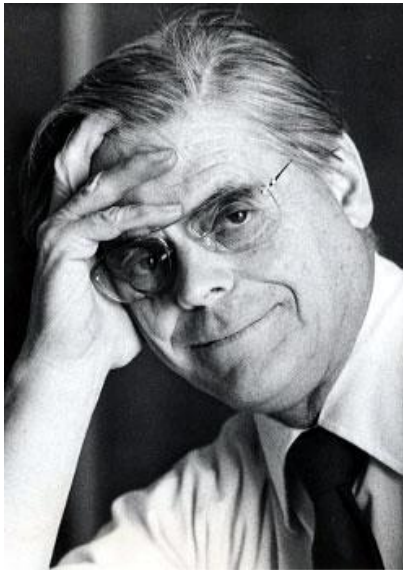


25 years and counting

**Start of FNAL Collider
and
Early CDF**



12-17-2010

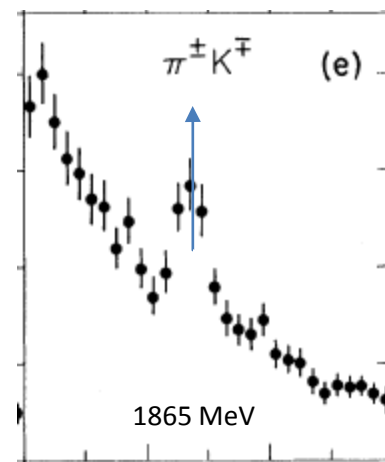
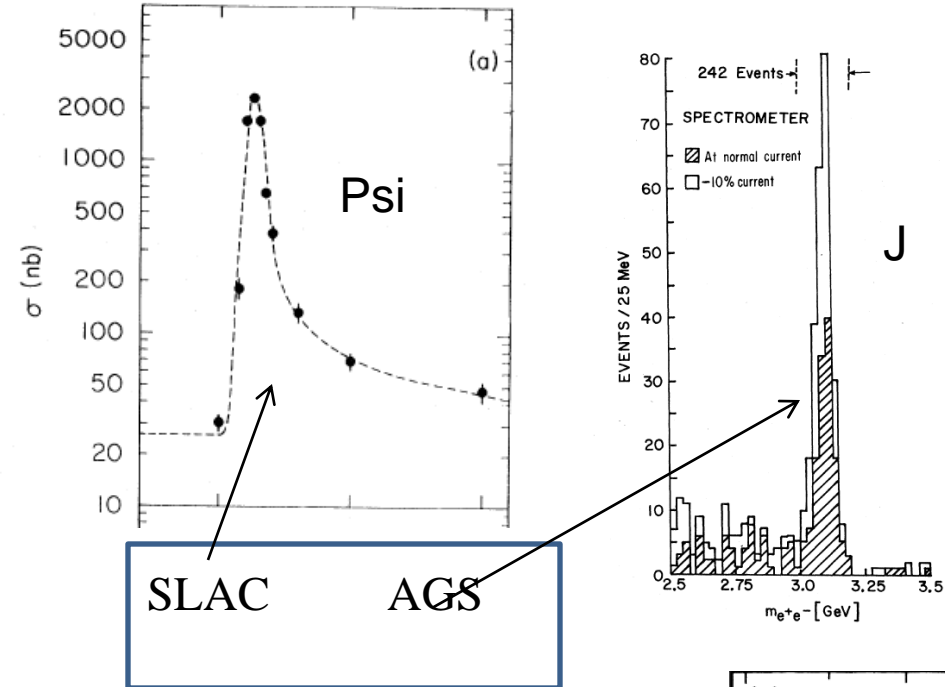
Alvin Tollestrup



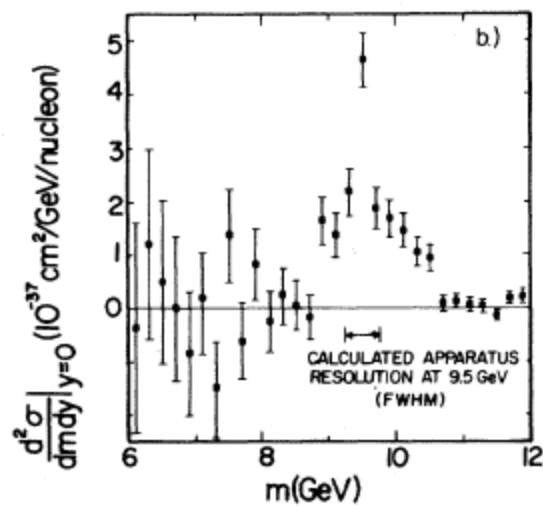
The U. S. Laboratories 1970-1995

Foundations of the Standard Model being established and new technology becoming available

