



A new Lederman Science Center

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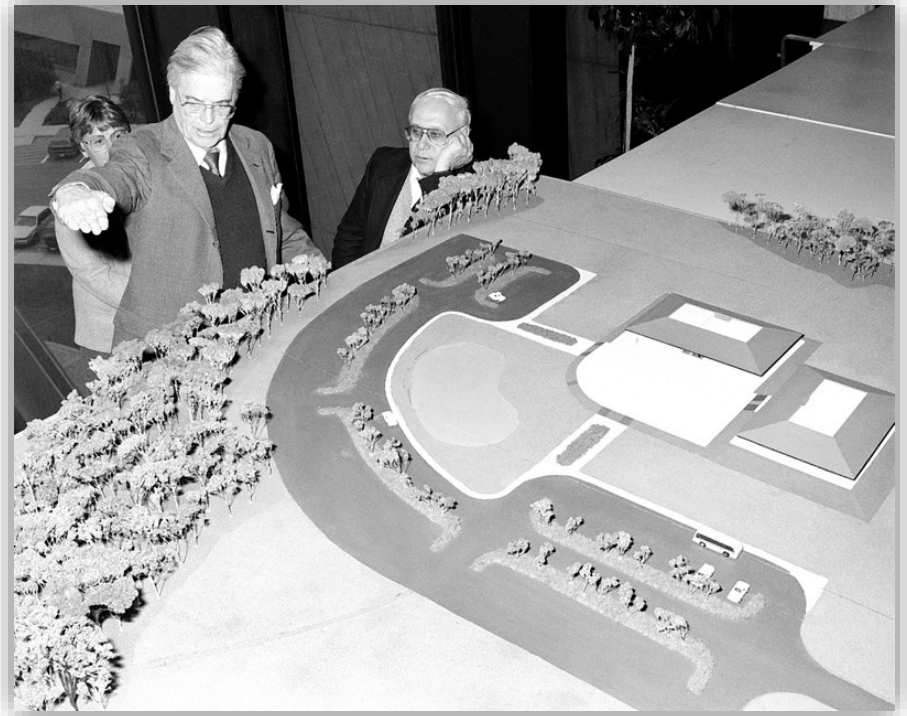


A New Lederman Science Center

The Lederman Science Center (LSC) was opened in 1992 with a mission to engage the general public and K-12 students from the Chicagoland area in activities that communicate Fermilab science.



Leon Lederman in 1989 demonstrates how electric fields accelerate particles.



Robert Wilson Viewing Model of Science Education Center in 1990

A New Lederman Science Center

For decades, the LSC has successfully served its purpose, and it became a bridge between Fermilab and our community, telling the story of Fermilab science and inspiring young people to pursue careers in STEM.









However, as **Fermilab moves forward setting new directions and accomplishing new goals**, it is important that our exhibits and activities at **LSC reflect these new priorities** while honoring the outstanding scientific past of the lab.

A New Lederman Science Center

To align LSC’s vision with Fermilab’s current priorities, and to make LSC more inclusive, we did a fundamental reexamination of our resources and activities. The goal is to transform LSC into more collaborative open space where learners with different backgrounds, ages, and interests can share ideas, be innovative, and build their own knowledge **inspired by Fermilab’s science, art, and environment**. We developed a detailed plan for the LSC modernization, which includes:

- MakerSpace construction
- Fermilab Timeline exhibit construction
- Exhibit signage upgrade
- Exhibit Incubator development
- Science Lab remodeling

Task	2021	2022	2023
LSC signage upgrade			
3 new exhibit developments			
Exhibit Incubator construction			
Science Lab remodeling			
Fermilab Timeline exhibit construction			
Fermilab Maker Space construction			

MakerSpace Construction

As a modern science center, we want to foster a culture of inquiry – **exploring new ideas and thinking “outside of the box”**. With this goal in mind, we transformed the former Teacher Resource Center area into a **MakerSpace**

- to provide a space for our visitors where they can get engaged in activities that foster creativity and skill development
- to give students, teachers, and everyone who visits LSC an access to a new class of technologies such as 3D printers, digital cutters, robotics, etc.



MakerSpace Construction

Fermilab is a scientific makerspace – scientists, technicians, engineers, artists, mathematicians and computer specialists are makers. The unique skills they develop in the lab from developing superconducting magnets to building quantum computers bring progress and are important in every aspect of our life.

Current MakerSpace activities:

- Artist in Residence Junior (in collaboration with Water Street Studios)
- SAGE – Science Accelerating Girls Engagement in STEM summer camp
- We Break, You Fix (engineering project under development)



Fermilab Timeline Construction

To create the sense of Fermilab's continuous scientific adventure and to give more insight into the discovery process, the old accelerator complex footprint in front of the LSC will be transformed into Fermilab Timeline. This new exhibit will be built on the "Tevatron ring" as a pathway of stone tiles featuring Fermilab's most important milestones. It will put together Fermilab's outstanding achievements in the past, as well as present and future projects.




