

Welcome!





Fermilab 101

Fermilab Community Advisory Board
January 9, 2010

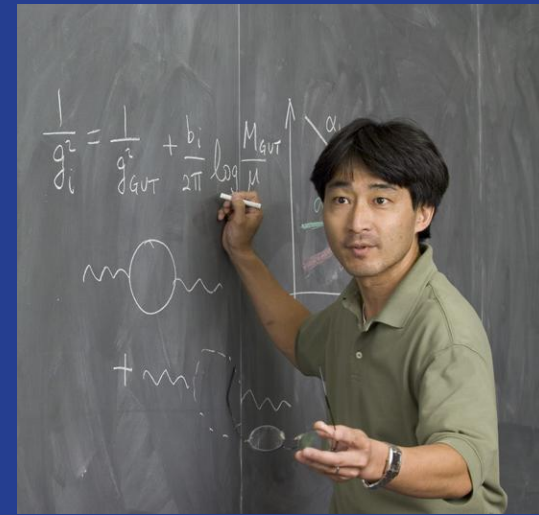
Welcome to Fermilab! (at a fascinating time!)



Particle physics starts with questions

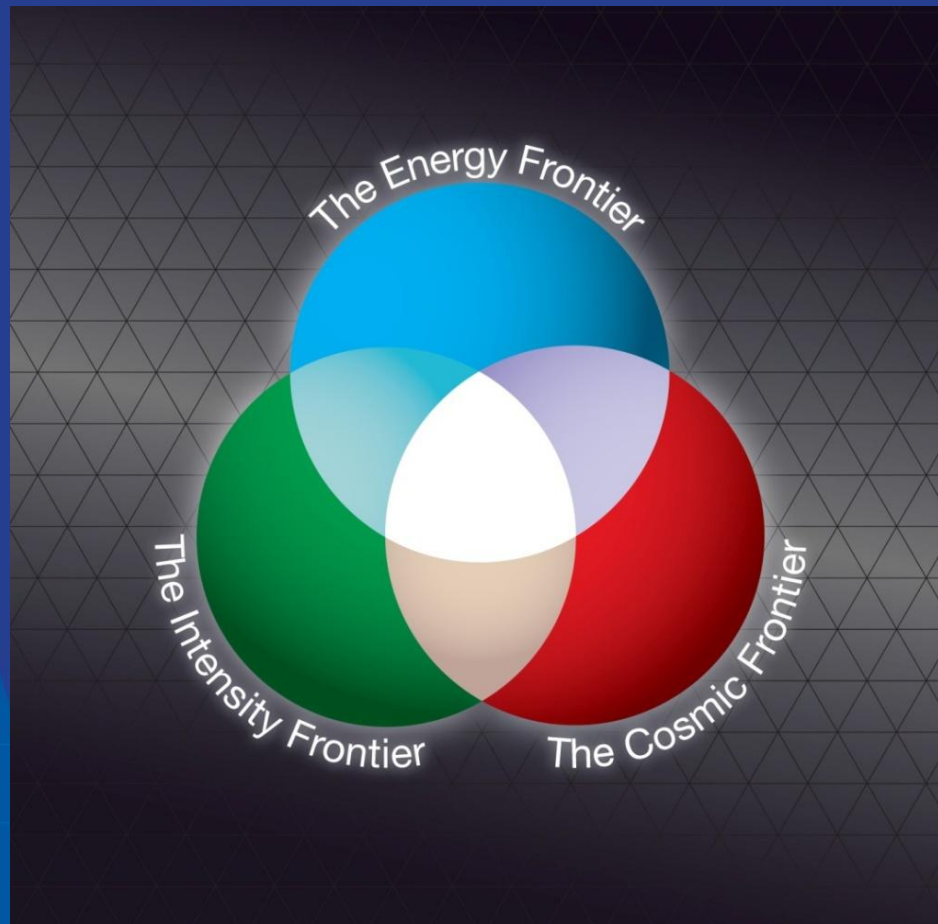


More than 95 percent of the universe is unknown: dark matter and dark energy



What is dark matter?
Dark energy?
Are there extra dimensions?
Where's the antimatter?
Do all forces unify?

Three frontiers of particle physics



Fermilab has world-leading science programs at all three frontiers.

