What's new at Fermilab?

Community Advisory Board meeting

September 26, 2024

Office of Communication

From the newsroom

13 stories posted in the Fermilab newsroom between July 26 and Sept. 21.

First neutrinos detected at Fermilab short-baseline detector (press release) 8,300 Views

Underground event marks excavation completion on colossal caverns for underground neutrino laboratory, DUNE (press release) 2,100 Views

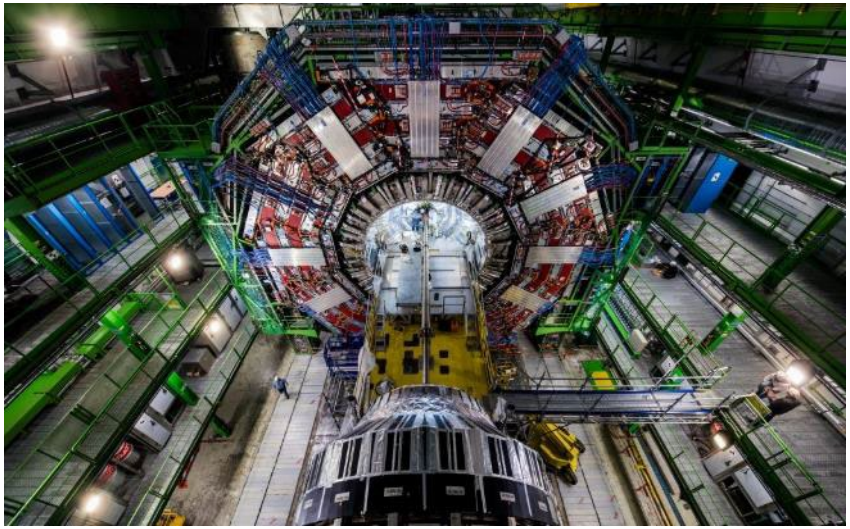
The Short-Baseline Neutrino Detector collaboration celebrated the moment the detector began running at 100% voltage. Credit: Dan Svoboda, Fermilab

The August 15, 2024 ribbon-cutting in Lead, South Dakota. Credit: Ryan Postel, Fermilab

From the newsroom

New results from the CMS experiment put W boson mass mystery to rest (press release) 1,700 Views

DUNE scientists observe first neutrinos with prototype detector at Fermilab (press release) 2,100 Views



The CMS detector at CERN is located 100 meters underground. Photo: Brice, Maximilien: CERN

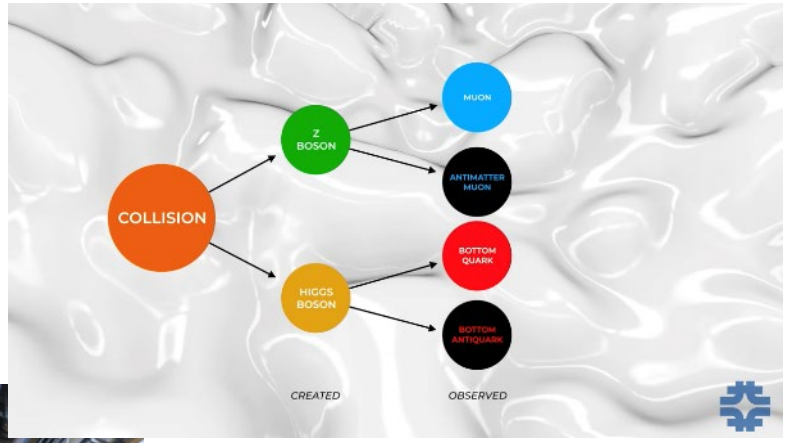
The 2×2 prototype provides the first accelerator-neutrino data to be analyzed by the DUNE collaboration. Photo: Dan Svoboda, Fermilab

From the newsroom

Meet the world-renowned physicist now leading Fermilab's newest accelerator project. (news feature) 2,900 views

Physicist Pantaleo Raimondi is the new project director for the PIP-II collaboration that is upgrading the accelerator complex at Fermilab. Photo: Dan Svoboda, Fermilab

