Open Science Grid

The Open Science Grid: Bringing the power of the Grid to scientific research

www.opensciencegrid.org

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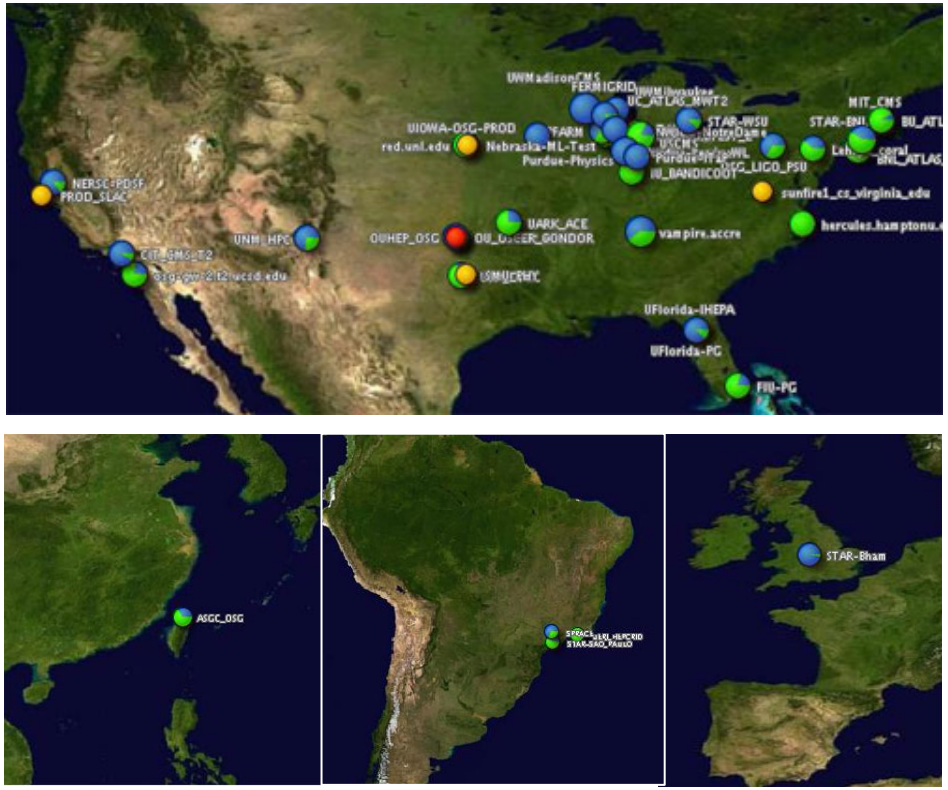
Open Science Grid

The Open Science Grid…

A distributed computing infrastructure for large-scale scientific research

- Brings petascale computing and storage resources into a uniform grid computing environment
- Integrates computing and storage resources from over 50 sites in the U.S. and beyond



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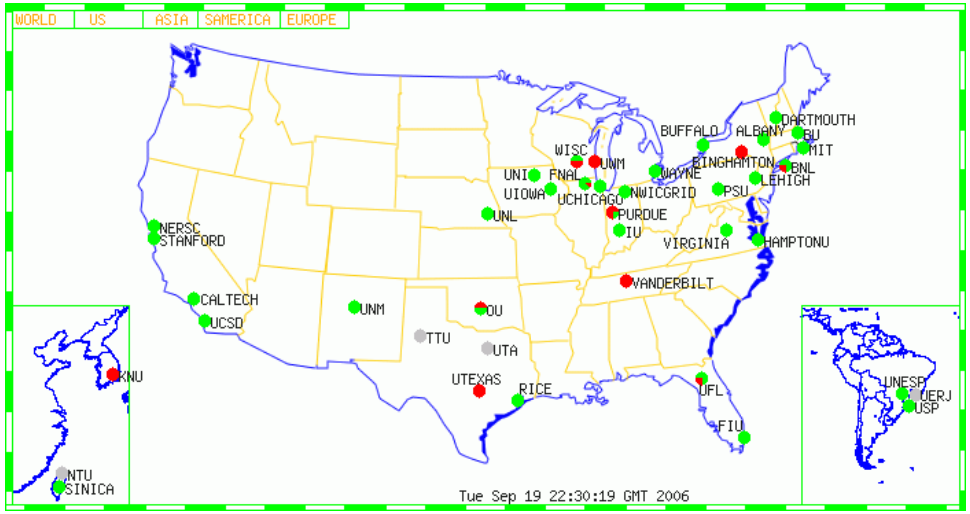
OSG Members

OSG welcomes new members, partners and collaborators.

