



# DØ Fact Sheet

DØ is one of two large particle physics experiments at Fermilab. Its dimensions are 30 x 30 x 50' and it weighs about 5,000 tons.

The first meeting envisioning its design occurred at Stony Brook in 1983. Construction was completed in February 1992 and DØ took data from 1992 – 1996. The experiment was upgraded from 1996 – 2001 and has been running nearly continuously since.

## Technical Highlights

Inner silicon detector, 700,000 channels  
 Scintillating fiber tracker & preshower  
 100,000 channels  
 Uranium/liquid argon calorimeter, 50,000  
 channels  
 Muon system (wire chambers and  
 scintillator), 70,000 channels

## Personnel Facts

550 scientists  
 150 graduate students  
 89 institutions (38 in the US)  
 18 countries  
 Second largest national contingent:  
 Russian

## Future

Will run through 2010 or longer  
 Expect to increase current data set by  
 50 - 100% by fall of 2010  
 Can provide evidence for Higgs boson in  
 the range of 115-125 GeV & 140-180 GeV  
 (or rule out all expected masses.)

## Accomplishments

> 250 papers & > 250 Ph.D. theses to date  
 Discovery of the top quark.  
 Observation of B-meson mixing that might  
 shed light on the lack of observed antimatter  
 in the universe.  
 Discovered exotic baryons ( $\Xi_b$ ,  $\Omega_b$ )

## Data Facts

Inspects 1.7 million collisions/second  
 Records ~ 100 events/second  
 Data flow is 20 Megabytes/second  
 300,000 giga bytes of data recorded/year  
 4.5 billion events recorded to date

## Trivia

DØ event displays were shown in the Keanu  
 Reeves movie "Chain Reaction"  
 Fictional physicist Larry Fleinhart joined "DØ  
 team" in season 4 of TV show NUMB3RS.  
 Current spokespersons: Dmitri Denisov  
 (Fermilab) & Stefan Soldner-Rembold  
 (University of Manchester)