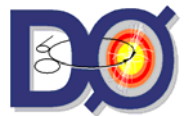


Status of DØ

John Womersley

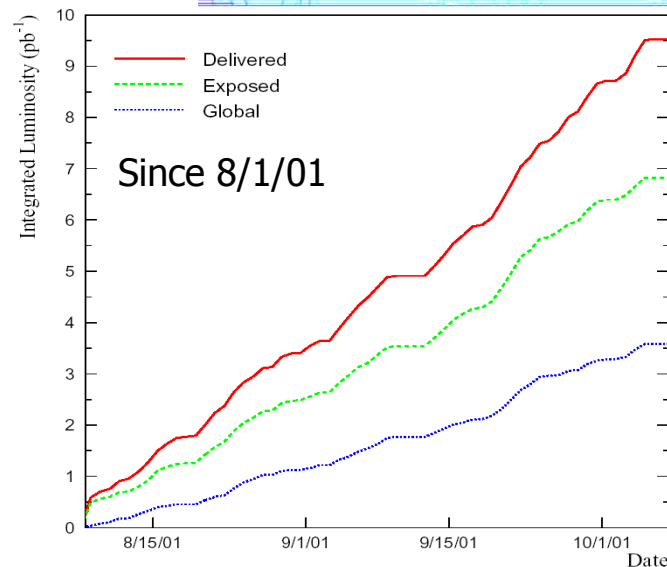
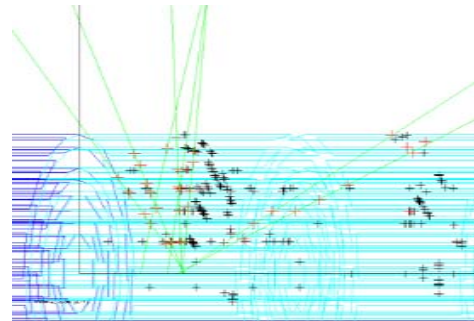
DØ Experiment Department
Fermi National Accelerator Laboratory, Batavia, Illinois

<http://www-d0.fnal.gov/~womersle/womersle.html>



Run 2 so far

- **January 26**
 - Rolled detector into collision hall
- **March 1**
 - official start of Run 2
- **April 3**
 - first collisions
- **early June**
 - consistent 36×36 bunch running
- **August-September**
 - take data for commissioning, timing, improve DAQ
- **October 8**
 - start six week shutdown
 - installation of fiber tracker electronics
- **November 17**
 - run resumes

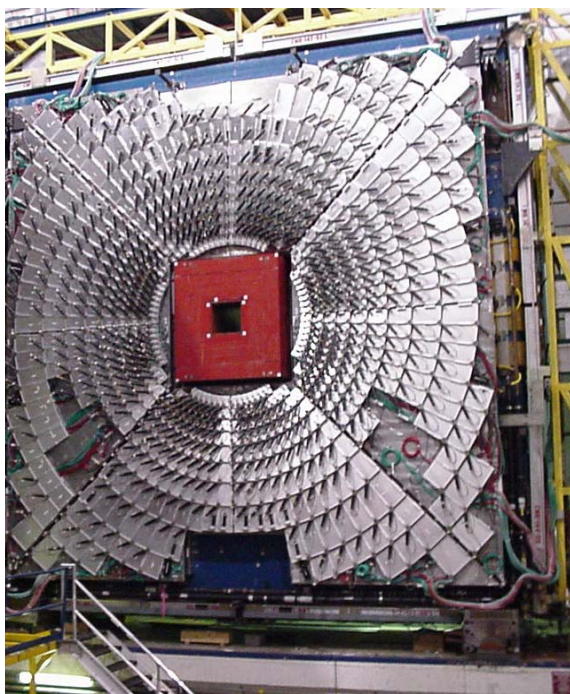
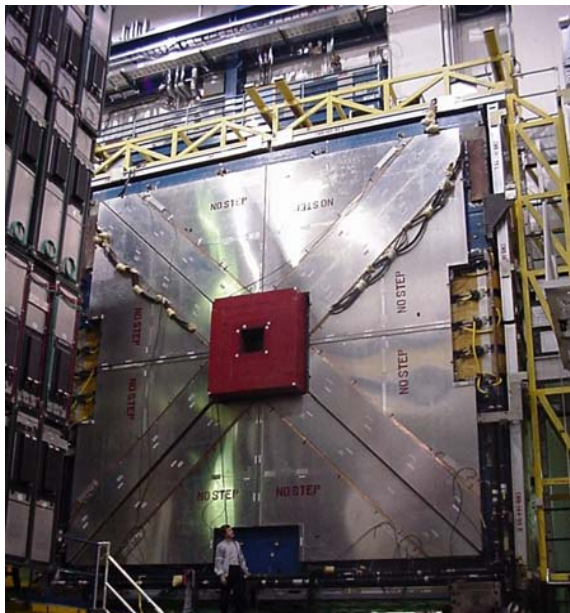