At the energy frontier: accelerators

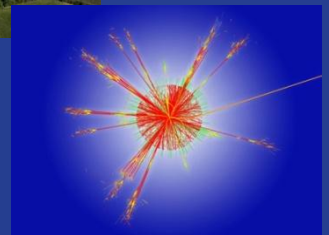
To answer their questions, particle physicists use giant accelerators to make high-energy particle collisions.



CERN's LHC



Fermilab's Tevatron



The energy frontier

- Until last month, Fermilab's Tevatron was the world's highest-energy collider.
- Now, the Large Hadron Collider at CERN in Geneva has begun operations. Ultimately it will have seven times the Tevatron's energy.



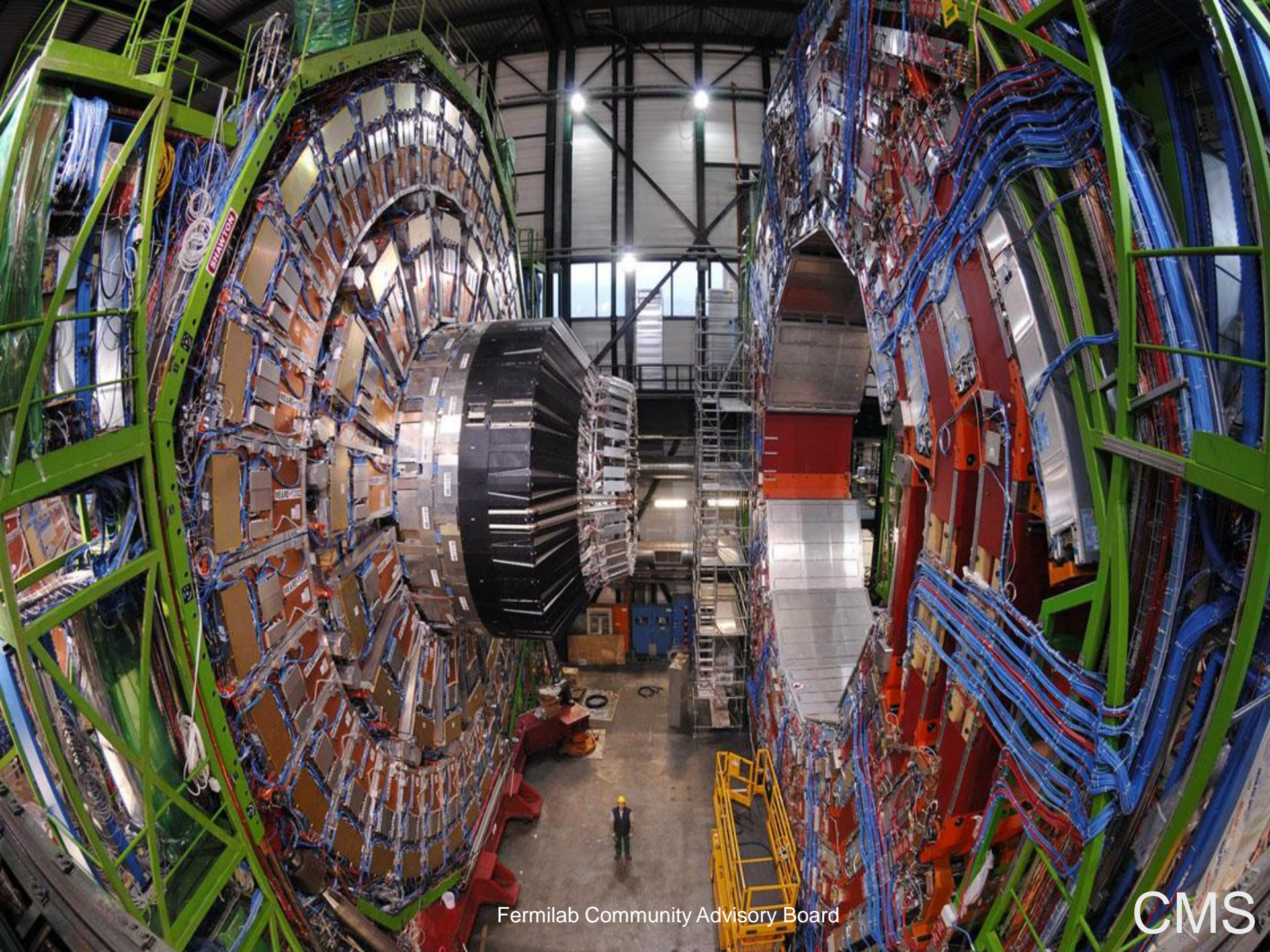
6 km

