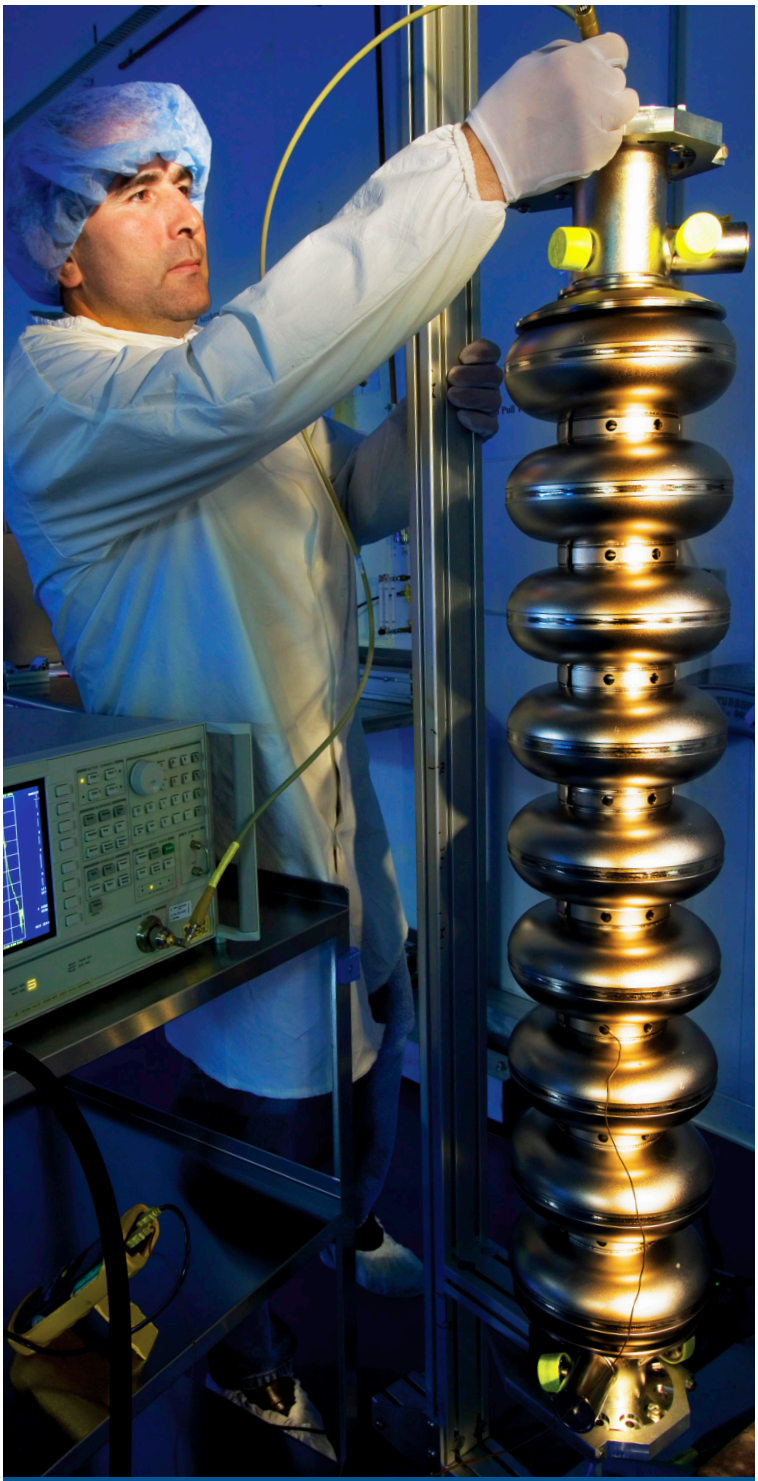
SRF Accelerator Research & Development

Technologies developed at Fermilab will be used in the next generation of particle accelerators and will spur innovation to meet the challenges of America's future.



Fermilab scientist with SRF cavity.

One of the first SRF cryomodules designed, built and tested at Fermilab.

R&D for Future Accelerators

Superconducting Radio Frequency Technology

Superconducting radio frequency (SRF) cavities are the technology of choice for the next generation of particle accelerators, and Fermilab is a world leader in their development and testing. Fermilab partners with U.S. industry and other institutions around the world to design and build SRF cavities in cost-effective ways. The technology has potential applications in medicine, nuclear energy and materials science, as well as basic research.

Superconducting Radio Frequency Test Facility

Fermilab operates the most advanced R&D center for SRF technology in the United States. Fermilab uses the facility to test cryomodules, components that will be used in the accelerators of the future. Scientists are testing cryomodules for two proposed projects: the International Linear Collider, which could become the world's next high-energy particle collider; and Fermilab's own proposed high-energy superconducting particle accelerator. The main section of the facility is being developed to include a 460-foot-long electron beam test accelerator that is a unique facility for advanced accelerator research and development.

Fermilab's proposed accelerator

Future plans for the laboratory include a proposed high-intensity proton accelerator that would provide experiments with the most intense beams of difficult-to-study particles like neutrinos, kaons and muons. The accelerator would provide the centerpiece of a unique user facility for research at the frontiers of particle physics. The proposed machine would make use of superconducting radio frequency cavities developed and tested at Fermilab, and would pave the way for future particle accelerators and colliders.