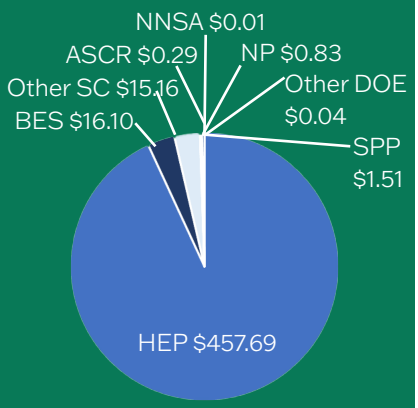
AT A GLANCE: FERMI NATIONAL ACCELERATOR LABORATORY

Fermilab

Fermilab's mission is to be the frontier laboratory for particle physics discovery. The accelerator complex powers research into the fundamental nature of the universe and is the only one in the world to produce both low- and high-energy neutrino beams for science and also enable precision science experiments. The construction of the Long-Baseline Neutrino Facility (LBNF) and Deep Underground Neutrino Experiment (DUNE), along with the world's most intense neutrino beams made possible by the Proton Improvement Plan II (PIP-II) project, will be the first international mega-science project based at a DOE National Laboratory. Fermilab integrates U.S. researchers into the global particle physics enterprise through its experiments and programs in neutrino, collider, precision, and cosmic science. The laboratory's scientific R&D advances accelerator, detector, computing, and quantum technology for use in science and society.

FUNDING BY SOURCE

FY 2019 Costs (in $M)
Total Laboratory Operating Costs: $491.64*
DOE Costs: $490.12
SPP (Non-DOE/Non-DHS) Costs: $1.51
SPP as % of Total Laboratory Operating Costs: 0.3%
DHS Costs: $0.0
**Reflects funding of $15.537M provided by SLAC for LCLS-II work.*



HUMAN CAPITAL

1,810 full-time equivalent (FTE) employees
22 joint faculty
95 postdoctoral researchers
65 undergraduate students
30 graduate students
2,610 Fermilab accelerator complex users
1,162 other Fermilab users (including US-CMS)
27 visiting scientists

CORE CAPABILITIES

Accelerator S&T
Advanced Computer Science, Visualization, and Data
Large-Scale User Facilities/Advanced Instrumentation
Particle Physics

MISSION UNIQUE FACILITIES

Fermilab Accelerator Complex

FACTS

Location: Batavia, Illinois (40 miles west of Chicago)
Type: Single-program Laboratory
Contractor: Fermi Research Alliance, LLC
Site Office: Fermi Site Office
Website: fnal.gov

PHYSICAL ASSETS

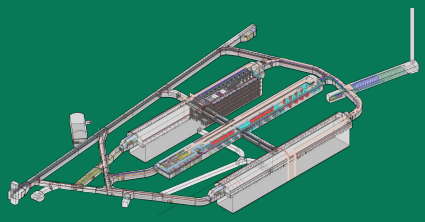
6,800 acres and 365 buildings
2.4 million GSF in buildings
Replacement plant value: $2.44 billion
28,913 GSF in 10 excess facilities
22,155 GSF in leased facilities

U.S. DEPARTMENT OF ENERGY

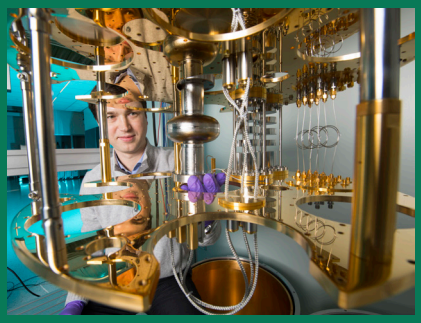
AT A GLANCE: FERMI NATIONAL ACCELERATOR LABORATORY

Fermilab

ACCOMPLISHMENTS



Unique Facility: Long-Baseline Neutrino Facility - Construction for two major projects with international contributions is underway at Fermilab to advance the DOE High Energy Physics program: the LBNF, which will host DUNE, and the PIP-II project. More than 1,000 scientists from over 30 countries are working on the DUNE experiment to explore the mysteries of neutrinos. They are seeking to answer some of the biggest questions regarding our understanding of the universe, such as the origin of matter and the nature of subatomic particles. The PIP-II project will upgrade the Fermilab Accelerator Complex facility with a 700-foot-long, state-of-the-art superconducting particle accelerator. PIP-II will also enable the world's most intense neutrino beam for DUNE, plus a broad physics research program that will power new discoveries for many decades to come.



Tech-to-Market Highlight: From Particle Physics Technologies to Quantum Computers and the Quantum Internet - Fermilab scientists have demonstrated that superconducting radiofrequency cavities can increase the length of time that a quantum device can maintain information, which is crucial to engineering the next-generation quantum computers and sensors. Building upon this technological breakthrough, together with Rigetti Computing and other partners, Fermilab scientists are using their expertise in superconducting radiofrequency (SRF) cavities and cryogenics to build scalable superconducting quantum computing systems at the DOE-funded Superconducting Quantum Materials and Systems Center. Also, in 2017, Fermilab planted the seeds for a quantum internet by installing the Fermilab Quantum Network (FQNET), a long-term partnership with AT&T, Caltech, and Fermilab. FQNET successfully demonstrated quantum teleportation in 2018. Fermilab and its partners are now expanding the point-to-point network to a multinode system that will crisscross Chicagoland—the third largest metropolitan area in the U.S.

Research Highlight: World Record Magnets for Future Proton Accelerators - Powerful niobium-tin superconducting magnets are key components of high-energy proton accelerators and have applications in many other areas, including medical imaging. In a multiyear effort involving Fermilab, Brookhaven, and Berkeley National Laboratories, researchers successfully designed, built, and tested the first of 16 powerful beam-focusing magnets that the laboratories will provide for the High-Luminosity Large Hadron Collider at CERN. The effort set a world record for the highest field strength in a focusing magnet, reaching up to 13 teslas. Also, Fermilab and its partners in the U.S. Magnet Development Program are developing steering magnets for a potential successor to the Large Hadron Collider (which operates with a steering field of 7.8 teslas). In 2020, the program set the world record for the highest field strength for a steering magnet, achieving 14.5 teslas.