Fermilab's Tevatron



26 km

CERN's LHC

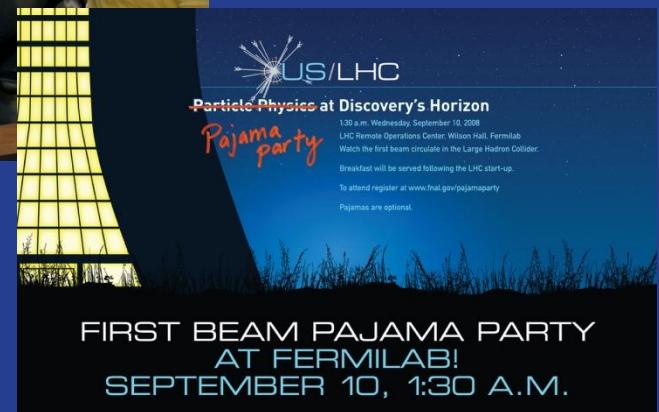




The energy frontier moves to Europe



The US and the LHC

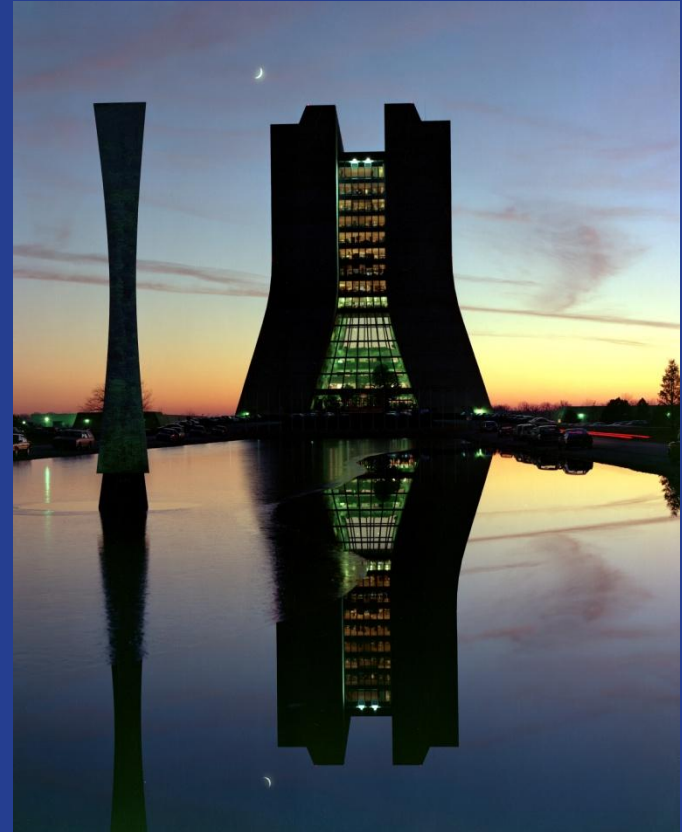


US/LHC
Particle Physics at Discovery's Horizon
Pajama party
1:30 a.m. Wednesday, September 10, 2008
LHC Remote Operations Center, Wilson Hall, Fermilab
Watch the first beam circulate in the Large Hadron Collider.
Breakfast will be served following the LHC start-up.
To attend register at www.fnal.gov/pajamaparty
Pajamas are optional.