OSG Consortium Meeting, August 2006

OSG members today represent:

- Universities
- National laboratories and computing centers
- Scientific collaborations
- Grid projects and alliances



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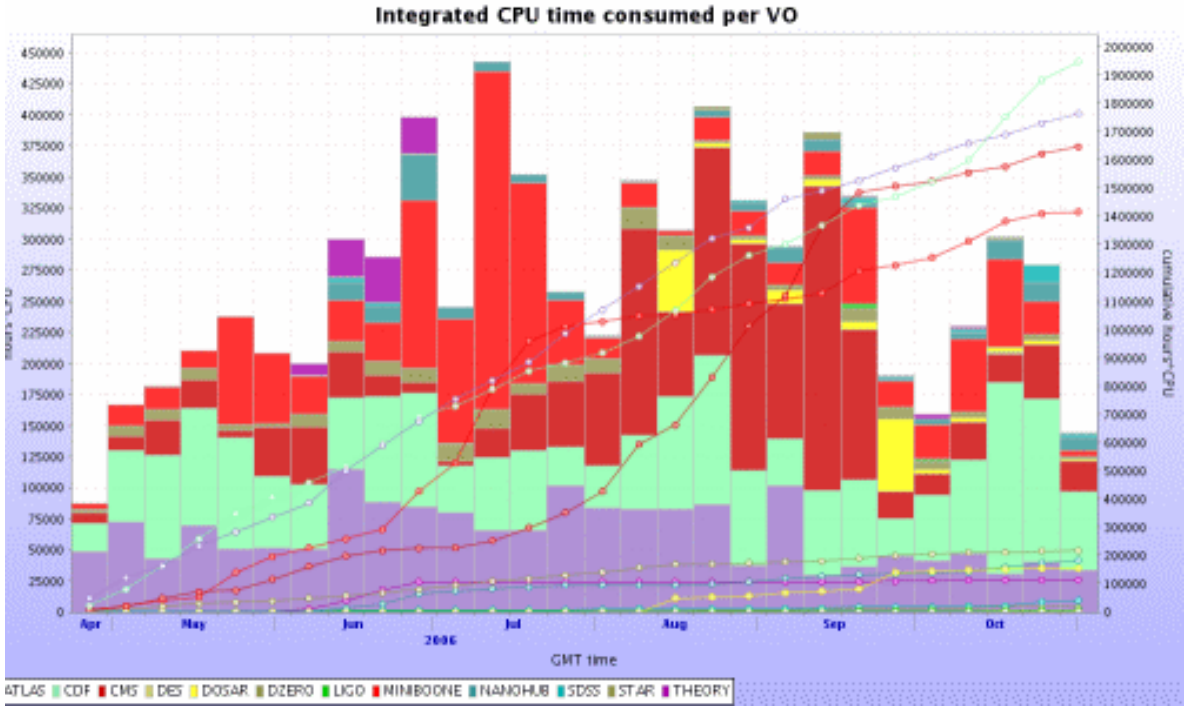
OSG News

OSG users have consumed over seven million hours of CPU time in 2006.



