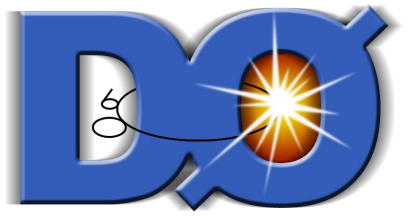


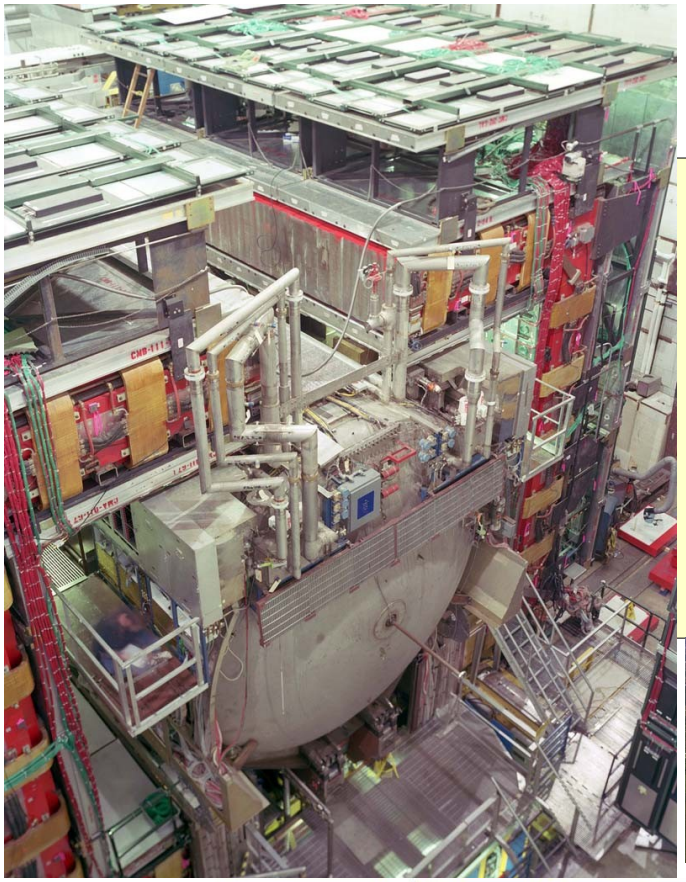
Joel Snow
OSG VO Forum
July 21, 2011

The DØ Collaboration

DØ is an international collaboration of 460 physicists from 20 nations who have designed, built and operate the DØ detector at the Tevatron and perform data analysis