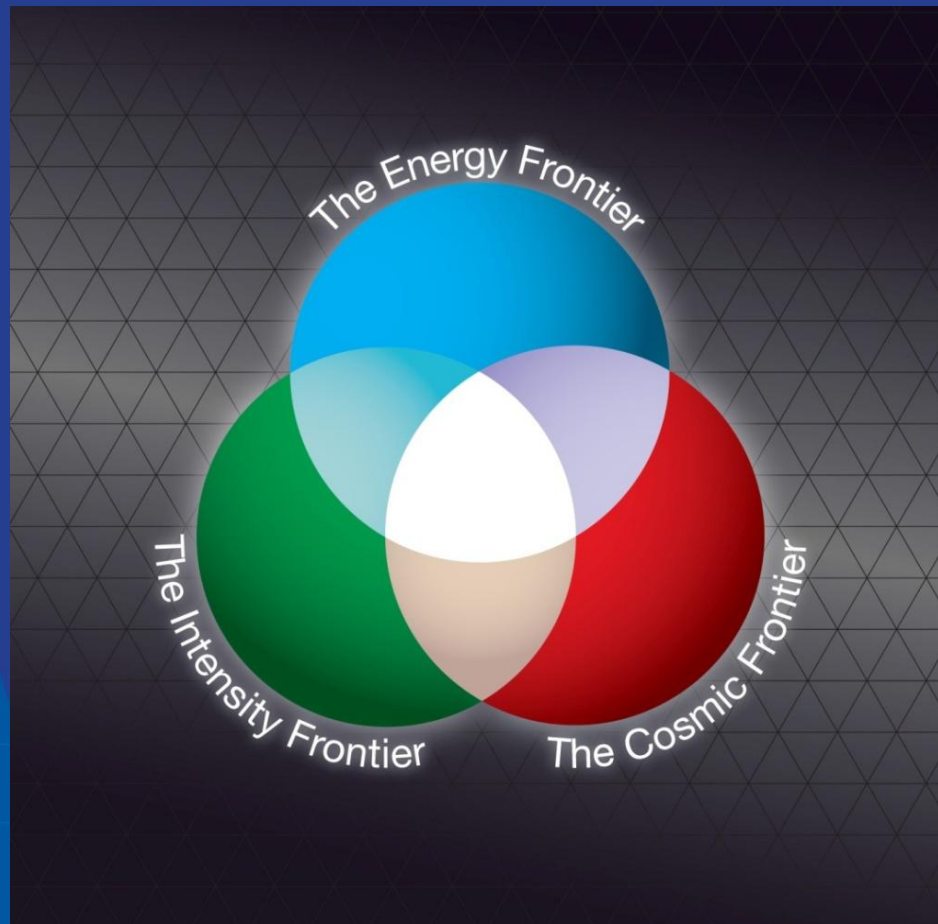
FIRST BEAM PAJAMA PARTY
AT FERMILAB!
SEPTEMBER 10, 1:30 A.M.

What's next for US HEP?

- When the energy frontier moves offshore, what is the future for US particle physics?
- Can the US retain its traditional role as a leader in this thoroughly international field?
- That is the question confronting national science policymakers—and Fermilab.



Remember: there are three frontiers

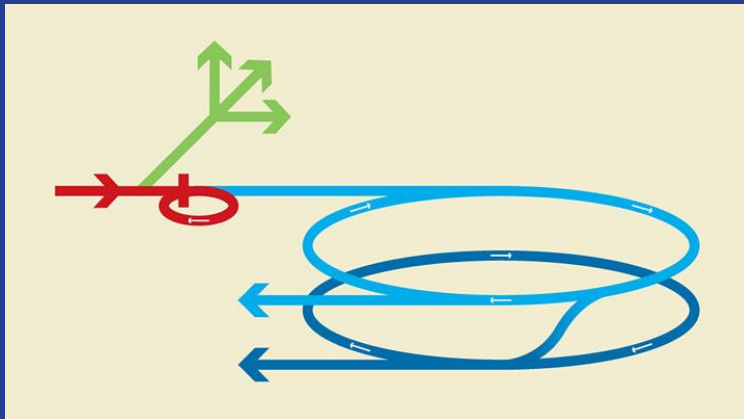


A future for Fermilab
at the Intensity Frontier

Highest-intensity
beams to address
the key questions
of particle physics.

Plus a continuing
role at the LHC
and a strong
astrophysics program

Fermilab and the Intensity Frontier



Project X :
a unique and flexible facility
with intense beams
for frontier experiments.

