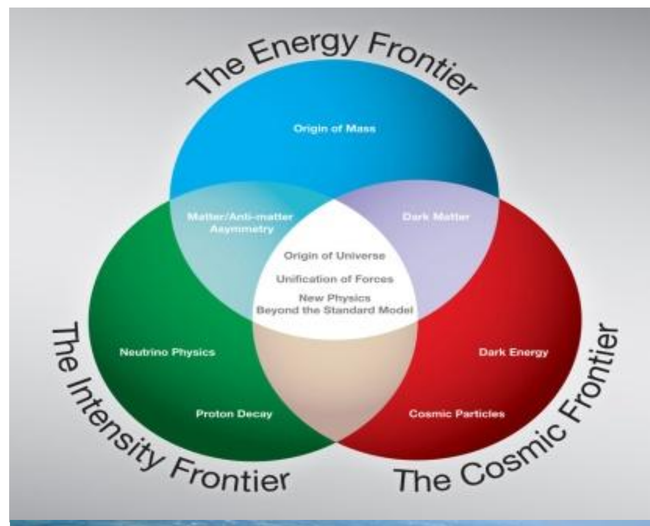
Fermilab National Accelerator Laboratory

General information

Fermilab is a U.S Department of Energy Office of Science laboratory located near Chicago, Illinois and is operated under contract by the Fermi Research Alliance L.L.C., a consortium of 90 research universities. It advances the understanding of the fundamental nature of matter, energy, space and time by providing leadership and resources for qualified researchers from around the world to conduct basic research on three interrelated frontiers – Intensity, Energy and Cosmic. Each frontier has a unique approach to making discoveries and is essential to answering key questions about the laws of nature.

Fermilab's proton accelerator complex includes the 400 MeV Linac, the 8 GeV Booster synchrotron, and the 120 GeV Main Injector synchrotron, which is being upgraded from 350 kW to 700 kW of beam power. This accelerator complex produces the world's most intense beam of high-energy neutrinos, whose unique properties appear to be at the crux of many questions about the universe.



Facts and figures

Area of lab site	6,800 acres
Number of accelerators and storage rings	7
Employees	1,750
Visiting researchers and graduate students	2,000
Ph.D. degrees received from work at Fermilab	1,961 since 1974
U.S. universities and labs working with Fermilab	118
Foreign universities and labs working with Fermilab	140
Students involved in on-site programs or internships	about 1,000 every year
K-12 students served by Fermilab science	38,600

Income Budget/Funding (mostly Department of Energy (DOE)) (2012)	
Office of Science, Office of High Energy Physics (DOE)	403.5 Million
Other Department of Energy (DOE)	4.8 Million
Work for Others (Federal and non-Federal)	1.5 Million
Total Funding	**409.6 Million**

Cost (2012)	
Operations	328.4 Million
Capital Equipment	89.7 Million
Line Item Construction	1.1 Million
Work for Others	5.7 Million
Total Cost	**424.9 Million**