Institutions: 86 total, 37 US, 49 non-US

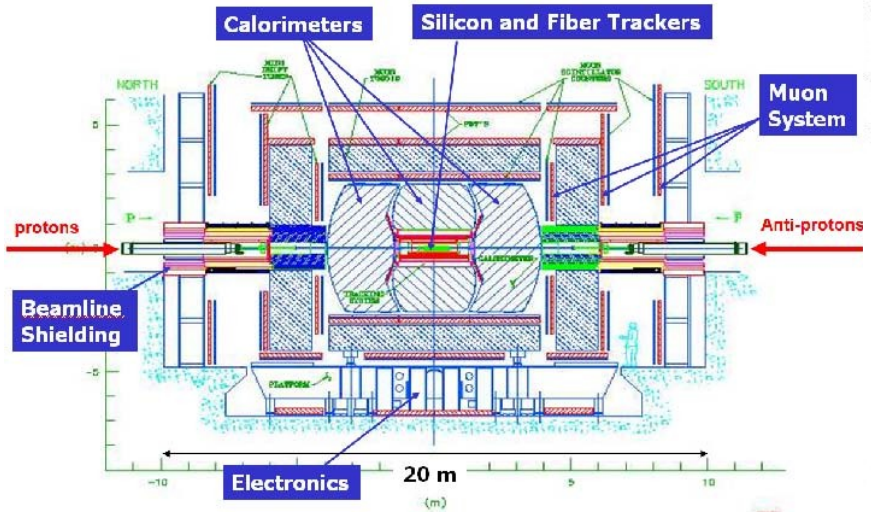
The DØ Experiment

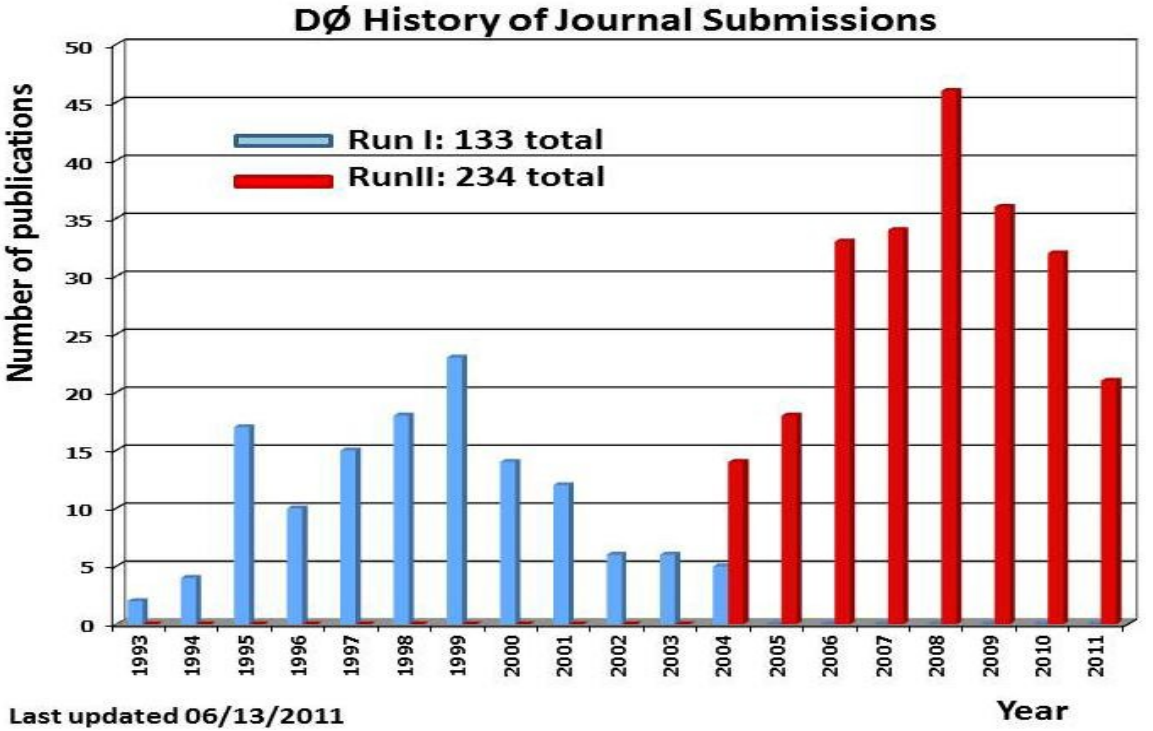


Studies fundamental physical constituents and their interactions by colliding 1 TeV protons with 1 TeV anti-protons

Topics of inquiry include:

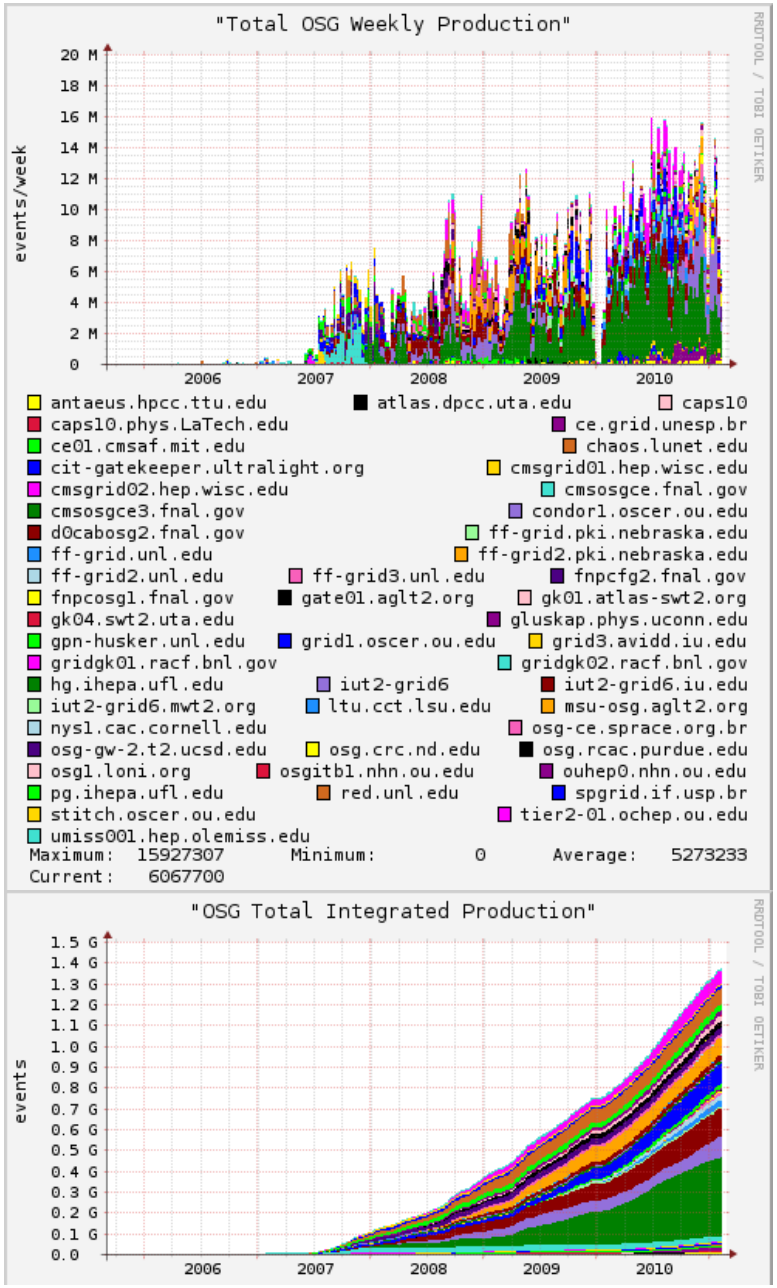
Bottom quark physics	Top quark physics
Higgs boson physics	Electroweak physics
Quantum Chromodynamics	New phenomena beyond SM