9&10
November
2009

Project X
Physics
Workshop

Fermilab
Batavia, Illinois
USA



4th Workshop on Physics with a high intensity proton source

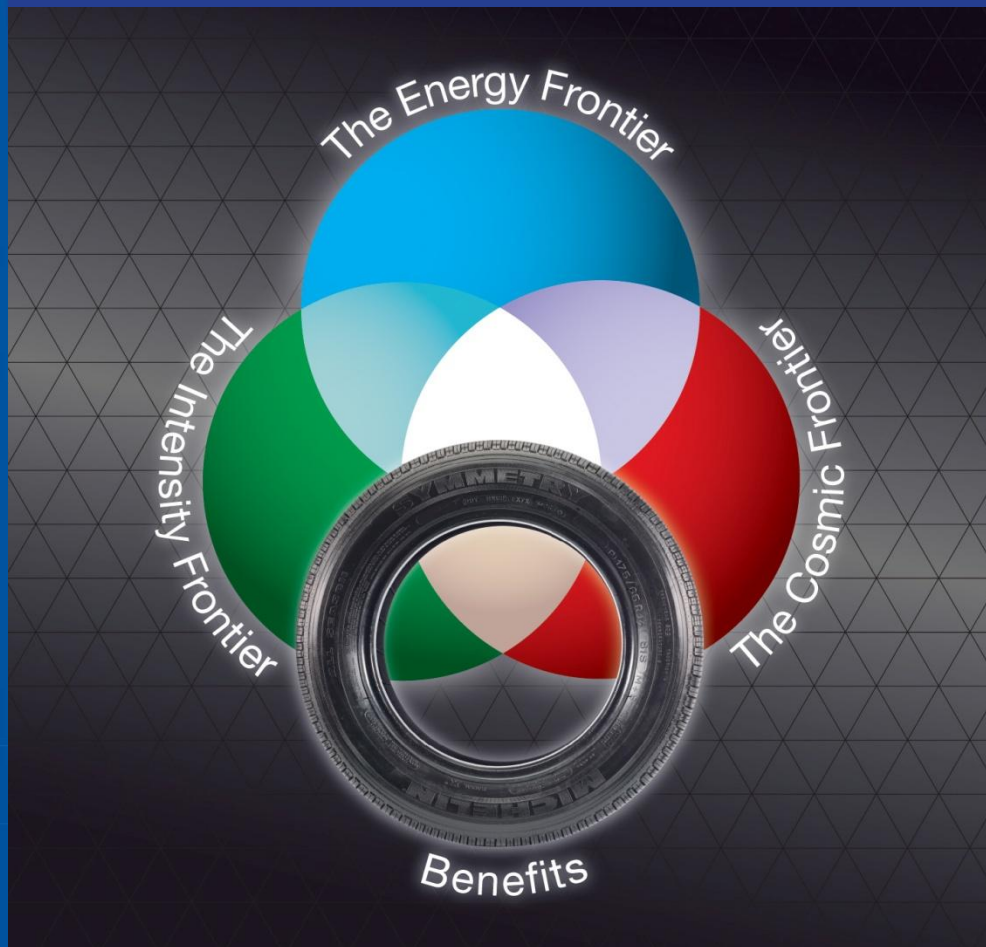
Fermilab ENERGY

www.fnal.gov/projectx

Neutrinos from Fermilab to South Dakota?