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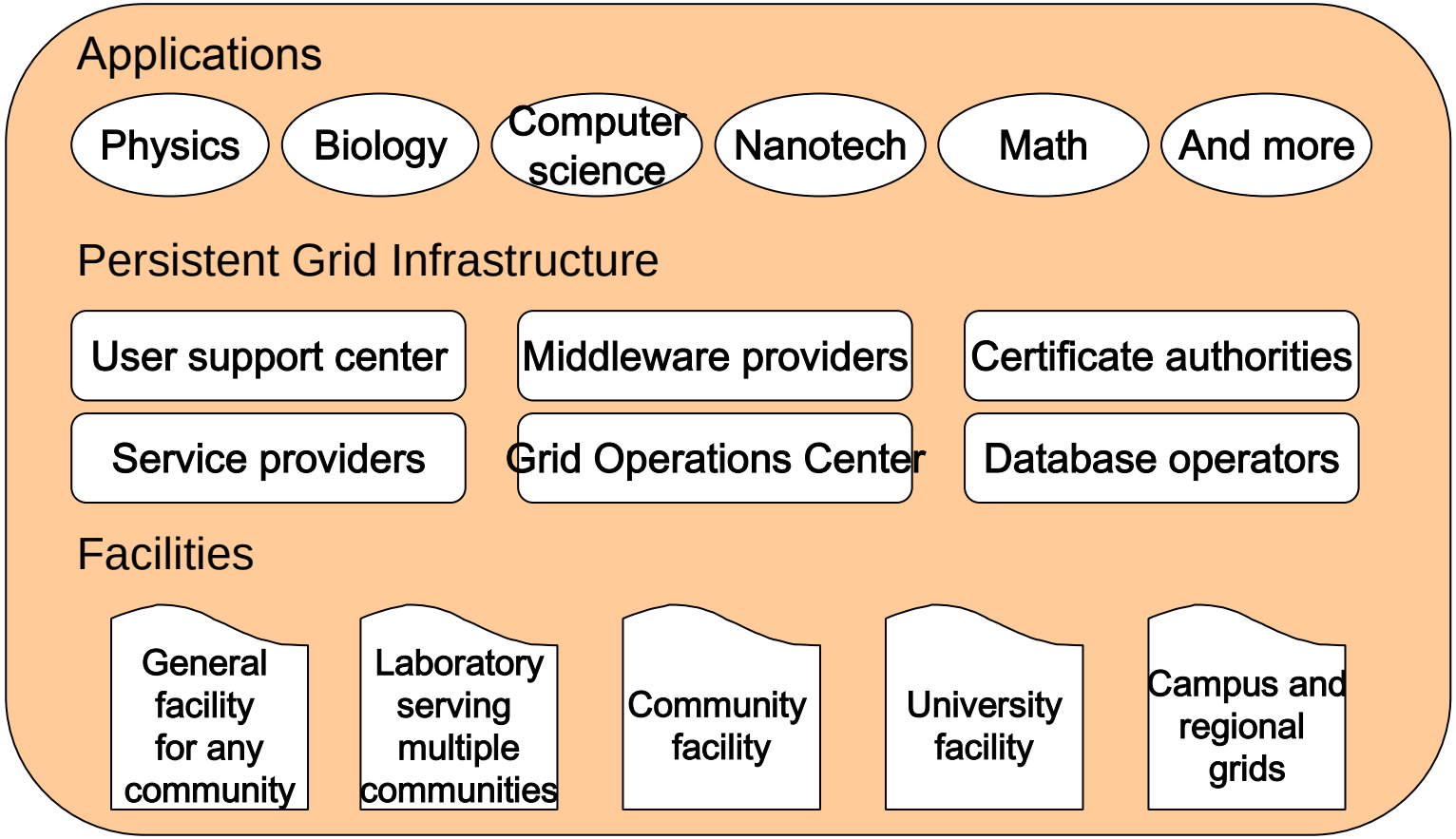
OSG Infrastructure

OSG sites provide computing or storage resources for grid users and a common infrastructure to access these resources.



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Using OSG Today

Applications run on the OSG from

- Astrophysics
- Bioinformatics
- Gravitational-wave physics
- Mathematics
- Nanotechnology
- Nuclear and particle physics
- And more…

ATLAS Detector
Copyright CERN
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SDSS Telescope
Image Credit Fermilab
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CDMS photo
Image Credit Fermilab
Permission Information

STAR Collision
Image Credit Brookhaven National Laboratory/STAR Collaboration
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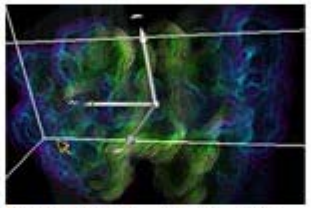

BioMOCA Application in nanoHUB
Image Credit Shawn Rice, Purdue University
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CMS Detector
Copyright CERN
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Auger photo
Image Credit Pierre Auger Observatory
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MiniBooNE photo
Image Credit Fermilab
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DZero Detector
Image Credit Fermilab
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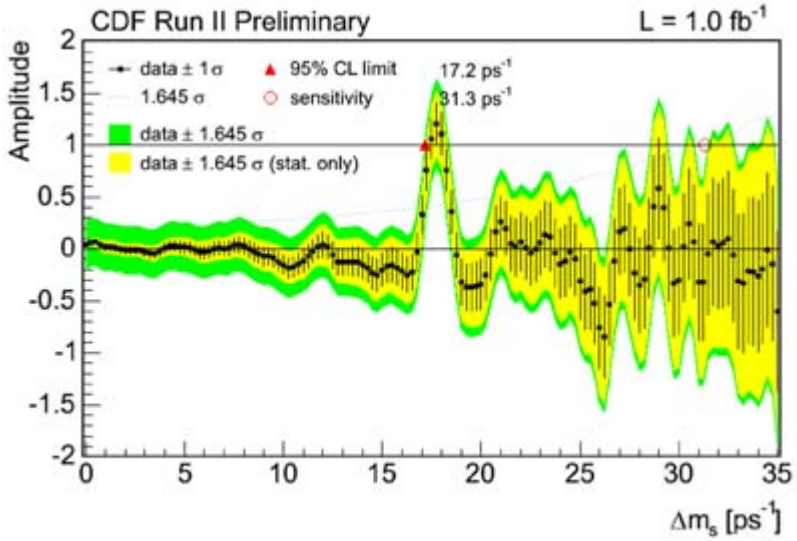
Used for Particle Physics

