced the video and highlighted it as a special feature in [MSUToday](#). The video will be shown as a commercial on TV and through other media outlets.

**RARE ISOTOPES APLENTY AT FRIB (CERN Courier):** The \$730 million FRIB at MSU is scheduled to come online in early 2022 - a game-changer in every sense for the U.S. and international nuclear-physics communities. With peer review and approval of the first round of experimental proposals now complete, an initial cohort of scientists from 25 countries is making final preparations to exploit FRIB's unique capabilities. [Read more](#)

**A NEW PARTICLE ACCELERATOR AIMS TO UNLOCK SECRETS OF BIZARRE ATOMIC NUCLEI (ScienceNews):** Researchers are queuing up to use a particle accelerator at MSU to study some of the rarest atomic nuclei. When it opens in early 2022, FRIB will strip electrons off of atoms to make ions, rev them up to high speeds and then send them crashing into a target to make the special nuclei that scientists want to study. [Read more](#)

**MEET THE 16-YEAR-OLD 'PRODIGY' STUDYING NUCLEAR PHYSICS AT MSU (Lansing State Journal and FOX47 News):** MSU sophomore Maya Wallach, 16, is studying experimental physics. She also works an internship at FRIB. A subscription to the Lansing State Journal is required to view [this article](#). The FOX47 News written and video articles are also [online](#)

**HOW MSU'S FRIB COULD CREATE A NEW KNOWLEDGE ECONOMY IN GREATER LANSING (Lansing State Journal):** After nearly 12 years of planning and construction, MSU's FRIB is about 98-percent complete, paving the way for global advancements in nuclear physics. A subscription to the Lansing State Journal is required to view this article. [Read more](#)

## UPDATE YOUR INFORMATION IN FRIB ALUMNI DIRECTORY

The FRIB Laboratory has an [alumni directory form](#) to communicate with laboratory alumni and to track their career paths. Please take a couple of minutes to fill out or update the form by answering a few simple questions. This will ensure our records are accurate and build a more reliable network we hope you find useful. Visit the online [alumni directory form](#) to enter and update information.

## WE WANT TO HEAR FROM YOU

Send us your story ideas! Let us know what you are up to! We want to feature at least one story each issue about you—our alumni, so please email us story tips about you and/or your fellow alumni to [alumni@frib.msu.edu](mailto:alumni@frib.msu.edu). Tell us about discoveries, business ventures, partnerships, awards, and other professional developments, and we may feature them in a future issue. Also let us know if there are other types of laboratory updates you'd like to see in future alumni issues.

## LOOKING AHEAD

<b>12-13 January 2022</b>	Seventh Accelerator Readiness Review (ARR07)
<b>1-3 February 2022</b>	DOE Office of Project Assessment Critical Decision-4 Review of FRIB

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*The FRIB Laboratory Update for Alumni is published by the FRIB Laboratory and distributed via email. Please email questions, comments, address changes, story tips, contributions, or requests to unsubscribe from this list to [alumni@frib.msu.edu](mailto:alumni@frib.msu.edu). If you are in touch with other NSCL/FRIB alumni, please forward this to them and invite them to contact us to subscribe.*



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*Michigan State University operates FRIB as a user facility for the [U.S. Department of Energy Office of Science](https://www.energy.gov/science) (DOE-SC), supporting the mission of the DOE-SC [Office of Nuclear Physics](https://www.energy.gov/science).*