

# DØ International participation

*H. Weerts*

*Argonne National Lab. &  
Previously Dzero (1983-2004)*

# Some history

It has been a  
long time....

## Timeline of Dzero

1983 Start Dzero-- first  
meeting at SUNY Stony  
Brook

.....

1991 Detector complete Start  
Run I

1997 End Run I

Major upgrade of  
Tevatron complex &  
detectors--- more physics

2001 Start Run II

.....

2011 End of Run II/Tevatron

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- .....
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## Evolution of Dzero collaboration

13 US institutions + 1 France;  
89 collaborators

..... a US collaboration

New collaboration after Top discovery-- growing

Create governance document

49 institutions; 427 collaborators; 19 non-US

An international collaboration at Fermilab

.....

76 institutions; 39 non-US

Migration to LHC starts

=> People follow physics potential

# 1984 Design report

## 14 Institutions

## 89 members

Brookhaven National Laboratory  
Brown University  
Columbia University  
Fermi National Accelerator Laboratory  
Florida State University  
Lawrence Berkeley National Laboratory  
University of Maryland  
Michigan State University  
Northwestern University  
University of Pennsylvania  
DAPNIA/SPP-CE Saclay, Gif-sur-Yvette, France ?  
State University of New York, Stony Brook  
Virginia Polytechnic Institute

DO more international '84 → '97

# 1997: 49 Institutions

## 427 members

Universidad de los Andes, Bogota, Colombia  
University of Arizona  
Boston University  
Brookhaven National Laboratory  
Brown University  
Universidad de Buenos Aires, Buenos Aires, Argentina  
University of California, Davis  
University of California, Irvine  
University of California, Riverside  
LAFEX, Centro Brasileiro de Pesquisas Fisicas,  
Rio de Janeiro, Brazil  
CINVESTAV, Mexico City, Mexico  
Columbia University  
Delhi University, Delhi, India  
JINR Dubna, Russia  
Fermi National Accelerator Laboratory  
Florida State University  
University of Hawaii  
University of Illinois at Chicago  
Indiana University  
Iowa State University  
Korea University, Seoul, Korea  
Kyungshung University, Pusan, Korea  
Institute of Nuclear Physics, Krakow, Poland  
Lawrence Berkeley National Laboratory  
University of California, Berkeley  
University of Maryland  
University of Michigan  
Michigan State University  
Institute for Theoretical and Experimental Physics,  
Moscow, Russia  
Moscow State University, Russia  
University of Nebraska

New York University  
Northeastern University  
Northern Illinois University  
Northwestern University  
University of Notre Dame  
University of Oklahoma

Panjab University, Chandigarh, India  
Petersburg Nuclear Physics Institute, St. Petersburg, Russia  
Institute for High Energy Physics, Protvino, Russia

Purdue University  
Rice University

Universidade Estadual do Rio de Janeiro, Brazil

University of Rochester

DAPNIA/SPP-CE Saclay, Gif-sur-Yvette, France

Seoul National University, Seoul, Korea

State University of New York, Stony Brook

Tata Institute of Fundamental Research, Mumbai, India

University of Texas, Arlington  
Texas A&M University

DoE Review  
March 1997

One institution from France so far....

Continue to grow..... Especially when Run II became a reality

# 2012- stable for a long time; only growth because people move



AZ U. of Arizona  
 CA U. of California, Riverside  
 FL Florida State U.  
 IL Fermilab  
 U. of Illinois, Chicago  
 Northern Illinois U.  
 Northwestern U.  
 IN Indiana U.  
 U. of Notre Dame  
 Purdue U. Calumet  
 IA Iowa State U.  
 KS U. of Kansas  
 Kansas State U.  
 LA Louisiana Tech U.  
 MD U. of Maryland  
 MA Boston U.  
 Northeastern U.  
 MI U. of Michigan  
 Michigan State U.  
 MS U. of Mississippi  
 NE U. of Nebraska  
 NJ Princeton U.  
 Rutgers U.  
 NY Brookhaven Nat. Lab.  
 Columbia U.  
 SUNY, Buffalo  
 SUNY, Stony Brook  
 U. of Rochester  
 OK Langston U.  
 U. of Oklahoma  
 Oklahoma State U.  
 RI Brown U.  
 TX Southern Methodist U.  
 U. of Texas at Arlington  
 Rice U.  
 VA U. of Virginia  
 WA U. of Washington



LAFEX, CBPF, Rio de Janeiro  
 State U. do Rio de Janeiro  
 U. Federal do ABC, São Paulo



U. of Science and Technology  
 of China, Hefei



U. de los Andes, Bogotá



Charles U., Prague  
 Czech Tech. U., Prague  
 Academy of Sciences, Prague



U. San Francisco de Quito



LPC, Clermont-Ferrand  
 ISN, IN2P3, Grenoble  
 CPPM, IN2P3, Marseille  
 LAL, IN2P3, Orsay  
 LPNHE, IN2P3, Paris  
 DAPNIA/SPP, CEA, Saclay  
 IReS, Strasbourg  
 IPN, IN2P3, Villeurbanne



RWTH Aachen  
 Bonn U.  
 Freiburg U.  
 Göttingen U.  
 Mainz U.  
 LMU München  
 Wuppertal U.