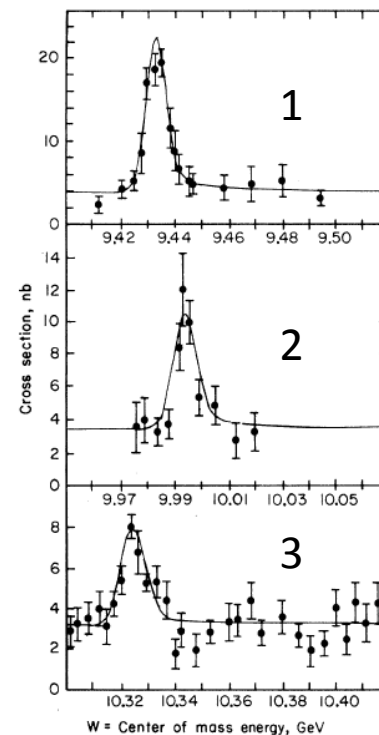
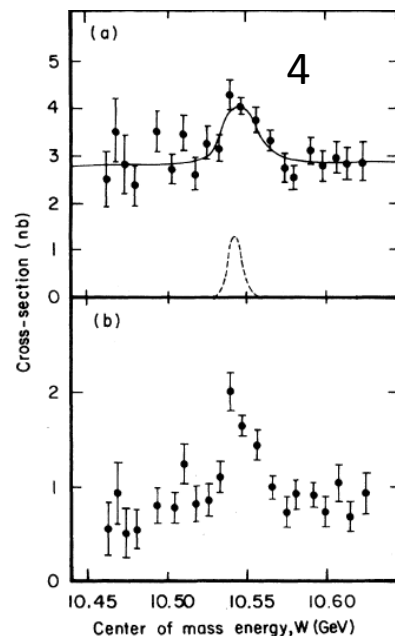
1. Exciting period: tau, QUARKS, charm, beauty, gluon, neutral currents, W, Z.
 - Stochastic cooling
 - Electron cooling
 - Electron colliders
2. NbTi superconductor raises possibility of dipoles with $B > 2T$.
 - ESCAR test ring at LBNL
 - ISABELLE at BNL
 - ENERGY DOUBLER / SAVER at FNAL
3. SCRF being developed at Cornell and many other places.



Bare Charm SPEAR 1976

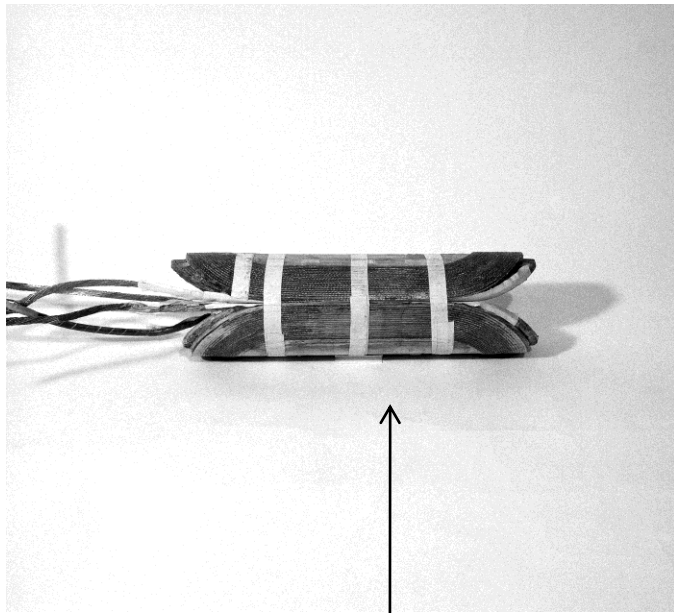


CLEO 1980
Y 1, 2, 3, 4



Y FNAL 1977

Jan. 1976	Small Colliding Beams meeting. Ring moves under MR
Feb. 1978	Wilson Resigns. Leon becomes acting Director in Oct 1978
Nov. 11, 1978	Armistice Day Shoot out. Pbar P option chosen
July 1979	Tevatron Ring authorized. US-Japan Accord signed. Italians & Japan join CDF.
July 1982	CDF and Pbar source authorized
July 4, 1983	First beam in Tevatron
1984	D0 Approved by DOE
Oct 17, 1985	First collisions at Fermilab
1988-1989	First real physics run for CDF
April 1992	D0 first run