Fermilab Timeline Construction

The construction of the Fermilab Timeline pathway is underway. We appreciate the involvement of the Fermilab community in creating the list of Fermilab milestones – past, present, and future projects to be included on the timeline path. Signs will be placed along the pathway for the current and future experiments. The signs will be replaced with stone tiles as new achievements and discoveries are made in future. QR codes will be used to provide background information.



New, Bilingual Exhibit Signage

Signs have been upgraded in exhibit rooms to create a cohesive, bilingual signage all around LSC. QR codes have been incorporated for Spanish translations.



Ideas Room


Scientists reveal nature's laws.

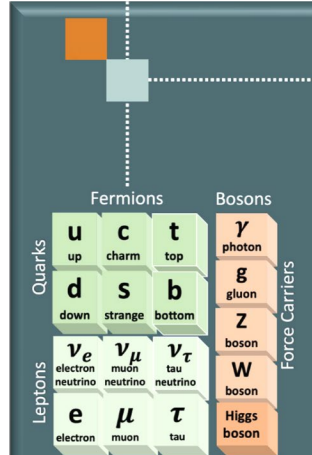
The challenge of particle physics is to discover what the universe is made of and how it works.

Elementary particles — the basic building blocks of matter — are not visible with the naked eye or with the most powerful microscopes. By building some of the largest and most complex machines in the world, Fermilab scientists expand humankind's understanding of matter, energy, space, and time.

The interactive exhibits in this room will introduce you to the ideas behind Fermilab's science.

Read the signs for each exhibit. They'll show you how the exhibits work.

 Escanname




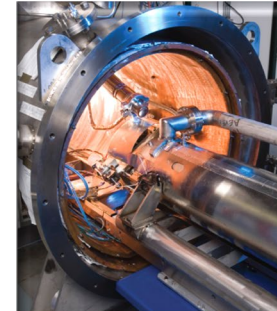
Standard Model of Elementary Particles

It is the dawn of a new era in particle physics.

Particle physicists have incorporated decades of observations and results into the Standard Model, a framework for our current understanding of matter. The Standard Model of elementary particles lists 17 fundamental particles. There are two basic particle families — fermions (matter particles) and bosons (force carrier particles). Fermions are divided into quarks and leptons.

Three out of 12 fundamental fermions were discovered at Fermilab.

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Why Does Fermilab Science Matter?

More than 30,000 particle accelerators are in operation around the world, serving medicine, industry, energy, environment, national security, and discovery science.

X-rays, CT scans, MRIs, and PET scans emerged from particle physics research. Accelerators are used by every major medical center in the nation to treat and to diagnose millions of patients. Semiconductors in your laptops and cell phones were made smaller and faster through accelerator-assisted manufacturing. The World Wide Web — WWW — was originally developed to share particle physics results around the globe more easily. Scientific Linux, an open source computer operating system managed and distributed by Fermilab, has been downloaded more than 10 million times, free of charge.


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Exhibit Upgrade and Development

Exhibit development is an ongoing process at LSC. Recently, we upgraded Fermilab job diversity exhibit. With this project we intend to **inspire young people to pursue careers in STEM** and encourage them to join the Fermilab community in future. **To establish Fermilab's leadership in quantum education** we plan to build new exhibits about particle physics and quantum science.

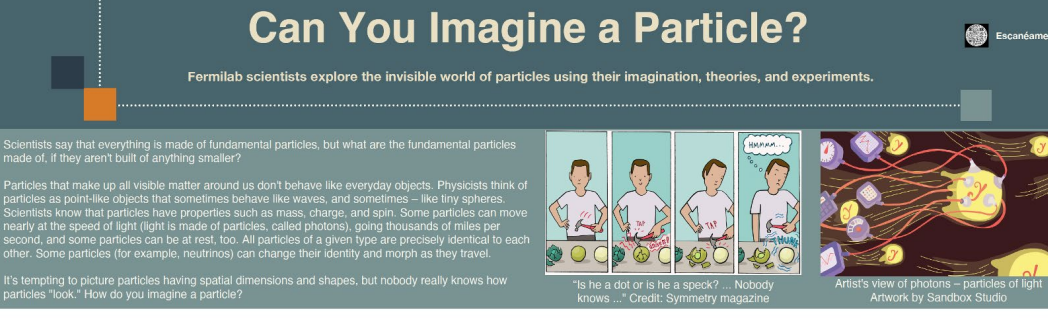


Can You See Yourself as a Fermilab Employee?

At Fermilab, groups of diverse people work together to make the laboratory's mission successful.

