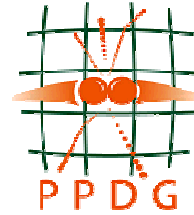


Particle Physics Data Grid: From Fabric to Physics

Selected Science Benefits

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Grids: now an essential and standard part of getting physics from DØ

Collaboratory: Particle Physics Data Grid (www.ppdg.net) Contact: ppdg-exec@ppdg.net

DØ experiment: www-d0.fnal.gov

The Fermilab RunII program is the world-leading elementary particle physics program colliding protons and anti-protons, until the LHC program takes over at the end of this decade. The physics program for RunII is testing the limits of the “Standard Model” of particle physics (known to be incomplete), investigating the nature of the electroweak interaction, and CP symmetry violation. The RunII experiments (DØ, pronounced dee-zero, and CDF) each have about 700 physicists participating from around the world. One of the significant challenges of the RunII program compared to the previous run is a greatly increased luminosity and data rate from the experiments, leading to a much greater need for computing resources to process and analyze the data. The strategy adopted by DØ to meet this challenge is to integrate advances in grid computing technology with a distributed computing model so that data analysis and simulations activities can be shared at many computing facilities around the world.

Fermilab physicist Gustaaf Brooijmans says “Using grids is now an essential and standard part of the process to getting physics out of DØ data from the Tevatron. We could no longer get physics results out without using grid middleware to distribute data and schedule jobs. There is of course a lot left to be done to have grids provide the robustness and universality of our ESnet and other networks - but the potential is proven. The Fermilab Result of the Week showing B(c) mesons mass and lifetime measurement at DØ, is just one of many topical results. DØ is one of the founding member experiments in the PPDG SciDAC Collaboratory project.

http://www.fnal.gov/pub/today/archive_2004/today04-12-02.html”.