Model Magnet

1976
Big Dreams!



Beams on the ceiling

After Jan. 1976 colliding beam meeting

THE US_JAPAN AGREEMENT

1978-1979

May 1978 Summit meeting. Prime Minister Fukuda and Pres. J. Carter.

May 2, 1979 the “Agreement” was signed by Schlesinger, Sec. Energy and Sonoda, Minister of Foreign Affairs. Covered a long list of items. HEP not explicitly mentioned!

But the HEP community had been very busy! Even in late 1978 a plan was being discussed for cooperation between US and Japan HEP communities.

May 28, 1979 Meeting in DC to discuss the 1979 effort and layout the 1980 plan.

U.S.

JAPAN

Birge	Sandweiss	Nishikawa
Lederman	Hildebrand	Fujii
Ozaki	Leiss	Kitgaki
Pief	Wallenmeyer	Ueki
Rau	Metzler	Nagasue

TEVATRON AUTHORIZED JULY 1979



...Prof. Kunitaka Kondo (second from right) visits with (L-R) Hans Jensen, Alvin V. Tollestrup and Ryuji Yamada, all with the Fermilab Colliding Detector Facility. On the table before them is a model of the colliding detector...

Kuni Kondo brought Japan into CDF.

1980: Giorgio Bellettini brought the Italians into CDF

1981: Conceptual Design Document

**1982, July 1: CDF Construction Begins!
Start construction of $p\bar{p}$ source.**

Fermi News: Dec 1979

CDF benefited enormously from the diversity of the collaboration. The Universities, Japan and Italy made unique contributions.

The PBAR Source and CDF were authorized July 1982.

1981



1982 Note overpass



John: CZAR of source and collision hall.

