Fermilab, 1965-1989: The Ring of the Frontier

American Physical Society
May 4, 2009
Adrienne W. Kolb
“Chain Reaction”
University of Chicago, December 2, 1942
Los Alamos, 1943
Science, the Endless Frontier

• "New frontiers of the mind are before us, and if they are pioneered with the same vision, boldness, and drive with which we have waged this war we can create a fuller and more fruitful employment and a fuller and more fruitful life."

-Franklin D. Roosevelt
November 17, 1944
Enrico Fermi’s vision – an Accelerator in Space, 1954
“… we stand today on the edge of a new frontier – the frontier of the 1960s, a frontier of unknown opportunities and perils, a frontier of unfilled hope and unfilled threats.

… the new frontier is here, whether we seek it or not. Beyond that frontier are uncharted areas of science and space, unsolved problems of peace and war, unconquered pockets of ignorance and prejudice, unanswered questions of poverty and surplus.

… but I believe that the times require imagination, and courage and perseverance. I am asking each of you to be pioneers towards that new frontier.”
The Next Frontier

- Berkeley?
- Brookhaven?
Illinois Proposal for 200 BeV Accelerator 1965
Glenn Seaborg, Chairman of the Atomic Energy Commission, Otto Kerner, Governor of Illinois, Arthur Theriault, President of the Village of Weston and Senator Paul Douglas, visiting the Weston site. April 1, 1966.
Report of the Panel on High Energy Accelerator Physics of the General Advisory Committee to the Atomic Energy Commission and the President’s Science Advisory Committee

April 26, 1963

1963 Ramsey Report

Norman F. Ramsey
President of URA
1966
AEC commissioners who made the decision to place the 200-BeV proton machine in Weston, Illinois, pose for this official AEC photograph. Left to right: Samuel M. Nabrit, Wilfred E. Johnson, Glenn T. Seaborg, General Manager Robert E. Hollingsworth, James T. Ramey and Gerald F. Tape.
HIGH ENERGY PHYSICS RESEARCH

HEARINGS BEFORE THE
SUBCOMMITTEE ON
RESEARCH, DEVELOPMENT, AND RADIATION
OF THE
JOINT COMMITTEE ON ATOMIC ENERGY
CONGRESS OF THE UNITED STATES
EIGHTY-NINTH CONGRESS
FIRST SESSION
ON
HIGH ENERGY PHYSICS RESEARCH

MARCH 2, 3, 4, AND 5, 1965

Printed for the use of the
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GEORGE D. AIKEN, Vermont

JACK ROSEN, Staff Consultant
A Real Maverick
Robert R. Wilson
First Director
1967-1978
Recruiting the Corps of Discovery
Telegram to:

Dr. Martin Luther King
Southern Christian Leadership Conference
334 Auburn Avenue N. E.
Atlanta, Georgia

with copy to:
Southern Christian Leadership Conference
366 East 47th Street
Chicago, Illinois

We scientists now designing the 200 BeV accelerator to be located at
Weston strongly support the struggle for open housing in Illinois. Science
has always progressed only through the free contribution of people of all
races and creeds. This is no less true today in America, and the full
success of this laboratory will depend on achieving conditions in Illinois
which will allow any scientist, regardless of race or creed, to participate
in this important project - a project which will contribute to a truly great
intellectual and cultural heritage in Illinois. We join you in wanting to
attain these great ends.

Signed: Robert Rathbun Wilson
Director, National Accelerator Laboratory
DuPage Shows Little Interest in Protest

DuPage county generally showed little interest last weekend in the first civil rights protest of any proportion to be held here.

The “tent-in” at Warrenville was held to object to location of the atomic energy commission’s new research laboratory at Weston without prior adoption of open housing legislation in Illinois. An estimated 250 marchers walked in the rain Saturday from Warrenville to Weston. There were about the same number of spectators.

Sheriff’s and state police made two arrests. Fred Catalino, 29, and Christopher Vldmjevich, 23, who gave their addresses as 1314 W. Ohio st., Chicago, will appear July 6 in DuPage county Magistrate’s court on charges of littering the highway.