**9.5 pb⁻¹
delivered**

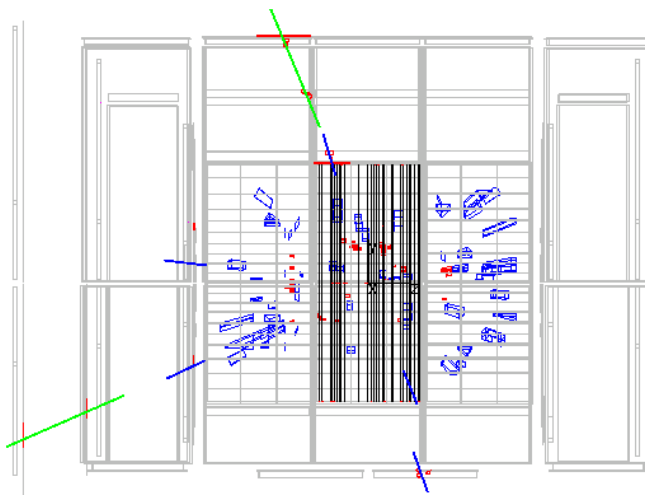
**6.8 pb⁻¹
recorded**

**3.5 pb⁻¹
physics
running
8M events**



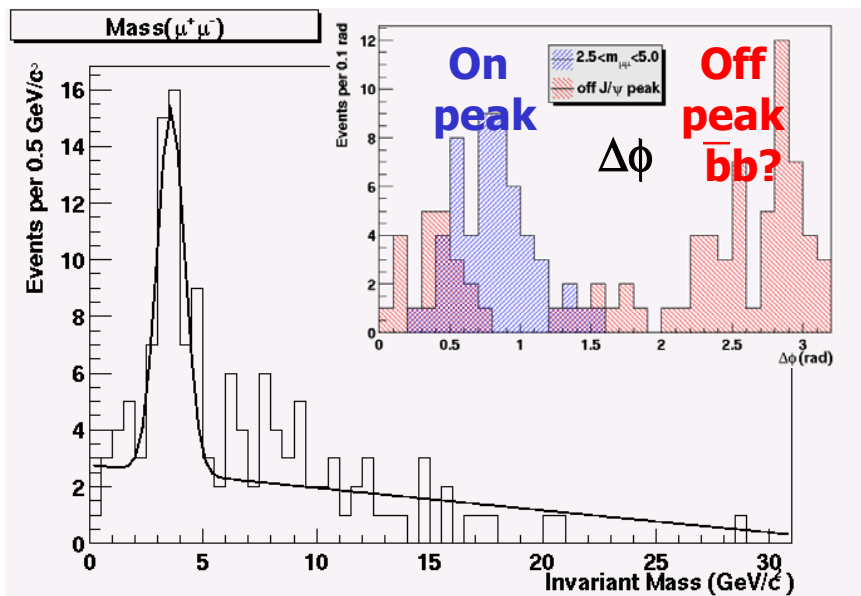


Muon System



Z + jet candidate:
two muons with
hits in drift tubes
and scintillator
detectors

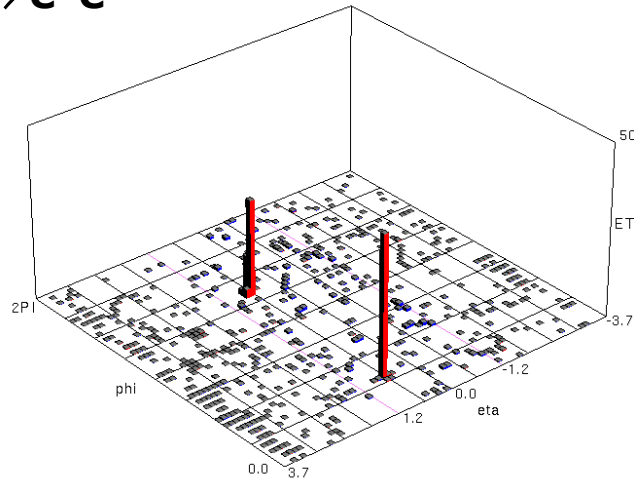
$$M_{\mu\mu} = 55 \text{ GeV}$$



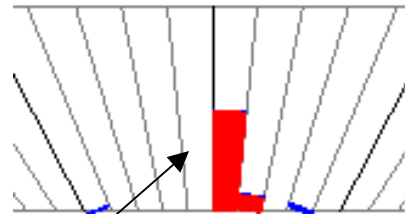
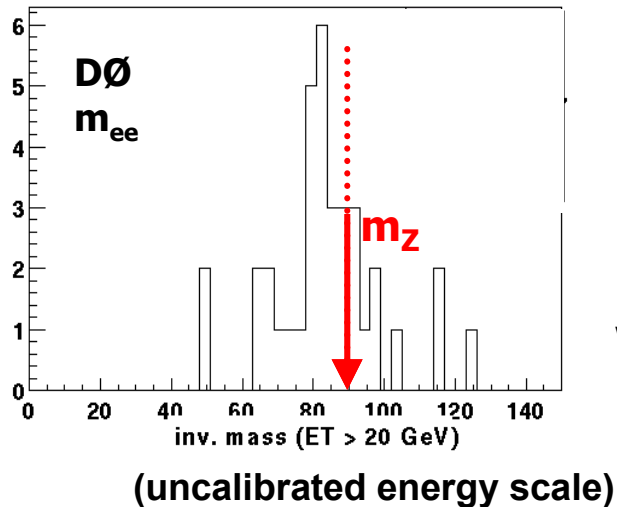
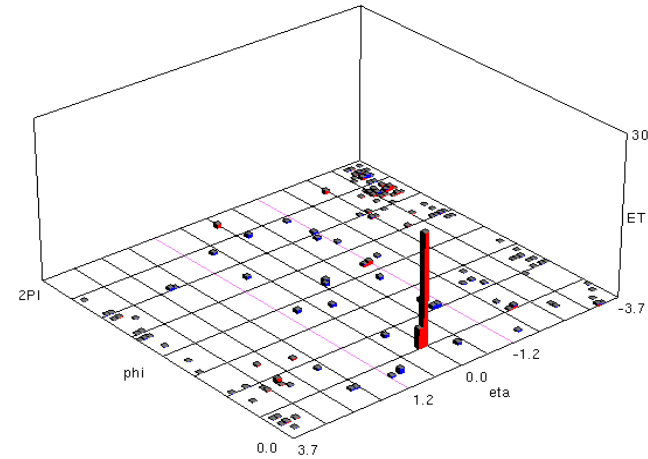
**J/ $\psi \rightarrow \mu^+\mu^-$
signal:
dimuons
reconstructed
in the forward
region**

Calorimeter

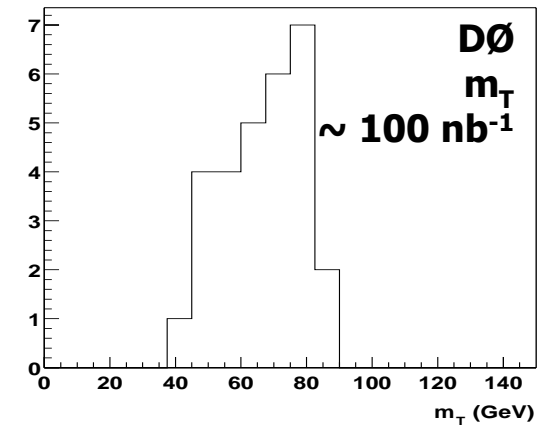
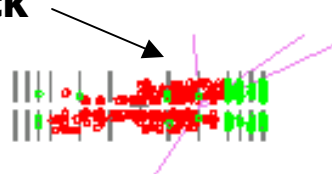
$Z \rightarrow e^+e^-$