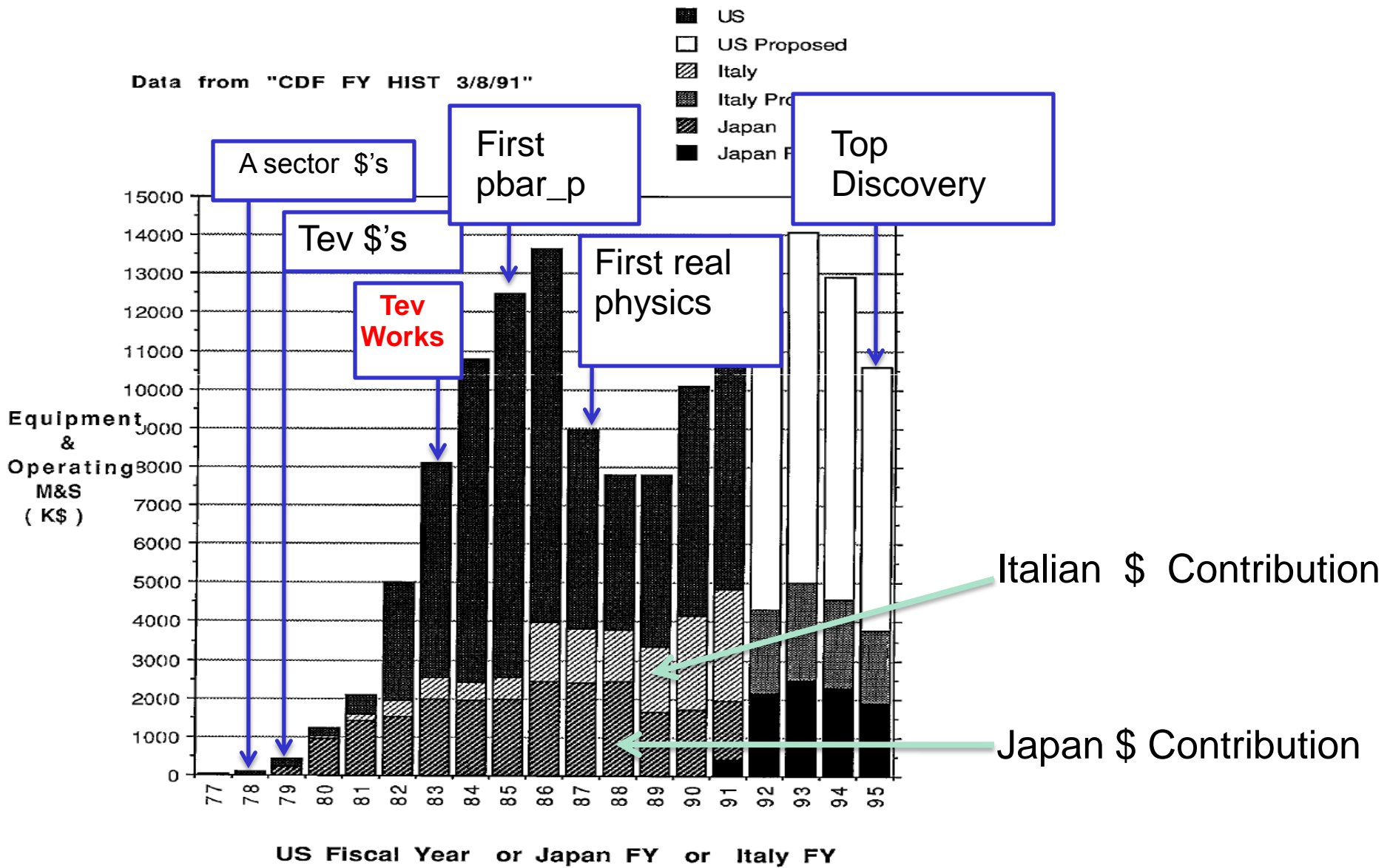
Roy and Dennis for convincing the DOE that we were real and to Dennis for even making it so !!



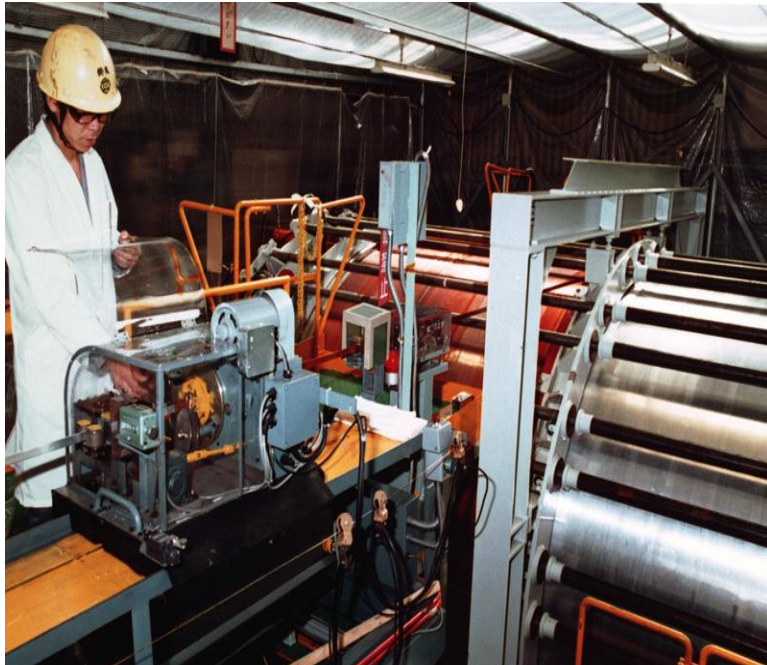
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CDF Solenoid Hitachi 1983



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1983



1982



1982

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1982

Alvin Tollestrup



1983

11



Yoke and
coil
1984

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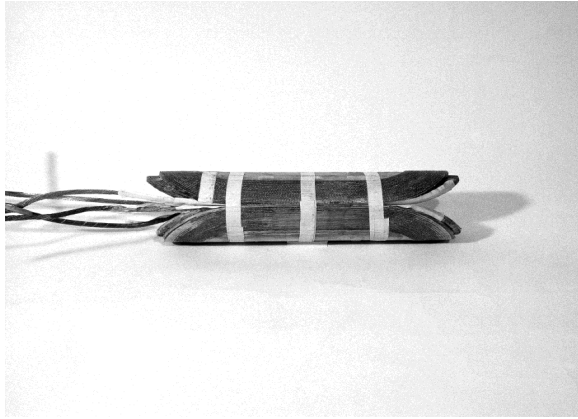


Coil installed 1984



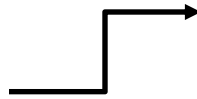
12

Some Pictures



1976 model magnet

1983 Real



July 3 1983
It Works!

