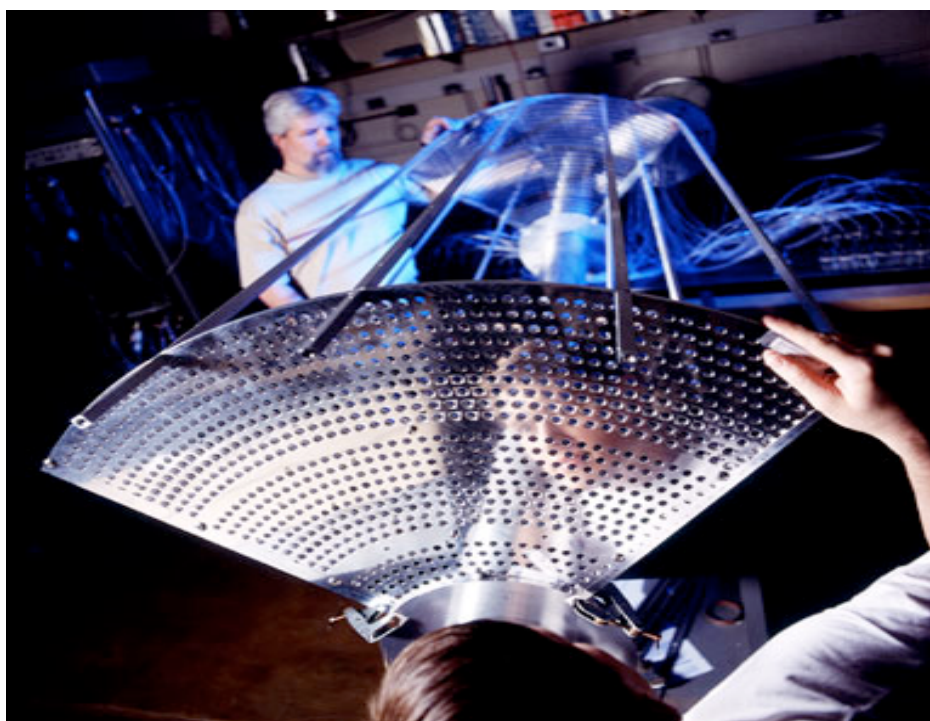


GlueX Gets a Boost

Nuclear physicists are rejoicing after the U.S. Department of Energy announced today that it will give Thomas Jefferson National Accelerator Facility (Jefferson Lab) \$225 million to double the power of its Continuous Electron Beam Accelerator Facility (CEBAF), upgrade its computing facilities, and build a fourth experimental hall to house the GlueX particle physics experiment.



Full steam ahead. Particle physicists on the GlueX project got encouraging news today from the Department of Energy.

CREDIT: CARNEGIE MELLON UNIVERSITY

GlueX is an experiment designed to push the limits of particle physics and answer big questions about tiny quarks, which make up much of the matter in the universe. The project got its start with a few nuclear physicists in the mid-1990s and has grown into an international collaboration of over 100 physicists from 25 institutions in seven countries.

GlueX set the requirements for Jefferson Lab's makeover, although the other facilities at Jefferson Lab will upgrade their

detectors and equipment to take advantage of the beefed-up CEBAF as well.

GlueX is unique in that it will use a relatively low-energy electron beam (12 billion volts, compared to the thousand-billion electron volts used by other facilities such as Fermi

National Accelerator Laboratory). But these energies are exactly where protons and neutrons begin to reveal their internal structure. Researchers will pass the electron beam through a diamond wafer, causing it to emit a beam of photons capable of spurring the quarks inside hydrogen nuclei to make exotic heavy mesons--never before seen particles that could illuminate mysteries about quarks such as why they only appear in pairs or groups of three or five and how they zoom around in the confined space of a proton. The improvements at Jefferson Lab will allow it to observe quarks with a precision unmatched by any other facility in the world.

"It's something we've been waiting for a long time," says physicist Alex Dzierba of Indiana University in Bloomington, the spokesperson for the GlueX project. "People think cutting-edge science is done at the very highest energies, but fundamental discoveries can also be made by looking with very high precision."

--KIM KRIEGER

Related Sites

[GlueX experiment home page](#)

[▲ PAGE TOP](#)

[Previous Story](#) [ScienceNOW Home](#)

Copyright © 2004 by the American Association for the Advancement of Science.

[SCIENCE MAGAZINE](#)

[SCIENCE NOW](#)

[SCIENCE'S NEXT WAVE](#)

[HIGHWIRE JOURNALS](#)

[ARCHIVES OF SCIENCE NOW](#)

[ARCHIVES OF SCIENCE MAGAZINE](#)

[SUBJECT COLLECTIONS](#)

[CURRENT ISSUE OF SCIENCE](#)