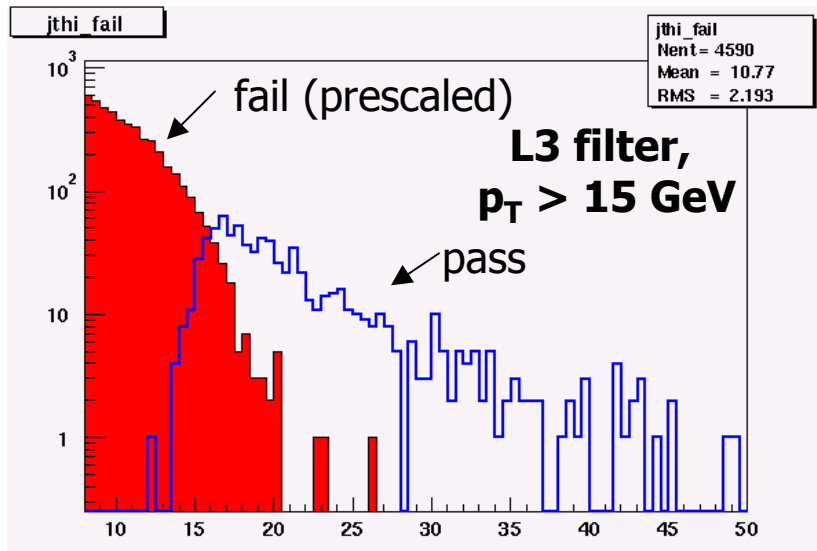
$W \rightarrow e\nu$



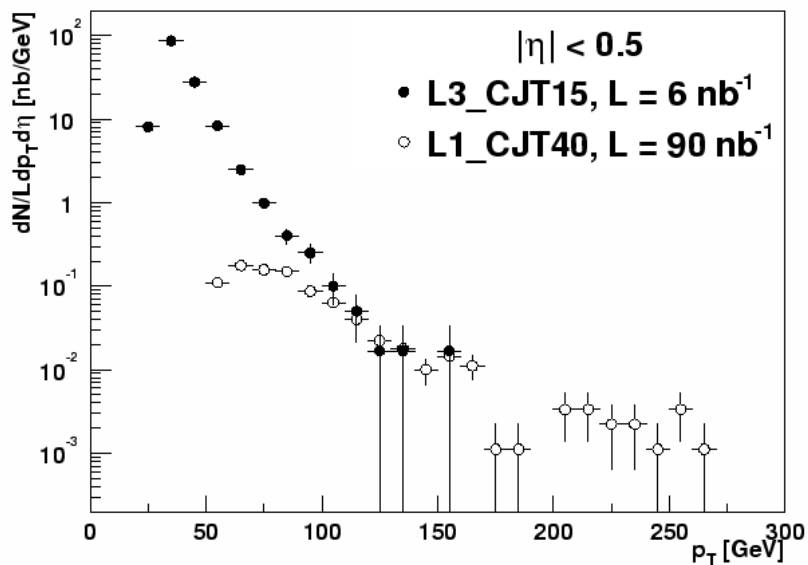
EM cluster
with track



Jets



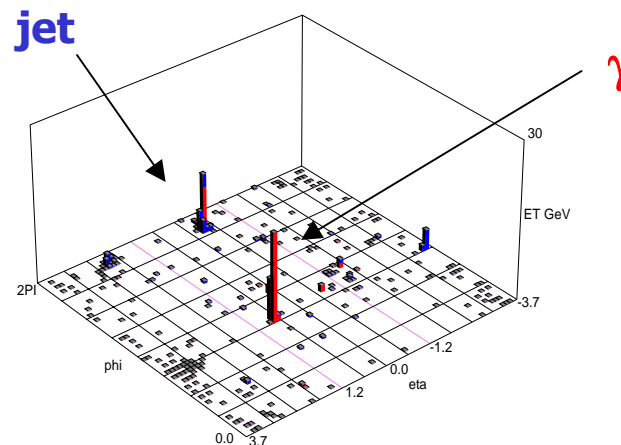
Jet cross section



John Womersley

Gamma + Jet Candidate

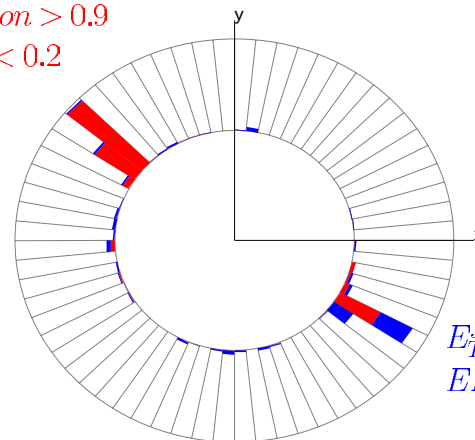
Run 128309 Event 256324



γ candidate

$E_T^\gamma = 27 \text{ GeV}$,
 $EM \text{ fraction} > 0.9$
 $Isolation < 0.2$

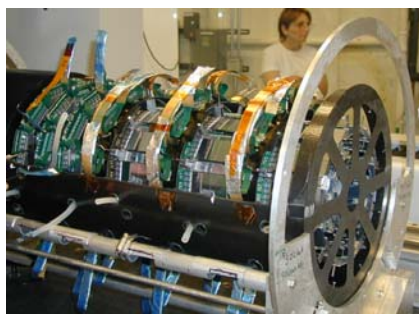
This type of event is used to derive the jet energy calibration