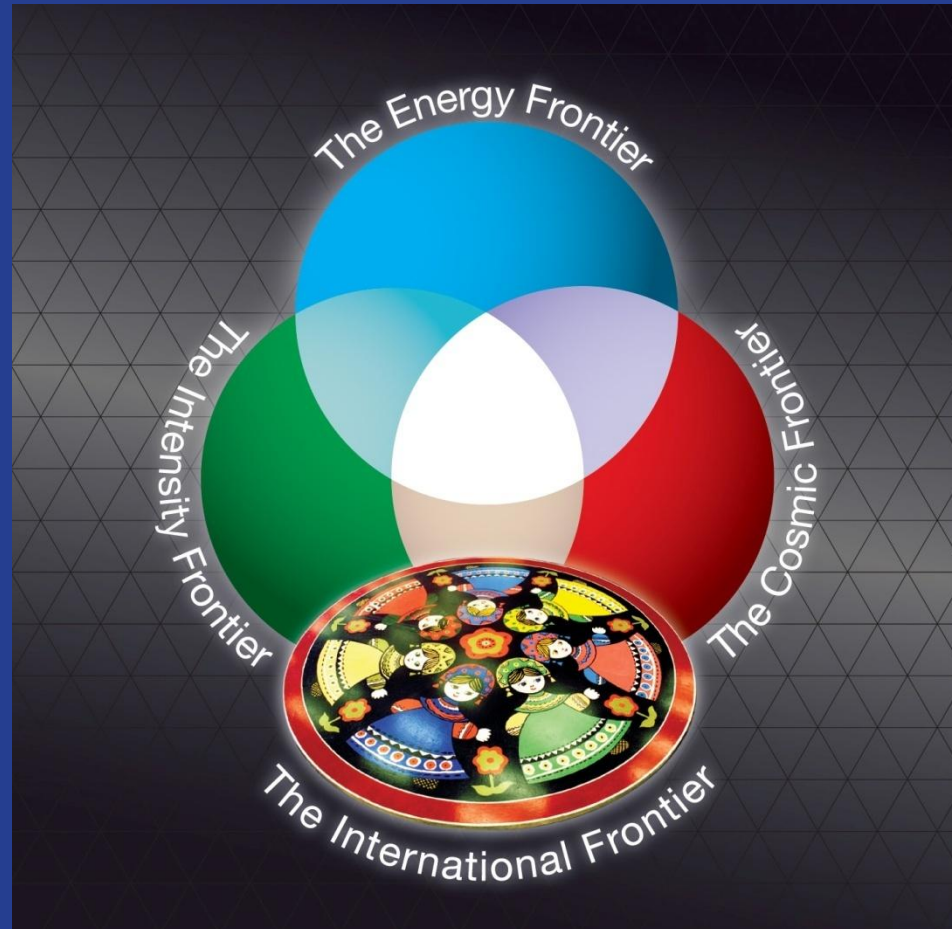


What's it good for?



A beam of particles is a very useful tool for many applications beyond particle physics.

The international frontier



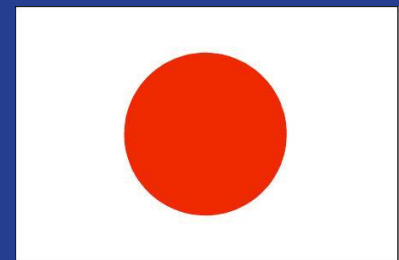
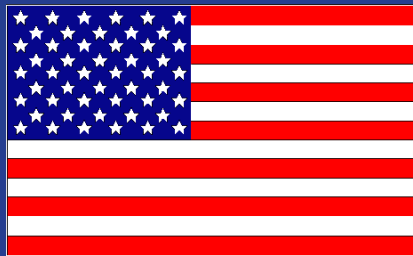
First experiment: Fermilab-USSR



Fermilab cafeteria

€ € € \$\$\$ ¥ ¥ ¥

The scale of particle physics means that governments must fund large national and international laboratories.



Fermilab basics



Fermilab basics

- 1900 employees
- 3,042 users (scientists from universities and labs across the country and around the world)
- This year's budget: \$400M
- Plus Recovery Act Funding: \$103M

Fermilab and the Recovery Act


- DOE has provided Fermilab with \$103.1 million in ARRA funds:
 - General Infrastructure projects (\$25 million)
 - NOvA at Fermilab (\$14.9 million)
 - High-field magnets (\$1.5 million)
 - Long-baseline neutrino research (\$9 million)
 - Superconducting rf technology (\$52.7 million)
- Plus \$40.1 million to University of Minnesota for NOvA construction up north



Why a community advisory board?

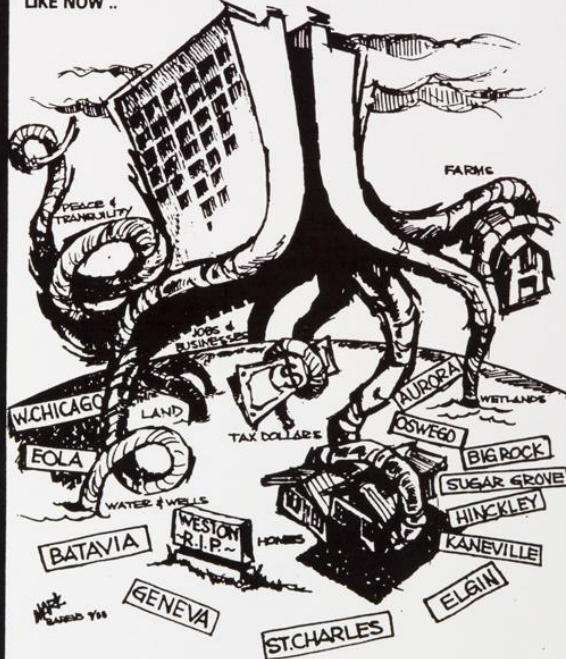


C.A.T.C.H. - ILLINOIS
 (CITIZENS AGAINST THE COLLIDER - HERE)

 THIS IS WHAT FERMILAB USED TO LOOK LIKE WHEN IT WAS A "GOOD NEIGHBOR." THAT IS, BEFORE IT WAS PROPOSED TO BECOME THE "INJECTOR" FOR THE 53-MILE SSC RING. NOW FERMILAB IS SAYING, ALONG WITH THE STATE AND FEDERAL GOVERNMENT ...