New Fermilab videos



Don Lincoln

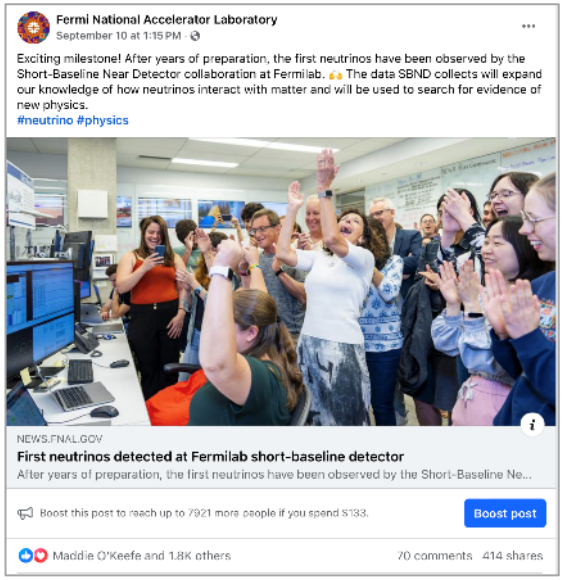
How the Higgs boson was discovered, Aug. 7, 2024

54,000 views

The discovery of the Higgs boson was a long process. In this video, Fermilab's Dr. Don tells us how scientists searched for the Higgs boson over the years, using three major accelerators and culminating finally in the discovery in 2012.

Social media

- The Short-Baseline Near Detector first neutrinos post was shown to over 165,000 users on Facebook, which is more than our total followers on the platform (111,000 followers). Across all platforms, the posts were viewed by 300,000 users.



- Fermilab's Depths of Discovery for DUNE campaign garnered over 200,000 views. The campaign included a series of videos of DUNE collaboration members answering our followers' questions.

Social media

- September 15 was the start of Hispanic Heritage month, Fermilab celebrated with profile pictures, a graphic and is sharing relevant articles for the month.

- Fermilab's repost of the CMS results on W boson received over 17,000 views on X/Twitter. Across all platforms, the posts were viewed

Fermilab in the news

The New York Times

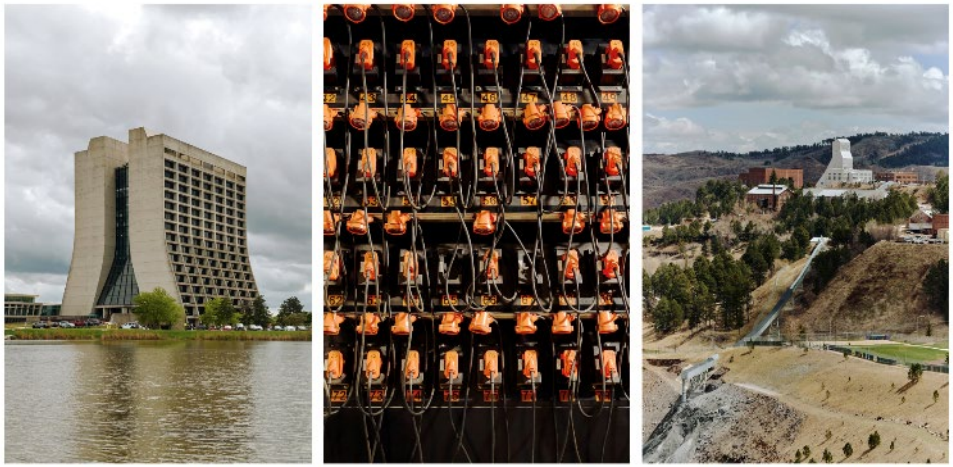
In a South Dakota cavern, scientists are working to capture the most elusive particles in the universe.

By Joseph Howlett

Reported from Lead, S.D., with support from a grant from the Council for the Advancement of Science Writing and the Brinson Foundation.

Published Aug. 30, 2024 Updated Sept. 5, 2024, 12:03 p.m. ET

Every morning, two dozen miners and engineers pack into a cage-like elevator for an 11-minute descent into the bowels of South Dakota's Black Hills.