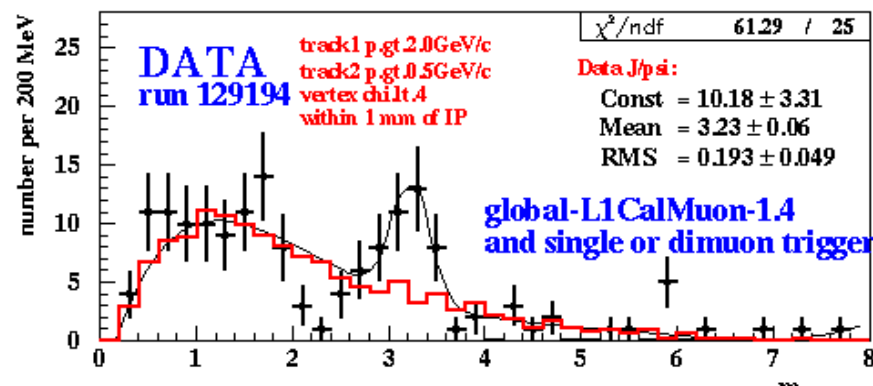
DØ



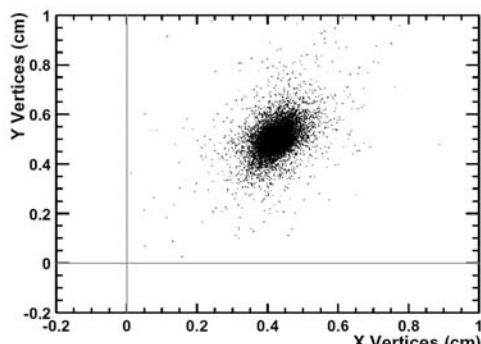
Silicon Tracker (SMT)



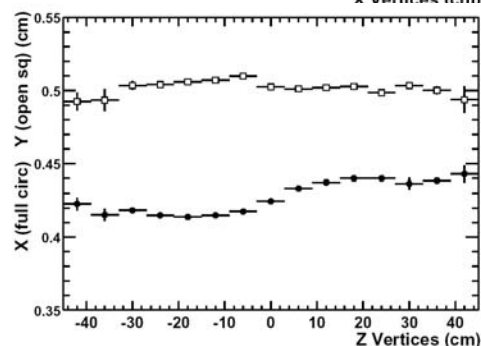
**95% of
SMT
channels
will be
working
after
shutdown**