1976: Director winding model magnet



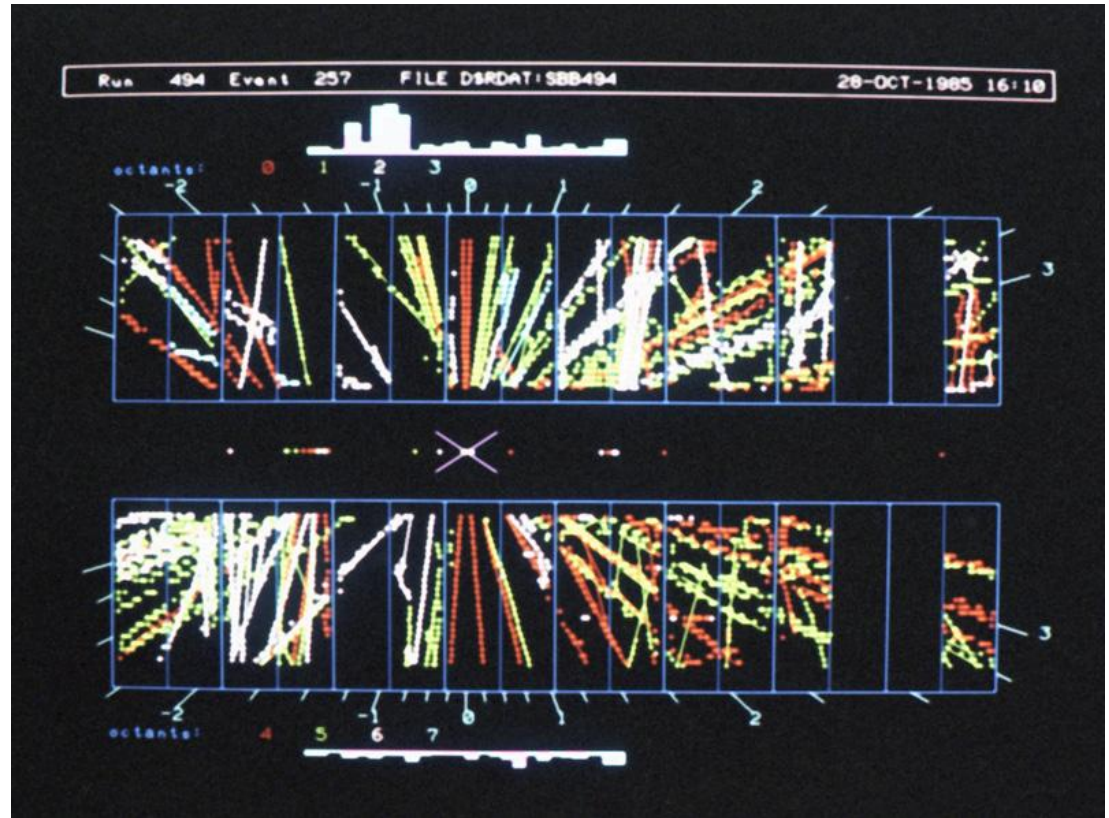
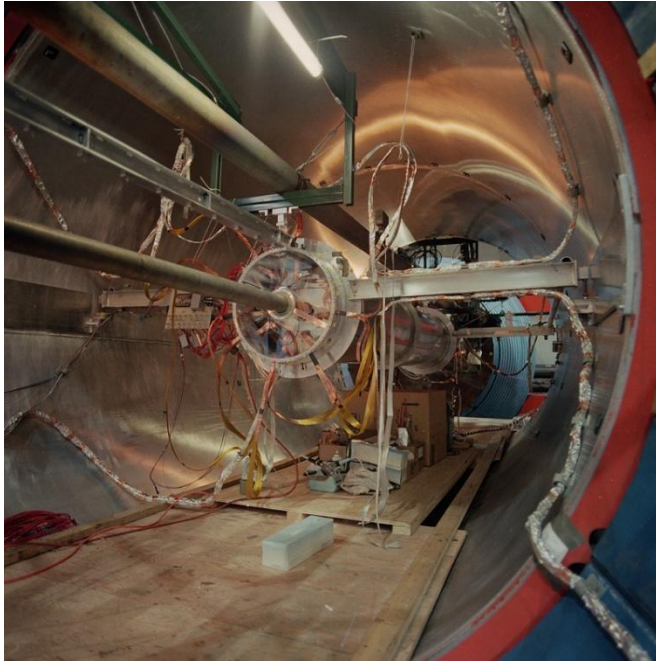
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