Fermilab; mining head lamps at the Sanford site; conveyer and head frame of the Yates mining shaft at the Sanford site, which deposited 800 tons of rock into the quarry below. Mustafa Hussain for The New York Times

Fermilab in the news – DUNE ribbon-cutting event

yahoo!news

After several years, the DUNE Project takes its next steps

Tyler Louder

SDPB

As Black Hills neutrino lab moves into next phase, officials look toward expans

LEAD, S.D. (KELO) – The DUNE Project has gone through three years of excavation that has led to the Sanford Underground Research Facility being able to take the next steps in the study of neutrinos.

Over 200 people have been involved with getting the colossal caverns prepared for the underground neutrino laboratory.

"One of the reasons the focus started here at the farsite, we call it the farsite in

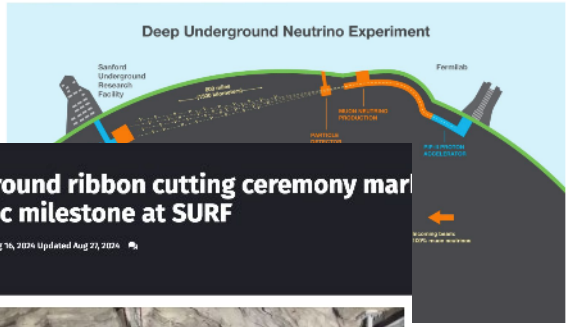
SciTechDaily Biology Chemistry Earth Health Physics Sci

DUNE Milestone Achieved: Completion of Massive Caverns Deep Underground for Neutrino Research

BY FERMI NATIONAL ACCELERATOR LABORATORY — AUGUST 17, 2024 — 2 COMMENTS — 6 MINS READ

Facebook Twitter Pinterest Telegram

NEWSCENTER1



Underground ribbon cutting ceremony mar scientific milestone at SURF

Samantha Johnson Aug 16, 2024 Updated Aug 23, 2024

LEAD, S.D. – A ribbon-cutting event recently marked the completion of excavation work on two seven-story caverns and a slightly smaller utility cavern for the Deep Underground Neutrino Experiment (DUNE) at the Sanford Underground Research Facility (SURF). This international project, led by the U.S. Department of Energy's Fermi National Accelerator Laboratory (Fermilab), represents a significant step forward in understanding some of the universe's fundamental mysteries.

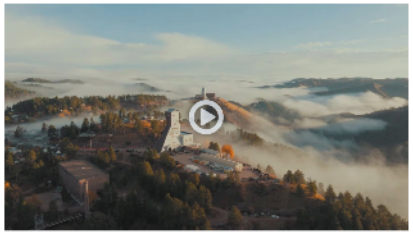
Mike Headley, Executive Director of SURF, emphasized the project's scale, stating, "DUNE will be truly the largest mega-science project ever constructed on U.S. soil."

SDPB Radio | By Lee Strubinger

Published August 19, 2024 at 2:58 PM CDT

KOTA TERRITORY

Underground quantum particle research facility begins its work



By Eric Weaslick

Published: Aug. 15, 2024 at 5:45 PM CDT

RAPID CITY, S.D. (KOTA) – A mile beneath Lead, the beginning of quantum particle research is about to take shape.

Fermilab's DUNE project will be the largest research facility in North America that will be primarily looking into neutrinos.

Neutrinos are quantum particles that scientists believe can help us understand the reason our universe is made of matter, native acres of Black Hills beaches, and maybe even witness the birth of neutron stars or even black holes.

The DUNE project is located around a mile beneath Lead, and the site was chosen due to its provided no gold mine that would help

Fermilab in the news

npr

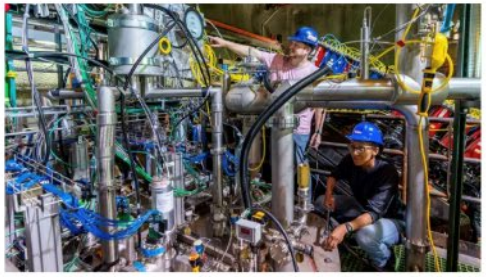
This mysterious energy is everywhere. Scientists still don't know what it is

BIG THINK

HARD SCIENCE — AUGUST 19, 2024

Scientists validate upcoming mega-sized "ghost" particle detector

DUNE is designed to detect the Universe's most antisocial particle: the neutrino.