Panjab U. Chandigarh  
 Delhi U., Delhi  
 Tata Institute, Mumbai

## The DØ Collaboration



University College, Dublin



KDL, Korea U., Seoul



CINVESTAV, Mexico City



FOM-NIKHEF, Amsterdam  
 U. of Amsterdam / NIKHEF  
 U. of Nijmegen / NIKHEF



JINR, Dubna  
 ITEP, Moscow  
 Moscow State U.  
 IHEP, Protvino  
 PNPI, St. Petersburg



ICREA/IFAE, U. de Barcelona



Stockholm U.  
 Uppsala U.



National U. of Kiev



Imperial College London  
 Lancaster U.  
 U. of Manchester

Ann Heinson, UC Riverside

Some concerted effort to increase collaboration  
Paris, March 1997

DØ France

**DØ Meeting in Paris: Tentative Agenda**

**Monday, March 24, 1997**

9:30 -- 10:00	Overview of Workshop; Tevatron & Detector upgrades	<i>H. Montgomery</i>
10:00 -- 11:00	DZero Upgrade	<i>M. Tuts</i>
11:00 -- 12:00	Physics Program in Run II	<i>P. Grannis</i>
12:00 -- 12:45	Possibilities for Participation, Overview	<i>H. Weerts</i>
12:45 -- 14:00	Lunch	
14:00 -- 14:45	Calorimeter Upgrade, Status, Opportunities	<i>D. Schamberger</i>
14:45 -- 16:30	adjourn for Veneziano talk	
16:45 -- 17:30	Trigger Upgrade, Status, Opportunities.	<i>J. Blazey</i>
17:30 -- 18:15	Impact Parameter Trigger, Status, Opportunities.	<i>H. Wahl</i>
19:00	Working Dinner	

**Tuesday, March 25, 1997**

9:30 -- 10:30	Online/Offline/Analysis Computing, Status, Opportunities	<i>W. Merritt</i>
10:30 -- 11:15	Run I Thesis Opportunities	<i>M. Strovink</i>
11:15 -- 12:00	Concluding Remarks	<i>H. Montgomery</i>
12:00 -- 13:30	Lunch	
13:30 -- 15:30	Working Meeting on agreeing conclusions.	
16:00 --	Discussion reservee aux groupe francais; reaction a chaud, strategie a suivre, etc.	

Outline status of DØ; possibilities for collaboration, address any concerns ( Run I Theses)

Attendance ~ 30 people incl. DØ people.

New DØ France institutions (Jan. 1998):

Officially  
in DØ

Add the new IN2P3 institutions from France.

The IN2P3 institutions are LAL Orsay, CPPM Marseille, ISN  
Grenoble and Paris VI-VII.

The contact people are:

Marseille

Orsay

Paris VI-VII

Took ~ 1year

Feb 1999: Add Grenoble,

April 2000: Add Lyon,

2001: Add Strasbourg,

Interesting how IN2P3 joined DØ.

(Separate talk about contributions)

Series of seminars at: Netherlands, Germany, Sweden, Belgium and UK.

People are interested especially:

Physics potential

Need results for people's career- young people at start

By 2001:

Multiple groups from above countries joined-----

# non-US groups > # US groups

We encouraged them to be organized by "country" i.e. pull resources

Many people who took jump, now have staff/faculty positions

## LBNE Questions asked

1. The collaboration rules specific to international partnership
2. The agreements with international partners and how they were reached, who participated in these agreements,
3. What was the actual implementation of the agreements ?
4. What changes had to be made to agreements during implementation.
5. The relationship between the agencies, laboratories, and collaboration, etc.

## LBNE Questions asked-- answers

### 1. The collaboration rules specific to international partnership

There were no specific rules. Each institution ( US or non - US judged on proposed contribution to Dzero. Follow collaboration procedures.

### 2. The agreements with international partners and how they were reached, who participated in these agreements,

This was done through institutional/individual contacts, but in the end the spokespeople became and were involved  
Plus MoUs were signed with all non-US groups to put basic principles in writing .

### 3. What was the actual implementation of the agreements ?

Had MoUs during Run II specifying participation in running, computing and analysis and followed Dzero governance written procedures.

## LBNE Questions asked-- answers

### 4. What changes had to be made to agreements during implementation.

Not quite sure here. When needed MoUs were updated. Governance and other documents ( authorship rules) were/are "living" documents i.e. they are updated as needed.

### 5. The relationship between the agencies, laboratories, and collaboration, etc.

Dzero international relations remained very informal during Run II; no real contracts until Dzero asked for contributions to operations.

Finance committee never brought large amounts of actual funding.

All aspects handles through spokes -- agencies & NSF, DOE ( keep them up to date and informed)

This was very different when "Upgrade" was a project. More formal through project management.

The End