J/ ψ signal from silicon tracking

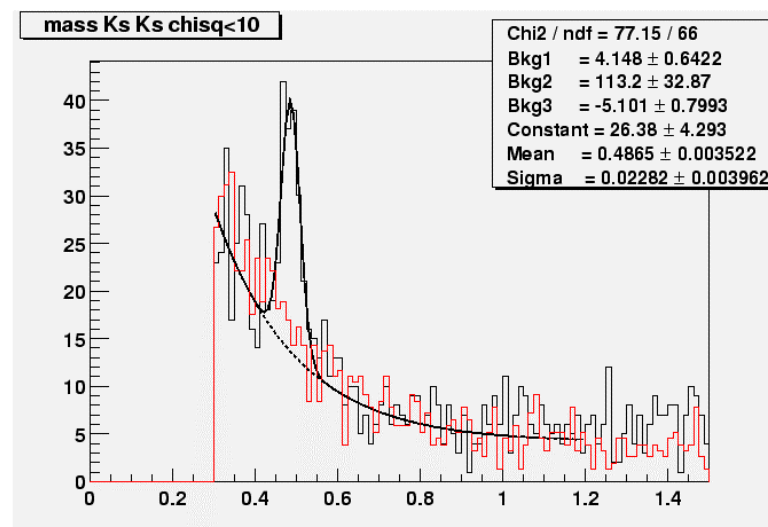


**Reconstructed
Primary vertex
X vs. Y**



X, Y vs. Z

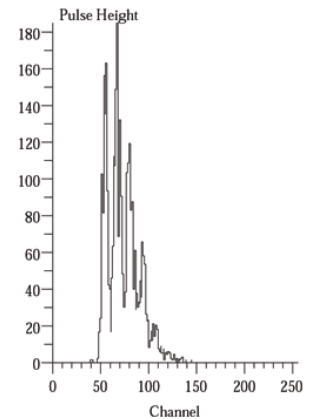
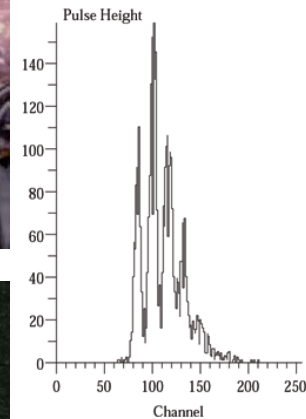
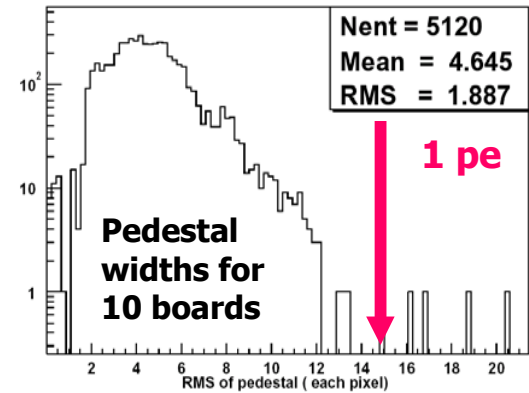
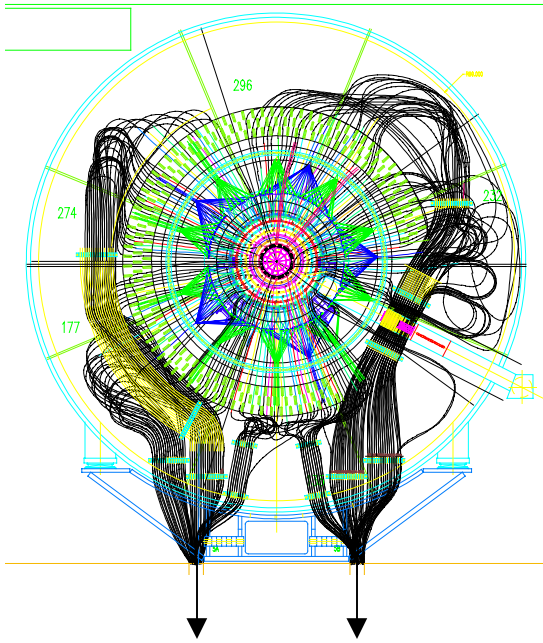
**→ we moved the detector
by 4mm x and 5mm y**



K⁰ signal from silicon tracking



Fiber tracker readout