Scientists work on the DUNE prototype detector. (Credit: Dan Svoboda/Fermilab)

Fermilab in the news – Muon g-2 in the news and the new 2 x2 detector

PHYS.ORG

SEPTEMBER 13, 2024 FEATURE Editors' notes

A fundamental magnetic property of the muon measured to unprecedented precision

by David Appell , Phys.org

Physicists stand inside the Muon g-2 storage ring when it was in Brookhaven N…

Scientists have measured the magnetic moment of the muon to unprecedented precision, more than doubling the previous record.

COSMOS

DUNE prototype detector observes its first neutrinos

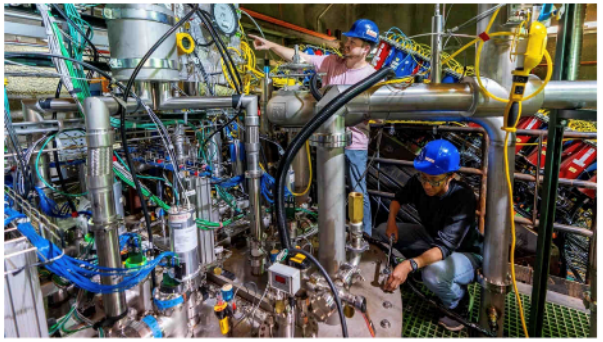
August 13, 2024

Evrim Yazgin

Cosmos science journalist

Fermilab scientists have taken a major step forward as they work to get the Deep Underground Neutrino Experiment (DUNE) operational.

DUNE is a prototype particle accelerator at the US Department of Energy's Fermi National Accelerator Laboratory. Once finished, the new detector will be the most comprehensive neutrino experiment in the world.



The 2×2 prototype detector for the DUNE near detector. Credit: Dan Svoboda, Fermilab.

Its goal is to explore the fundamental questions and biggest mysteries of the universe such as the origin of matter and the formation of supernovae and black holes.

Outreach

Education and Public Engagement Highlights: July 26 - September 23

Saturday Morning Physics resumes this Saturday, September 28th

Since July 26th**, Fermilab welcomed over 600 STEM participants** including university REU groups, MBA students from Bangkok, Argonne RENEW summer program students, students from local area junior high and high schools, and our famous monthly lab tour!

Mr. Freeze engaged with 420 students in grades 2-12 at four different schools.

EPE hosted a new program, *Fermiside Chats* (a way to get to know STEM enthusiasts across the lab), for Fermilab employees to ask science questions.

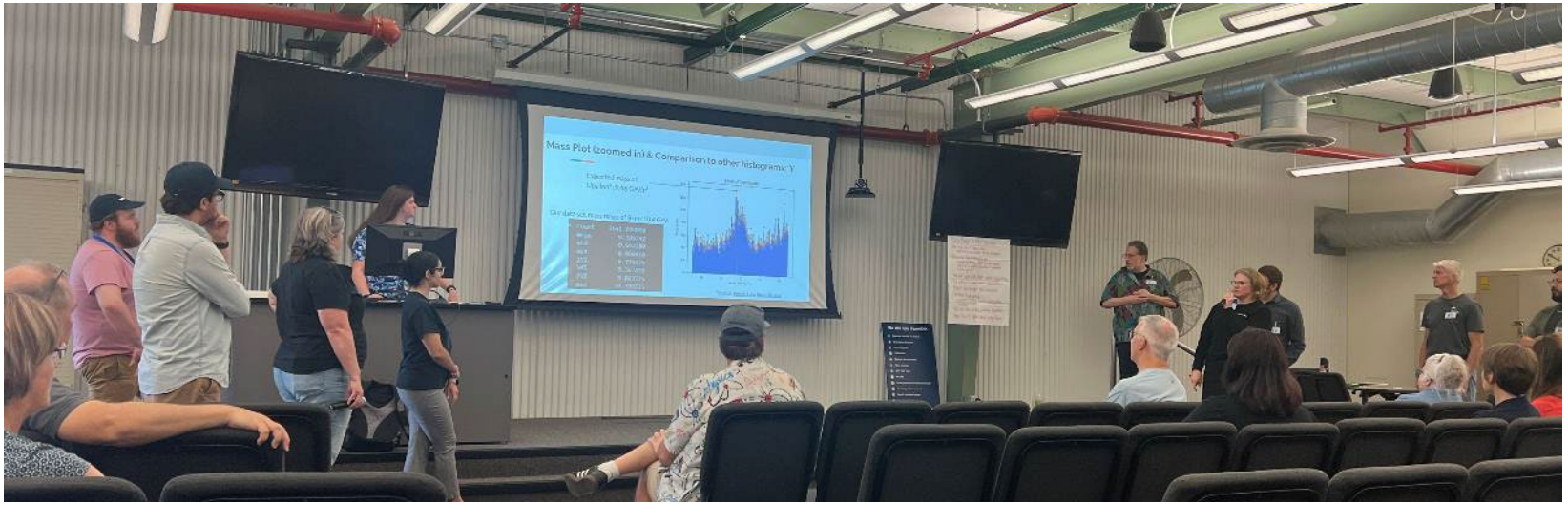
The new Fermiside Chats event hosted by EPE