"I WANT YOUR LAND, WATER, WELLS, HOMES, FARMS, BUSINESSES, JOBS, TAX BASE, TAX DOLLARS, WETLANDS, AND YOUR PEACE AND TRANQUILITY. I WANT IT ALL AND I WANT IT NOW, AND IF YOU WILL NOT GIVE IT TO ME ... I WILL TAKE IT."



FERMILAB USED TO BE A GOOD NEIGHBOR, WHAT A SHAME ... WHAT A DISGRACE ... WHAT A DISAPPOINTMENT ... THIS IS WHAT IT LOOKS LIKE NOW ..



IF YOU WANT TO STOP THIS OBNOXIOUS INTRUSION UPON YOUR HOME, FAMILY AND ENVIRONMENT, THEN PLAN TO ATTEND THE FINAL DEPARTMENT OF ENERGY HEARINGS ON OCTOBER 6th & 7th AT WAUBONSIE VALLEY HIGH SCHOOL. THIS IS YOUR LAST CHANCE BEFORE THE DYNAMITING STARTS AND THE TRUCKS BEGIN TO ROLL!

"FERMILAB IS NO LONGER A GOOD NEIGHBOR"

C.A.T.C.H. - ILLINOIS
 P.O. BOX 104, WASCO, IL 60183
 (312) 584-4244

2004: First Community Task Force

- Local citizens
- How should Fermilab interact with the community on issues that affect both lab and neighbors?
- One recommendation: Form **NEW** dedicated ILC Task Force



Fermilab's fears about P4*

- Fermilab approached the original Community Task Force with trepidation.
 - Would the neighbors expect to decide scientific and technical questions? (No.)
 - Would they suspect Fermilab's motives (Yes, at first.)
 - Would CATCH participate? (Yes.)
 - Would their recommendations make sense? (Absolutely.)

ILC Citizens' Task Force

- Charge: Provide guidance and advice to Fermilab to ensure that community concerns and ideas are included in all public aspects of ILC planning and design.
- Report complete June 2008



Fermilab ILC Task Force



What Fermilab learned



- Public participation is different from community outreach and education.
- Decisions made with public involvement are better decisions, not just for the community but for Fermilab and for particle physics.
- ILC recommendations apply to ANY big science project.
- Public participation is key to Fermilab's future.

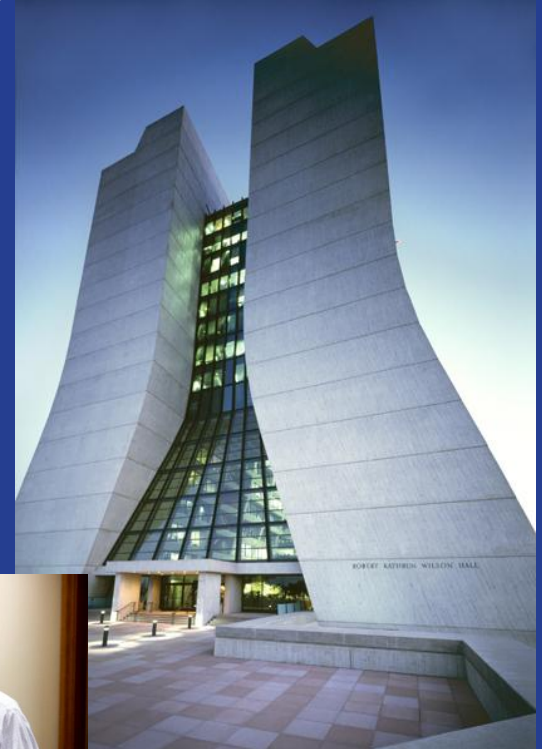
What Fermilab learned



- Don't try this alone.
- Worked with the Perspectives Group, public participation consultants.
- Consultant supports the group to make sure it has the resources it requires and that all voices are heard.

The Public and Big Science

- Citizens seldom have the opportunity to engage meaningfully in large science projects.
- Fermilab asks local citizens to participate in planning and decision-making.



You are a “notable outcome.”

- The Department of Energy supports the Community Advisory Board so strongly that they made it a “notable outcome,” for Fermilab—one of a small number of criteria on which they will evaluate the laboratory this year.



Fermilab's future

- As Fermilab explores the 21st-century frontiers of physics, we are glad that you, our neighbors, will share the adventure.
- We seek our community's advice and counsel on every public-related issue, from the effects of blasting on local residents to the future of US particle physics.