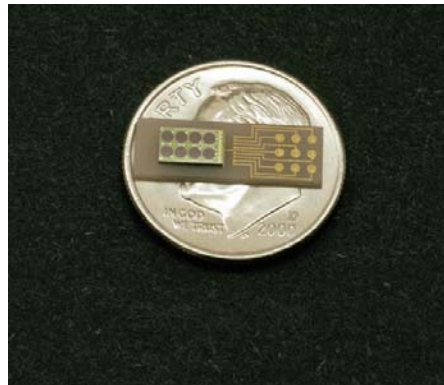


**See photoelectron peaks
in 43 final boards in DØ**
1 pe \sim 7 fC
1 MIP \sim 8 pe

**Clear Fiber Waveguides
carry the signals to VLPC's
in cryostat under detector**

**Central readout uses 166 AFE
boards**

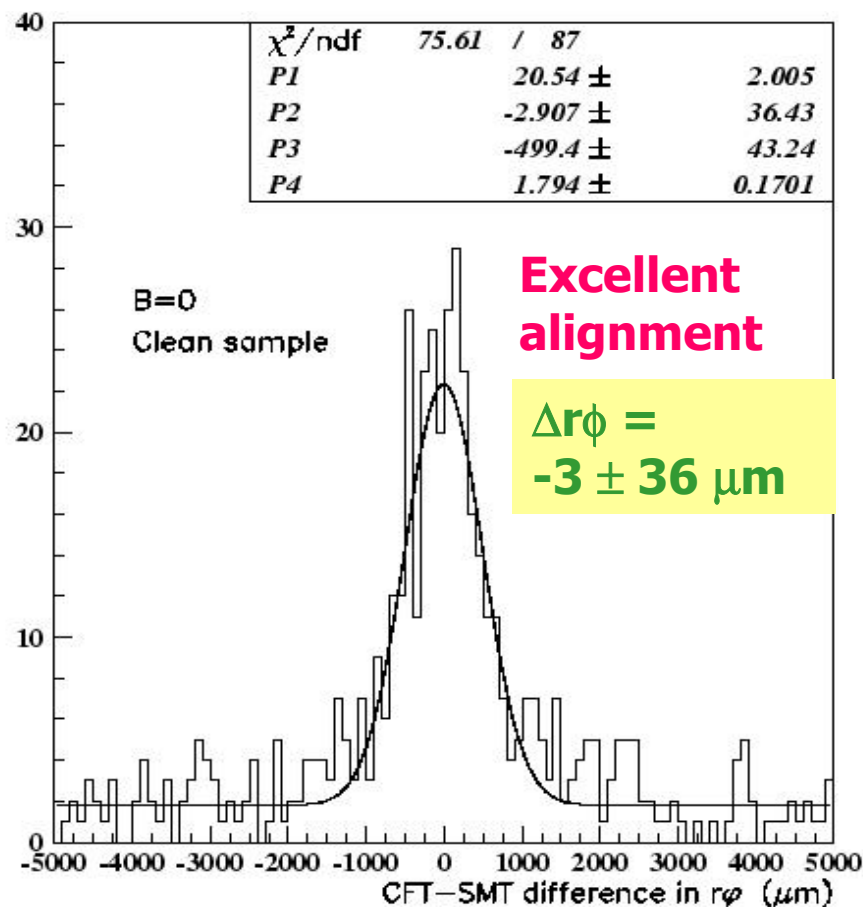
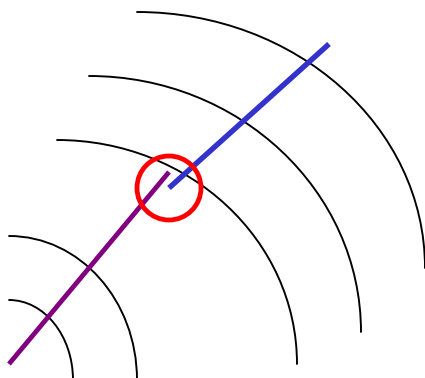
**All in hand, goal is to install all
this shutdown (\sim 50 so far)**