There are many ways to support Fermilab's mission. The great thing about working with a diverse team is that we can approach problems from different perspectives with many talents and backgrounds. At Fermilab, we value our diverse family and we're always in search of new additions.

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Can You Imagine a Particle?

Fermilab scientists explore the invisible world of particles using their imagination, theories, and experiments.

Scientists say that everything is made of fundamental particles, but what are the fundamental particles made of. If they aren't built of anything smaller?

Particles that make up all visible matter around us don't behave like everyday objects. Physicists think of particles as point-like objects that sometimes behave like waves, and sometimes – like tiny spheres. Scientists know that particles have properties such as mass, charge, and spin. Some particles can move nearly at the speed of light (light is made of particles, called photons), going thousands of miles per second, and some particles can be at rest, too. All particles of a given type are precisely identical to each other. Some particles (for example, neutrinos) can change their identity and morph as they travel.

It's tempting to picture particles having spatial dimensions and shapes, but nobody really knows how particles "look." How do you imagine a particle?

"Is he a dot or is he a speck? ... Nobody knows ..." Credit: Symmetry magazine

Artist's view of photons – particles of light
Artwork by Sandbox Studio


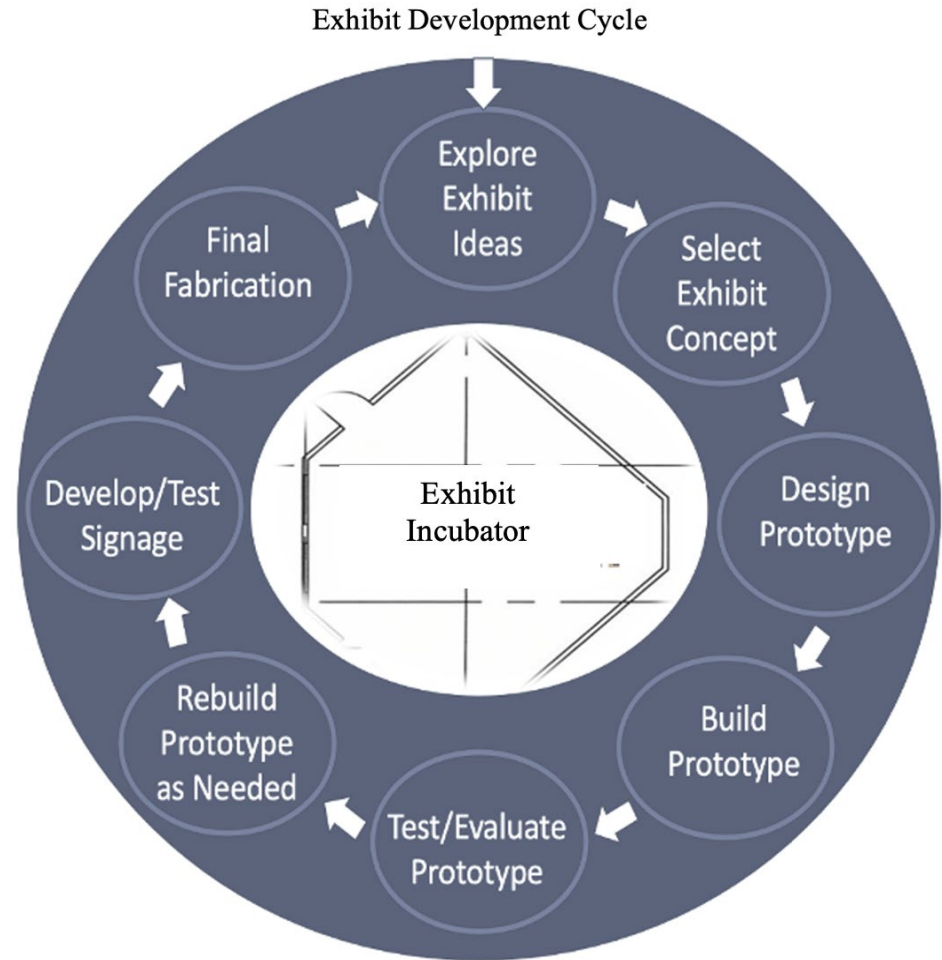


Exhibit Incubator

We plan to transform the Technology Room into an Exhibit Incubator, to create a space where we can experiment with ideas for future exhibits and do prototyping and evaluating with our visitors. At the same time, we will keep this room as a flexible space for different uses and close it to the public when needed.



Science Lab Upgrade

Fermilab treasures its natural surroundings and federal lands as valued national resources. In 1989, Fermilab was designated a National Environmental Research Park, one of 7 across the United States. As part of the LSC modernization process, we dedicate the science lab to the study of the natural resources and ecology of the Fermilab site. With this goal and mission, we started renovation of the science lab. We invite the Indigenous perspective to represent traditional wisdom, scientific knowledge of bison, and prairie in this process.



Questions?