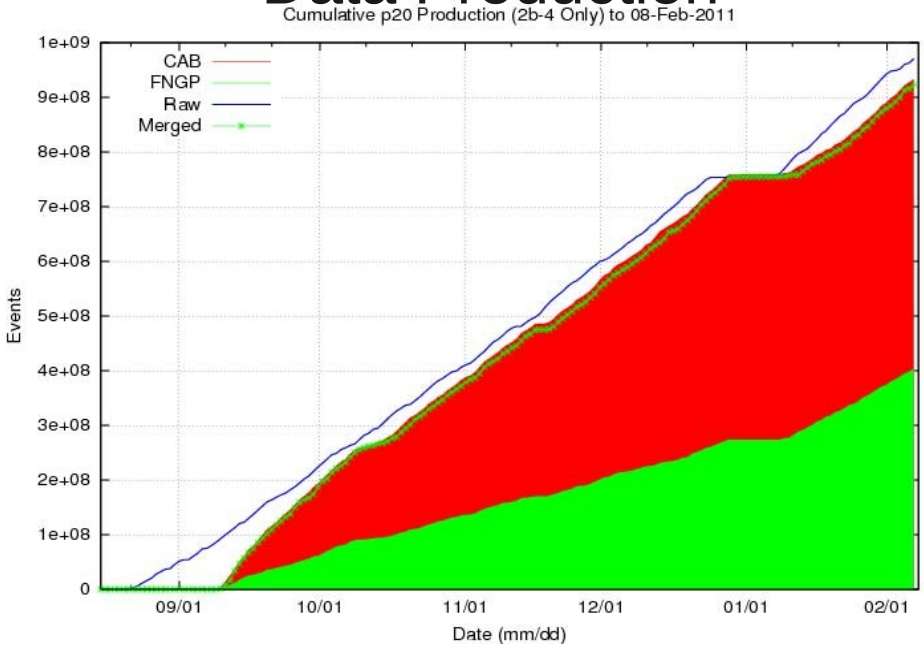


DØ OSG Use

Monte Carlo Production



Data Production



- **DØ** integrates legacy grid and data handling systems with the OSG. Job submission is all done at FNAL.
- **D**ata production only uses a few CE's located at FNAL with dedicated workers.
- **M**C jobs are submitted from a work queue by a daemon to a scheduler. MC is almost completely opportunistic and currently uses about 30 CE's & 8 SE's.
- **T**here are also some CPU intensive analysis jobs done on the OSG.

1.4 billion MC events represents about 5000 CPU-years

Science That Is Being Enabled

High Energy Physics, more exactly proton-antiproton collider physics at 2 TeV center of mass energy. Partial list of recent subjects of inquiry:

- Flavor changing neutral currents
- Supersymmetry
- Extra dimensions searches
- QCD jet cross sections, inclusive jet production, strong coupling constant
- Electroweak cross sections
- Top quark mass, top pair spin correlations, forward-backward asymmetry,
- Top polarization in pair production, differential cross sections, single top production
- Rare B quark decays, CP violation in B_s system, di-muon asymmetry
- Higgs boson searches

OSG has contributed to about 40 Dzero publications in the last year.

Plans For The Next Few Months

- DØ uses OSG resources for first pass analysis of raw data and for the production of simulation data
- Raw data processing is done at FNAL using dedicated resources
- Simulation data is done largely on opportunistic resources.
- There are no plans to change this mode of resource utilization or the structure of the VO.

Current Usage, General Status, And Issues

- Gratia reports that in the 30 day period 2011-06-12 to 2011-07-12 DØ used 4.2 million CPU hours of OSG resources.
- DØ production is in general running smoothly and able to keep up with the demands of excellent accelerator performance and enthusiastic analyzers.
- The continued availability of adequate opportunistic job slots is an issue for simulation production.
- Data taking ends September 30, ending the need for raw data processing.
- At that time a reprocessing of a partial set of raw data will be done. The reprocessing will run for at least one year and use the same resources that are currently doing the original raw data processing .
- Simulation production will continue for several years at a diminishing rate.

Concerns and Possible Obstacles To Implementing This Roadmap

Adapting legacy systems to evolving software stacks and methodologies when support is diminishing.

Requirements For New OSG Capabilities

None.

•*The DØ collaboration thanks the DOE, NSF, and the various international funding agencies that support this work.*

Joel Snow, Langston University/FNAL, on behalf of the DØ collaboration