Outreach

Education and public Engagement tours

EPE engaged with over 2,000 participants at local libraries and from the community to learn more about Fermilab science.

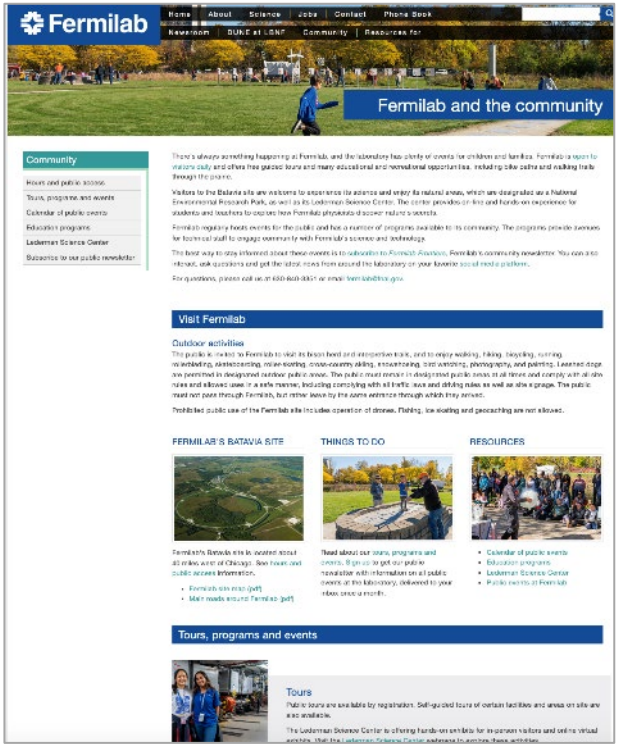
EPE led the QuarkNet Data and Coding camps for teachers.



Credit: Natalie Johnson, EPE

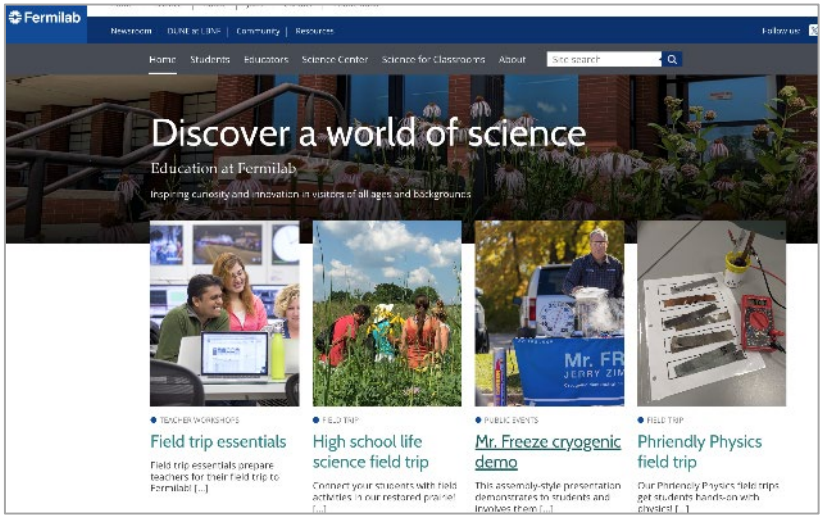
Website updates

www.fnal.gov/pub/community



Updated Community website with information on visiting Fermilab, tours, programs and events.