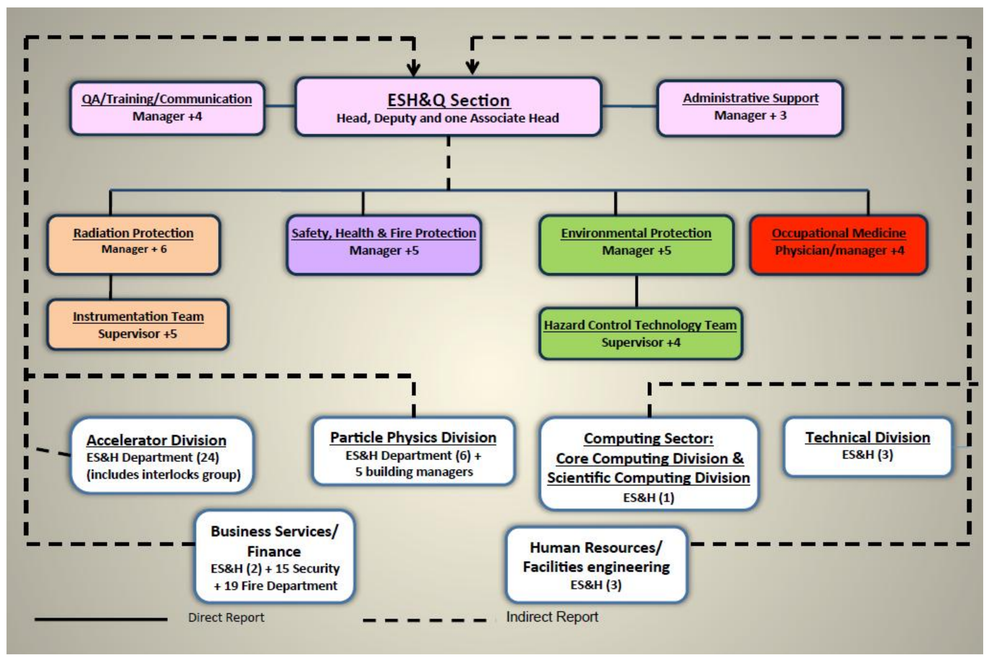
(US dollars shown in millions)

History

1968: Groundbreaking for the Linac.
1972: Main Ring accelerator reaches energy of 400 GeV.
1976: The first cancer patient receives neutron therapy.
1977: Experimenters announce discovery of bottom quark.
1984: Tevatron accelerates beam to 800 GeV.
1985: Antiproton Source produces and collects first antiprotons.
1986: First proton-antiproton collisions at 1.8 TeV.
1993: Groundbreaking for Main Injector accelerator.
1995: Discovery of the top quark.
1998: Sloan Digital Sky Survey (SDSS) achieves first light.
1999: Dedication of the Main Injector accelerator.
2000: First evidence for the direct observation of the tau neutrino.
2001: Startup of Run II of the Tevatron collider program.
2005: First neutrino beam from Fermilab to Minnesota (MINOS).
2011: End of Tevatron Run II; data analysis continues.
2011: Groundbreaking for Illinois Accelerator Research Center.
2012: Upgrade of the Fermilab accelerator complex for future Intensity Frontier experiments (NOvA, Muon g-2, Mu2e, etc).
2012: Dark Energy Camera records first images.
2013: Restart of the Fermilab accelerator complex.

HSE

The ESH&Q Section Head serves as the ESH&Q Director and reports to the Lab Director. The ESH&Q Section is divided into six groups (shown at right). Each group has a manager and certified specialists that provide support and advice to other Fermilab organizations. The ESH&Q Section has a staff of 43. In addition, there are five divisions and four sections (other than ESH&Q), each with an ES&H "group" led by a Senior Safety Officer (in some cases the only ES&H person) who has indirect reporting responsibilities to the ESH&Q Director. Fermilab has been registered to ISO 14001 and OHSAS 18001 since 2007.



Safety hazards

Hazards at Fermilab are similar to those found in industry with the main hazards relating to construction, installation and maintenance of components. These hazards include the operation of mechanical equipment, fall hazards, excavations, lifting and cranes. Electrical hazards include electrical shock, electrocution, arc flash and arc blast. Radiation hazards are the main non-industrial hazards that personnel may be exposed to, though mainly as residual radioactivity from activated components. Radiation hazards are very well mitigated and thus rarely cause any concern.

Projects

Fermilab is finishing a yearlong upgrade to its accelerator complex and the construction of the NOvA neutrino experiment, which features a large particle detector in northern Minnesota. The upgrade will support the lab's future experiments, such as MicroBooNE, Mu2e, Muon g-2 and NOvA. Project X, a proposed high-intensity proton accelerator, would ensure Fermilab's future leadership for the exploration of neutrinos and rare subatomic processes. In partnership with the State of Illinois, Fermilab is constructing the Illinois Accelerator Research Center (IARC). A major focus of IARC will be to develop partnerships with private industry and local universities for the commercial and industrial application of accelerator technology for energy and the environment, medicine, industry, national security and discovery science.