

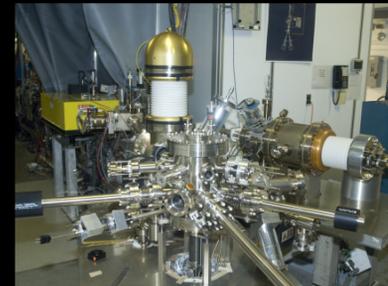


Jefferson Lab

Thomas Jefferson National Accelerator Facility

www.jlab.org • 757-269-7100

operated by Jefferson Science Associates, LLC



Injector

The injector is the source of polarized and unpolarized electron beams used in experiments at Jefferson Lab.



Linear Accelerator

Twenty cryomodules line each of CEBAF's two linear accelerators.



Recirculation Magnets

Quadrupole and dipole magnets focus and steer the beam as it passes through each tunnel arc.



Central Helium Liquefier

The Central Helium Liquefier keeps the accelerator cavities at -456 degrees Fahrenheit.



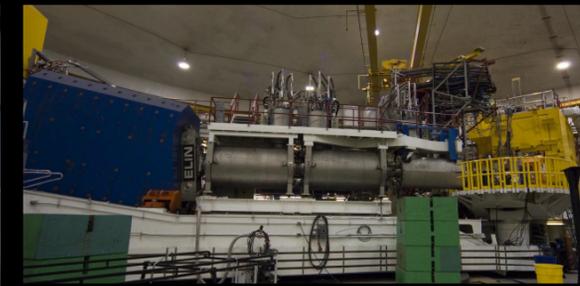
Experimental Hall A

Hall A is configured with two High Resolution Magnetic Spectrometers for studying the inner structure of the nucleus.



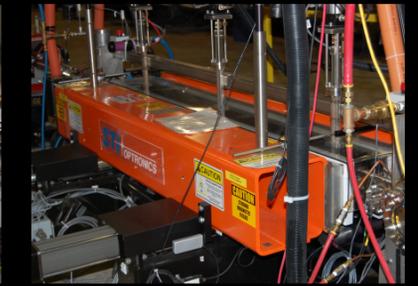
Experimental Hall B

The Large Acceptance Spectrometer in Hall B completely surrounds the target and can collect two terabytes of data per day.



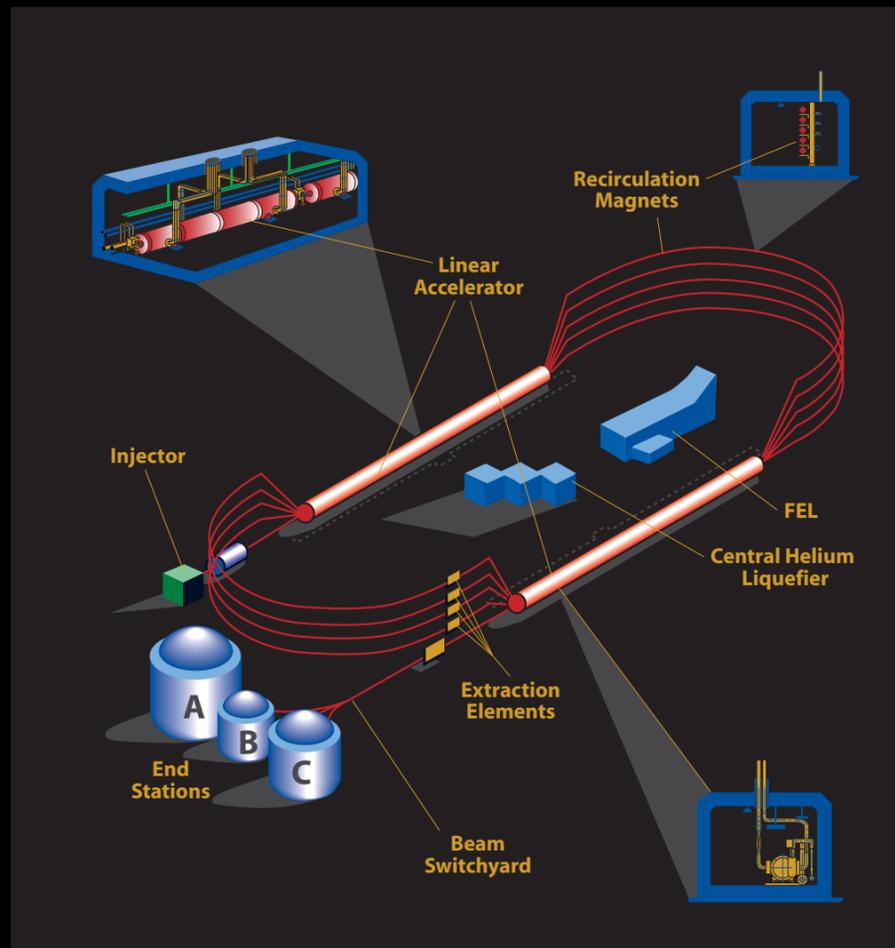
Experimental Hall C

The High Momentum Spectrometer and Short Orbit Spectrometer in Hall C are two of the instruments used to study the structure of simple quark-gluon systems.

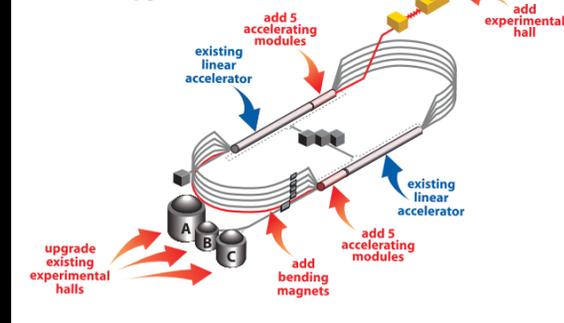


Free-Electron Laser Wiggler

To generate light from the Free-Electron Laser, an array of magnets converts electron beam power to laser light.



12 GeV - Upgrade Schematic



Performing World Class Research

Jefferson Lab's equipment is used to conduct world-class basic research by more than 1,300 visiting physicists representing more than 200 institutions and employs more than 640 people. To stay at the forefront of science, the lab is preparing to double the energy of its accelerator, enhance the capabilities in its three experimental halls and construct a new experimental hall. The lab also pursues applied research with its Free-Electron Laser and its Detector & Imaging capabilities.

Exploring the Nature of Matter

Scientists know that protons and neutrons consist of particles called quarks. How quarks bind together and why they cannot be separated are two of the many mysteries that research being conducted at Jefferson Lab is helping to unravel.

Accelerator Capabilities

- High-energy (~6 GeV), continuous wave (cw) electron beam to probe the nucleus
- Continuous, high-current beam (200 μ A) for complete data collection at high rate
- Optimal beam quality for high resolution measurements
- Simultaneous beams to all three experimental halls
- 100 MeV electron beam to power the Free-Electron Laser