Police said they caught the men, reported to be members of the American Bund party, climbing over a fence after posting and scattering anti-Negro literature at the camp site on the grounds of the Sisters of the Cenacle retreat house.

A car bearing a sign “Wallace for President” was diverted from the line of march.

Sheriff Lawrence Springborn assigned 75 uniformed men to the “tent-in” detail. There were 140 uniformed state policemen also on hand.

The Friday night “tent-in” was restricted to 10 campers by agreement between the sisters and the demonstration leaders.

Civil rights leaders the Rev. Martin Luther King and Al Raby both told audiences the federal government had failed to heed its own laws in moving ahead with Weston without fair housing guarantees.

A delegation of protestors was to have flown to Washington Tuesday to continue the Weston protest.
1967 Politics

Illinois House OKs Open Housing Bill After Dirksen Acts

Dr. Martin Luther King Jr. and other civil rights leaders at a press conference in the 1960s.
"It will be the policy of the National Accelerator Laboratory to seek the achievement of its scientific goals within a framework of equal employment opportunity and of a deep dedication to the fundamental tenets of human rights and dignity."

Robert Rathbun Wilson, Director, and Edwin L. Goldwasser, Deputy Director
Aerial view of NAL Village, 1968
Robert R. Wilson and Glenn Seaborg, AEC Chairman, at the NAL Groundbreaking, December 1, 1968
Transferring the Site to Atomic Energy Commission
April 1969

Goldwasser and Ramsey with Governors Shapiro, Ogilvie, and Kerner
Dr. Wilson: It only has to do with the respect with which we regard one another, the dignity of men, our love of culture. It has to do with those things. It has to do with, are we good painters, good sculptors, great poets? I mean all the things that we really venerate and honor in our country and are patriotic about. It has nothing to do directly with defending our country except to help make it worth defending.
Edwin Goldwasser and Robert Wilson at the controls of the Main Ring
Wilson’s vision of the Doubler, 1971
Early experimenters
The Trustees and Officers of the Universities Research Association and the Director and Staff of the National Accelerator Laboratory cordially invite you to attend the Dedication of the Laboratory which, on this occasion, will be named the Fermi National Accelerator Laboratory.

May 11, 1974
12:00 Noon  Reception and Lunch in Central Lab
2:00       Laboratory Tour
3:30       Dedication Ceremony

R.s.v.p.
Mrs. Dorothy Carlson, National Accelerator Laboratory,
Batavia, Illinois 60510, Telephone...
Discovery of Bottom Quark, June 1977
Inter-Laboratory Competition 1975-1983

The Energy Doubler

400 x 400 GeV

ISA-BELLE

A PROTON-PROTON COLLIDING BEAM FACILITY

BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK 11973
"Acqua Alle Funi"
1978
Leon M. Lederman
Fermilab Director
1978-1989
The Two-Neutrino Experiment
Energy Doubler/Energy Saver
The Energy Saver reached its primary design goal: accelerating protons to 500 GeV in a ring of superconducting magnets. In fact, the energy was 512 GeV -- a new world record for accelerators. The record was set at 3:37 p.m., Sunday, July 3, 1983, only 13 hours after the first serious attempt to accelerate beam above the injection energy of 150 GeV.
Construction of the Antiproton Source, 1983
Dedication of the Energy Doubler/Saver
April 28, 1984

Energy Doubler/Saver
512 GeV
July 3, 1983
First Collisions
October 13, 1985

Dedication of the Tevatron Collider
October 11, 1985
CDF and DZero
John Peoples and Leon Lederman
April 21, 1989
Fermilab…still at the frontier
The History and Archives Project offers guided access into the laboratory's historical

The History and Archives Project website can be found at

http://history.fnal.gov/

- Announcement of Renaming NAL
- Dedication of Laboratory
- Accelerator History
  - Linac
  - Booster
  - Main Ring
  - Beam Controls
  - Main Ring transition to Energy Doubler/Saver
- Fixed Target Program
  - Internal Target
  - Meson
  - Neutrino
  - Proton
- Early Computing