CFT tracking

Use partially instrumented CFT with old electronics

- Tracks were found separately in the SMT and the Central Fiber Tracker (CFT)
- SMT tracks were extrapolated to the CFT at which point the track offsets were measured
- Magnet off data



Trigger and DAQ

System	Status Oct 8	Status Dec 1	Completion date
In: collision rate L1 Out: 5-10kHz	Calorimeter: 50% Muon: scintillator Tracker: none	Calorimeter: 100% Muon: scintillator + drift tubes Tracker: all installed	Dec 2001
In: 5-10kHz L2 Out: ~1kHz	None (processor problems)	Global, Cal & Muon commissioned; not filtering at start	Feb 2002
In: ~1 kHz L3/DAQ Out: 50 Hz	In: 80 Hz (peak) Use emulators; final hardware not ready; Calorimeter filters	In: 500Hz by end of year Cal & Muon filters; others starting	1kHz in ~May 2002

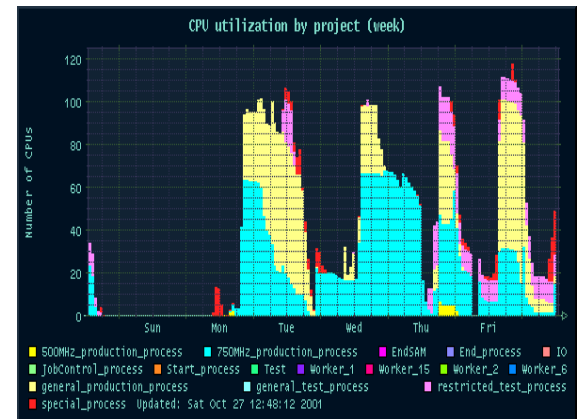


Data processing and access

- Online system logs data to tape in Feynman center (enstore)**
 - 8M physics events stored so far**
 - Events reconstructed in quasi-real time using a Linux farm running production software releases**
 - reprocessing recent data with latest release now**
 - Data accessed through SAM system**
 - physicists using Root ntuples**
 - Remote farm facilities up and running for Monte Carlo generation: capable of generating and reconstructing ~ 25 Hz rate**
 - Amsterdam, Lancaster, Lyon, Prague, Arlington, Boston (Manchester and Karlsruhe approved)**
 - all remote sites are SAM stations (GRID)**
 - ship data to Fermilab over network**
- CPU utilization by project (week)