Education.fnal.gov



The new Education website for teachers and students went live on September 17,2024

Fermilab updates

Maintenance Work Accomplished

- ICW screens at Casey's Pond pump house cleaned
  - Required turning off pumps to fire suppression and various HVACs
- Aspen East HVAC EOL replacement
- New safety railing installed at daycare
- CUB leaking water piping for tower repaired
- Wilson Hall – east side dock door grating/drainage
- Tree branch removal from Batavia Rd.
- Berm maintenance

Questions?

Fermilab updates

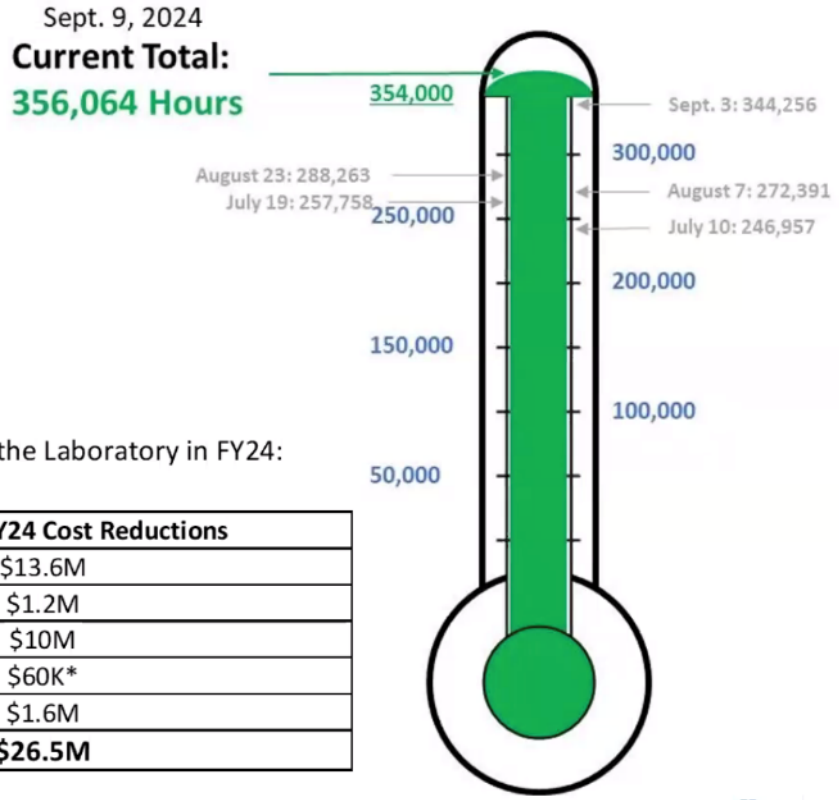
Transformer Update

- Multiple events within the past seven weeks have reduced Fermilab's electrical power capacity and resiliency.
  - A failed subcomponent of the transformer (i.e., high voltage bushing) failed, causing an explosion that resulted in the transformer catching fire
  - Follow-up extent of condition identified other transformers with suspect bushings, which were then taken out of service as a precaution
- Reduced capacity has impacted accelerator operations and scheduling
- The lab is in the process of implementing interim measures in a phased approach to restore sufficient capacity to achieve full accelerator/experimental operations
- Anticipate interim measures will be implemented by the end of October

Fermilab updates

FY2024 Budget Update

- Curtailing travel
- Curtailing new hires
- Phase I voluntary separation
- Curtailing procurements
- Maximizing vacation use
- DOE and FRA assistance



The following table summarizes the cost reductions completed by the Laboratory in FY24:

Cost Reduction Area	Estimated FY24 Cost Reductions
Vacation Management	$13.6M
Travel Restrictions	$1.2M
Purchasing Restrictions	$10M
Voluntary Separation Program	$60K*
Hiring Restrictions	$1.6M
TOTAL	**$26.5M**

*Cost reductions from SSVSP will be $13.5M in FY25