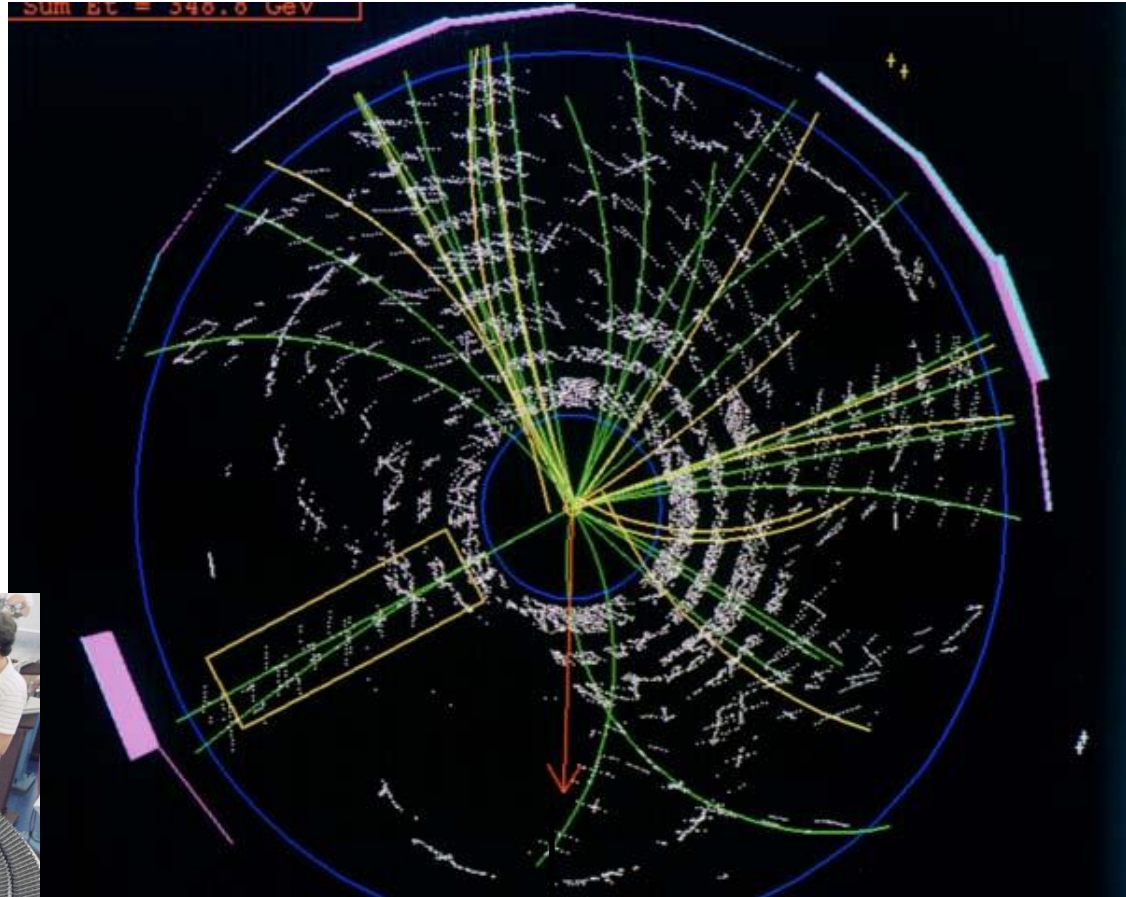
First Collisions: October 13, 1985



“First Collisions” ~20 events!
1987: 29 nb-1 . First physics!