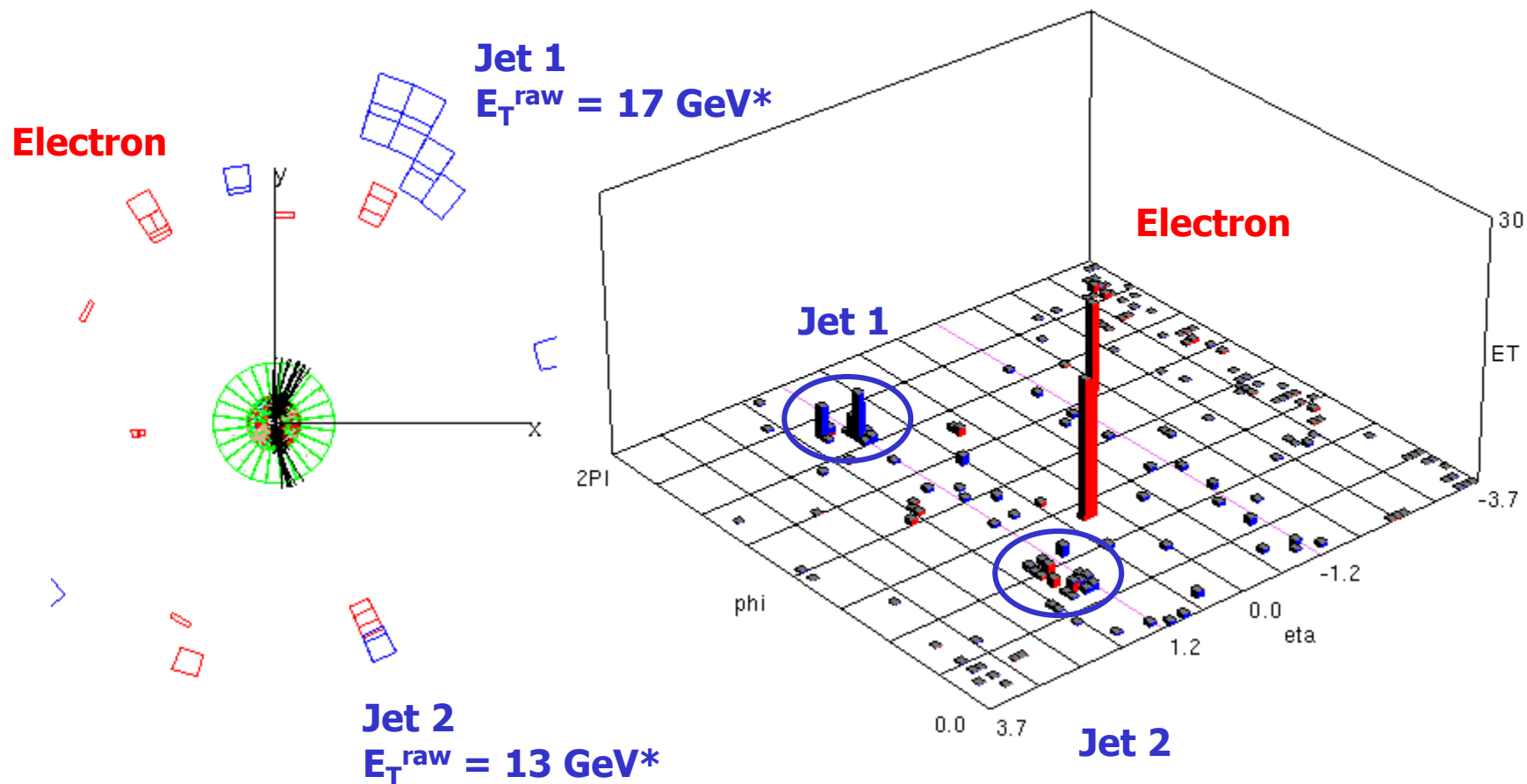
Project	Color
500MHz_production_process	Yellow
750MHz_production_process	Cyan
EndSAM	Pink
JobControl_process	Orange
Start_process	Red
Test	Green
Worker_1	Purple
Worker_15	Light Green
general_production_process	Brown
general_test_process	Dark Green
special_process	White

Updated: Sat Oct 27 12:48:12 2001
- The DØ Collaboration



Just for fun . . .

DØ W + 2 jet (Higgs!) candidate, October 2001



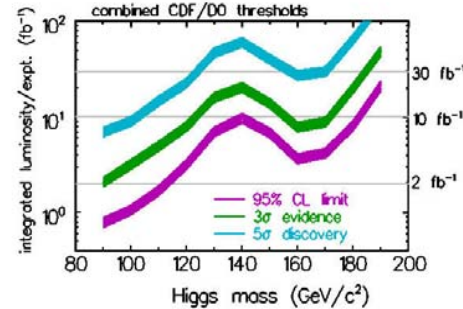
* Jet E_T corrections will be large

Conclusions

- DØ has been installed and running since March 1
- We have commissioned all the detectors with the exception of the fiber tracker
 - electronics installation will be complete at end of shutdown
- Trigger system has been running at reduced rate
 - sufficient for commissioning and some physics (W/Z); not for full physics program
 - being addressed over next months
- Commissioning of detector will continue when the run resumes
- We have defined a clear set of priorities for results to be obtained for Moriond 2002
- Expect full functionality early in 2002 and physics results in the summer



Next Presentations



- The committee has received:
 - Silicon Technical Design Report (and Executive Summary)
 - Trigger Conceptual Design Report (and Executive Summary)
 - Document on Run 2a status
 - Physics documentation
- Together these documents fully describe the present scope of the project
 - no additional detector hardware upgrades anticipated at this time
- Three presentations follow
 - Marcel Demarteau: Silicon
 - Darien Wood: Trigger
 - Jonathan Kotcher: Project Management issues, summary

