

May 2023 CAB meeting

News

Spring has arrived!

Fermilab's baby bison season begins

<https://news.fnal.gov/2023/04/fermilabs-baby-bison-season-begins/>

DUNE update

[DUNE collaboration ready to ramp up mass production for first detector module](#)

The international DUNE collaboration is conducting final tests of the components for its first neutrino detector module, to be installed a mile underground in South Dakota. Preparations for ramping up the mass production of these components are underway.

[DUNE collaboration tests new technology for second detector module](#)

Scientists working on the international Deep Underground Neutrino Experiment are developing a vertical drift detector. The new technology may open doors to building large neutrino detectors at a lower cost and in a simpler manner.

[DUNE Resources Review Board to meet in South Dakota for the first time](#)

Representatives from science funding agencies around the world will meet in Lead, South Dakota, on March 30 and 31.

Science news

[Fermilab scientist recognized for his work improving superconductors used for accelerator magnets](#)

Xingchen Xu, a scientist in Fermilab's Magnet Technology Division, was recognized by the European Physical Society for his work developing a new kind of superconducting material that will enable even more powerful accelerator magnets.

DOE visit

[DOE science and innovation officials visit projects, see progress at Fermilab](#)

Under Secretary for Science and Innovation Geraldine Richmond and Principal Deputy Under Secretary Ali Douraghy visited and toured Fermilab on May 1.

News – sustainability

[A minute with Catherine Hurley, sustainability manager](#)

- joined Fermilab in January 2023,
- previously at Argonne National Lab working on their sustainability strategy
- the lab is developing a more robust sustainability program to exceed the sustainability goals set forth by President Biden's Federal Sustainability Plan.
- One fairly large project we have going on now aims to identify energy-efficiency opportunities at 14 different buildings.

New sustainability team at Fermilab

[New group accelerates Fermilab's sustainability practice](#)

A new team of four, full-time sustainability specialists to direct the efforts of the lab's already established Sustainability Management Team — a committee of Fermilab employees \to make the lab more sustainable.

[Fermilab celebrates inventors, creators and entrepreneurs](#)

For the first time in three years, the Office of Partnerships and Technology Transfer, or OPTT, celebrated employees who earned patents and submitted records of invention during 2022.

- Today, it has almost 50 active patents with more in development.
- 65 people have graduated from entrepreneurial training programs sponsored by DOE.
- The lab currently has 15 inventors with more than one patent, including two commercial licenses and one spin-off company.

Vanessa Chan, chief commercialization officer for DOE and director of the Office of Technology Transitions, attended the ceremony as a special guest. In her remarks, Chan cited that OTT programs have trained 191 teams across 12 national labs that have raised more than \$150 million in external funding.

[2 students awarded DOE graduate student research fellowships](#)

The students received the prestigious U.S. Department of Energy Office of Science Graduate Student Research Award to conduct their doctoral research at Fermilab.

Symmetry

<https://www.symmetrymagazine.org/>

1. How technologies developed at the labs lead to an alternative career path for scientists outside of academia: entrepreneurship.
2. Why can't we see matter?
3. A collaboration of CERN scientists and science fiction writers to create short stories inspired by particle physics
4. An IceCube Neutrino Observatory researcher dedicated to reaching community college students and underrepresented racial groups to recruit and get involved on physics careers.
5. The theory of everything' is a rather tongue-in-cheek term for an encompassing framework that links together all physical phenomena on a fundamental level.
6. Why are so few people talking about a theory of everything today?
7. The importance of developing prototypes for projects like DUNE and PIP II
8. Dark matter
9. SPOT the four-legged robot wearing personal protective gear designed by College of DuPage fashion students.

10. The “dry” run, a test of the transportation system that they will use to shuttle massive but delicate cryomodules from Daresbury Lab to Fermilab.

Videos

[Is gravity a force?- Don Lincoln](#)

Is gravity is a force? The answer to that simple question is remarkably complicated and depends crucially on the theoretical framework in which the question is asked and answered. In this video, Fermilab’s Dr. Don Lincoln takes on this surprisingly tricky question.

[Even Bananas– Can AI do neutrino physics?](#)

The role of AI on particle physics>

Dr. Kirsty Duffy and Postdoctoral Researcher and AI expert, V Hewes, as they discuss the possibilities of using the latest machine learning technology in neutrino research. Artificial intelligence services are the current trend, but can AI replace neutrino physicists?

[What is driving particle physics – Don Lincoln](#)

Why are scientists always looking for better equipment and experiments?

Particle physics research attempts to answer timeless questions – questions first asked thousands of years ago. In this video, Fermilab’s Dr. Don Lincoln gives an overview of some of the most pressing unanswered questions of physics and describes how it is that scientists are deciding which of these questions to pursue. It’s a grand question that draws the attention of the world’s scientific community.

In the News

[Fermilab welcomes new baby bison](#)

From Naperville Community Television, April 26, 2023: It wouldn’t be spring at Fermilab without the arrival of the bison calves. Naperville News TV talks with herdsman Cleo Garcia on the lab’s infamous bison herd and the excitement the new baby bison bring each year.

[Fermilab’s DUNE: Investigating the universe’s mysteries with neutrino particles](#)

From WBEZ Chicago, April 26, 2023: Fermilab’s Sam Zeller talks with WBEZ about what are neutrinos, why they are important and the relevance of studying them with the international Deep Underground Neutrino Experiment.

[Is our Universe standing still? Examining Einstein’s key theory through the cosmic “yin-yang”](#)

From Big Think, April 28, 2023: Cosmic microwave background provides insights into the Universe’s motion, but it doesn’t disprove relativity because it only represents the visible Universe, not the entire Universe. Don Lincoln discusses how Einstein’s theory of relativity still hold proving that there is no absolute motion. As we move through our day, we are stationary and the Universe moves around us.

[Most accurate measurement of universe’s dark matter](#)

From the Post Online Media Magazine, May 7, 2023: Dark Energy Survey scientists recently unveiled the most accurate measurement ever of the large-scale structure of the universe. Using the 570-

mega pixel Dark Energy Cam developed and tested at Fermilab, the DES collaboration's announcement will allow scientists to understand more about the ways the universe has evolved over 14 billion years.

[LBNF excavation at Sanford Lab on schedule for June 2024 completion](#)

From the Black Hills Pioneer, May 13, 2023: Last week representatives from Fermilab and officials from SURF hosted a community meeting for Lead, SD residents. The event was an opportunity to update attendees on the progress of the underground facility, answer questions and explain the next phase of the project once excavation is completed in 2024.

[Muon telescope developed at Fermilab could unlock mysteries of the Great Pyramid of Giza](#)

From APS News, May 11, 2023: Alan Bross, senior scientist at Fermilab, is leading a team of researchers to use a "muon telescope" to map the entire 454-foot-tall Great Pyramid of Giza. Muons detected from different locations and directions will be combined to generate a single 3D reconstruction — similar to tomographic imaging, used in medical CT scanners.

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