

March 23, 2023 CAB meeting
Update from the Office of Communication

Science News

[MINERvA reveals a new way to explore proton's structure with neutrinos yields first results](#)

[Scientists release newly accurate map of all the matter in the universe](#)

U Chicago story with Fermilab collaboration.

DUNE update

[Mary Bishai joins Sergio Bertolucci as co-spokesperson of DUNE](#)

[SBND update](#)

Photo

PIP II update

[Fermilab completes the first-of-its-kind prototype of a superconducting accelerator module](#)

Quantum update

[Quantum researchers strike the right chord with silicides](#)

News

[New STEM program for high school girls comes to Fermilab](#)

[Fermilab welcomes a new chief financial officer](#)

[Fermilab to host Pathway Summer School program](#)

Symmetry

Most recent:

[How to put together an international physics experiment](#): To build the DUNE neutrino experiment and its associated accelerator upgrade, experts invent customized ways to transport fragile, expensive and highly specialized components.

Others:

[Do hidden influences give neutrinos their tiny mass?](#)

The quest to understand the small mass of neutrinos is also a quest to discover new particles.

[Kétévi Assamagan pays it forward](#)

West African scientist at Brookhaven contributed to the 2012 discovery of the Higgs boson, among other accomplishments.

[What the Higgs boson tells us about the universe](#)

[Creating the next 3D maps of the universe](#)

[How to do particle physics in a climate emergency](#)

MINERvA – [A new way to explore proton's structure with neutrinos yields first results](#)

[Proposed experiment seeks origin of cosmic neutrinos](#)

[Ways to weigh a neutrino](#)

Videos

Don Lincoln

[Can protons decay?](#)

Could protons decay? Don Lincoln talks about why we think protons are stable and how we could be wrong. The Standard Model is the best theory devised that describes most of the data taken in the quantum realm. It predicts that protons are stable. But what if the Standard Model is wrong?

Don Lincoln

[Does acceleration solve the twin paradox?](#)

Special relativity is known to make mind-blowing predictions, perhaps most notably the twin paradox, in which two individuals claim that the other person's clock is doing something funny. There have been many explanations, including two videos that seem to contradict each other but don't. In this video, Don Lincoln explains how the two videos can be reconciled.

March 3, Public lecture by Dr. Joe Lykken, leader of the Fermilab Quantum Institute

[Wormholes in the laboratory](#)

Joe Lykken and a team of researchers described observable phenomena produced by a quantum processor that "are consistent with the dynamics of a transversable wormhole."

The performed this work with a Sycamore quantum computer at Google.

Fermilab In the News

[This summer, particle physicists will prioritize projects for the field's future](#)

From APS News, March 16, 2023: The P5 report will be out later this year. In the meantime, the 30-members of the P5 panel are gathering information at town hall meetings this summer. This input will be added to the new information gathered at Snowmass 2022 for the first time that includes more early career researcher involvement and improved conversations about equity and inclusion.

[Addison Elementary District 4 hosts a night of science fun](#)

From the Daily Herald, March 15, 2023: Fermilab's Mr. Freeze recently presented at an Addison Elementary District junior high school at its annual Science Fun Night. Jerry Zimmerman, otherwise.

MINERvA

[How big is a proton? Neutrinos weigh in](#)

From Scientific American, March 16, 2023: Big news about a smaller size: MINERvA researchers used a new and entirely independent method to measure a proton's radius. The team's measurement of the proton's radius was 0.73 femtometer, even smaller than the 0.84-femtometer electric charge radius. In either case, it is almost 10,000 times smaller than a hydrogen atom.

MINERvA

[Neutrinos probe the proton's structure in surprising measurement](#)

From Physics World, March 6, 2023: The MINERvA experiment at Fermilab has been used to study the structure of the proton using neutrinos. Teijin Cai and colleagues working on Fermilab's MINERvA experiment have showed how information about the proton can be extracted from neutrinos that have been scattered by the detector's plastic target.

[Neutrinos could explain why the Universe didn't just disappear after the Big Bang](#)

From BBC Sky at Night Magazine, March 13, 2023: BBC speaks with Dr. Elena Gramellini, a Lederman Fellow at Fermilab, whose field of research is experimental particle physics and neutrino detectors. Dr. Gramellini explains neutrinos, cosmic building blocks and what they can tell us about the early Universe.

[Workshop celebrates partnership between Unicamp and Fermilab](#)

From the State University of Campinas, Unicamp (Brazil), March 13, 2023:

Lia Meringa visited the State University of Campinas in São Paulo to attend a workshop on the purification of liquid argon. The event celebrated the achievements of the first phase of the LBNF/DUNE project and previewed the work to be carried out and the technologies to be developed in the next stage. Meringa stated the efforts of undergraduate and graduate students and the contributions of the university are essential to the success of DUNE.

DON LINCOLN

[Cosmic rays passing through Great Pyramid help reveal hidden corridor](#)

From Big Think, March 4, 2023: Researchers in Japan have effectively used muon tomography to X-ray the Great Pyramid in Egypt finding an unknown tunnel in the structure. This new tool used in archeology is detailed in a new paper published in Nature Communications.

DON LINCOLN

[An attempt to solve a quantum problem just deepens the mystery](#)

From Big Think, Feb. 15, 2023: The Standard Model of Physics has been challenged by the Muon g-2 and W-boson measurements. Don Lincoln discusses a recent paper in the journal Nature Communications that attempted to resolve two significant discrepancies in particle physics

[For the love of science](#)

From the Kane County Magazine, February 2023: Kane County Magazine speaks with Fermilab's Rebecca Thompson, head of education and public engagement, and senior scientist Don Lincoln on their passion for science and the curiosity that led them to Fermilab. The story, "For the love of science" begins on page 40.