CDF Central Tracker

1985



1985

1987

Thanks to Richard Kadel

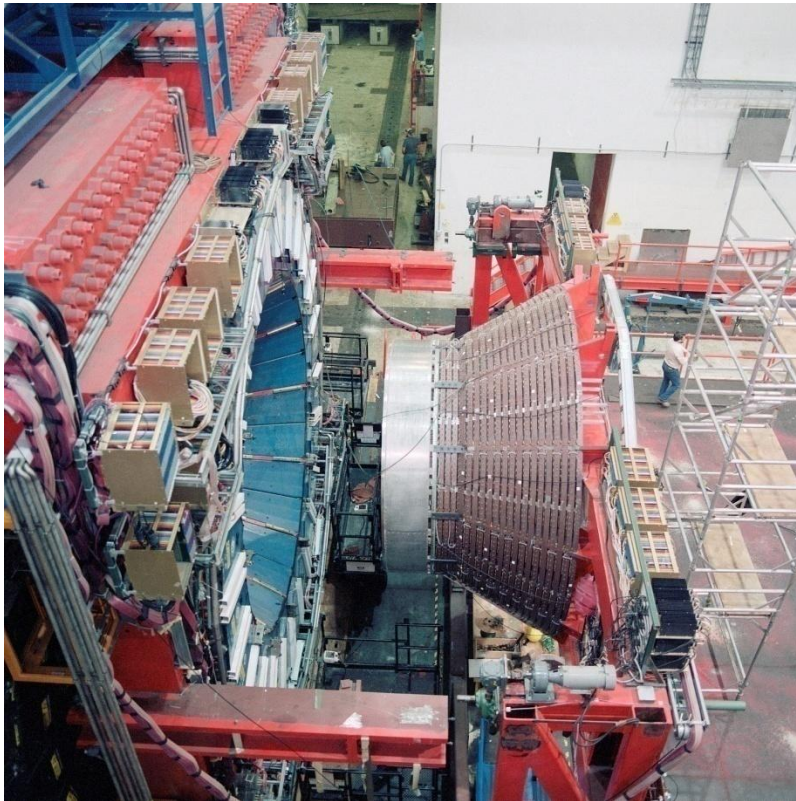
12-17-2010

Alvin Tollestrup

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1988-89 Run: Fully functional detector. 4 pb⁻¹

Detector complete as described in
1981 Design Report.



W & Z mass, $\sin 2q_w$
Limits for top mass
Start on B physics
QCD physics
Defined path for upgrade

VIEW LETTERS

14 AUGUST 1989

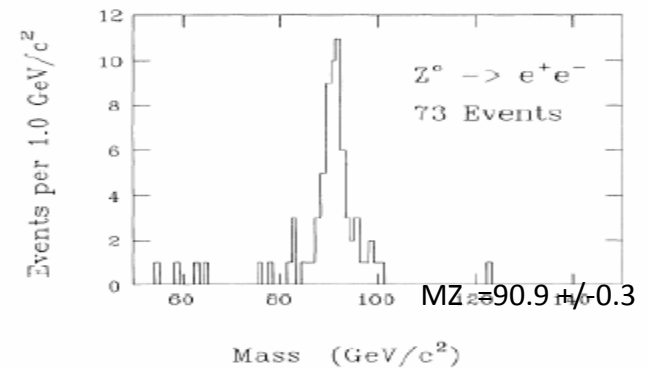


FIG. 3. The invariant-mass distribution for $Z^0 \rightarrow e^+e^-$ candidates using the information from the calorimeter.

We discovered the
accuracy of the CTC

Some Comments

1. The Tevatron colliders have played a major role in defining the reach of hadron colliders:
 - Precision measurements with tracking chambers and calorimeters in very difficult conditions.
 - Silicon Vertex detectors close to IP.
 - B, C physics.
 - Defined the science of triggering.
 - Established the analysis technology.
 - Populating both CMS and ATLAS.
2. The Tevatron has played a key role in developing machine technology including the care and feeding of SC magnets as well as collider technology.
3. I'm sure there is more to come!

Learning to pound Rice

Cultural exchange



Japanese Rice Pounding Party
New Years 1993?