The CDF Collaboration

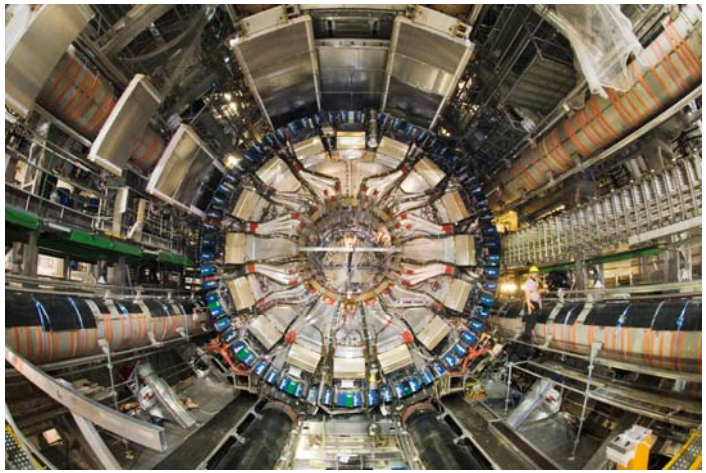
Measuring the B_s meson



A scan through matter - anti-matter oscillation frequencies for the B_S meson.

The ATLAS Collaboration

Will be searching for supersymmetry



Central view of the ATLAS detector with its eight toroids around the calorimeter, before moving it in the middle of the detector. *Image © CERN*

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Used for Math and Biology

Football Pool Problem

Solving a famous problem in mathematical coding theory

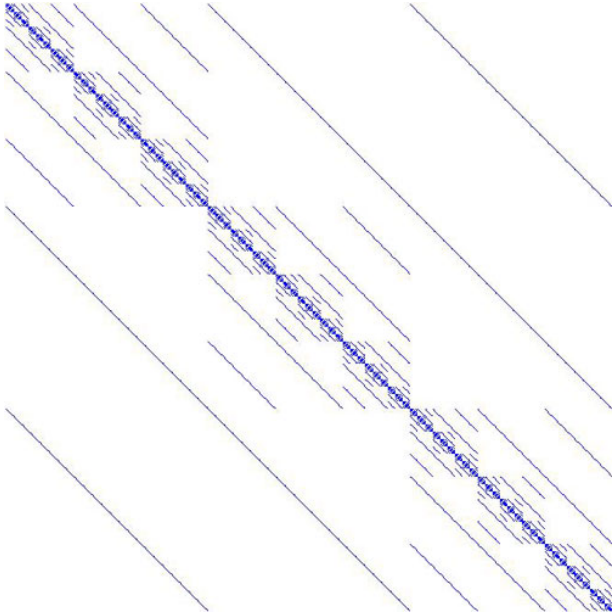
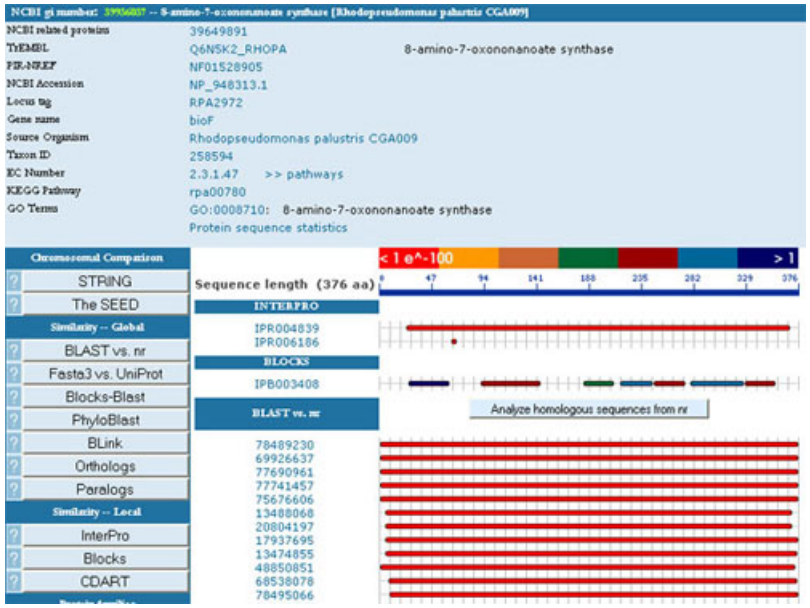


Illustration of the football pool problem. Researchers look for the smallest set of columns of the matrix such that every row is covered by the set of chosen columns.

Genome Analysis and Database Update

Supporting high-throughput genetic sequence analysis



The PUMA2 application uses GADU to provide analysis of protein sequences.

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Used for General Relativity

The Laser Interferometer Gravitational-Wave Observatory (LIGO)

- Detecting and measuring cosmic gravitational waves
- Studying general relativity as a manifestation of the curvature of space-time

Hanford, Washington

Livingston, Louisiana

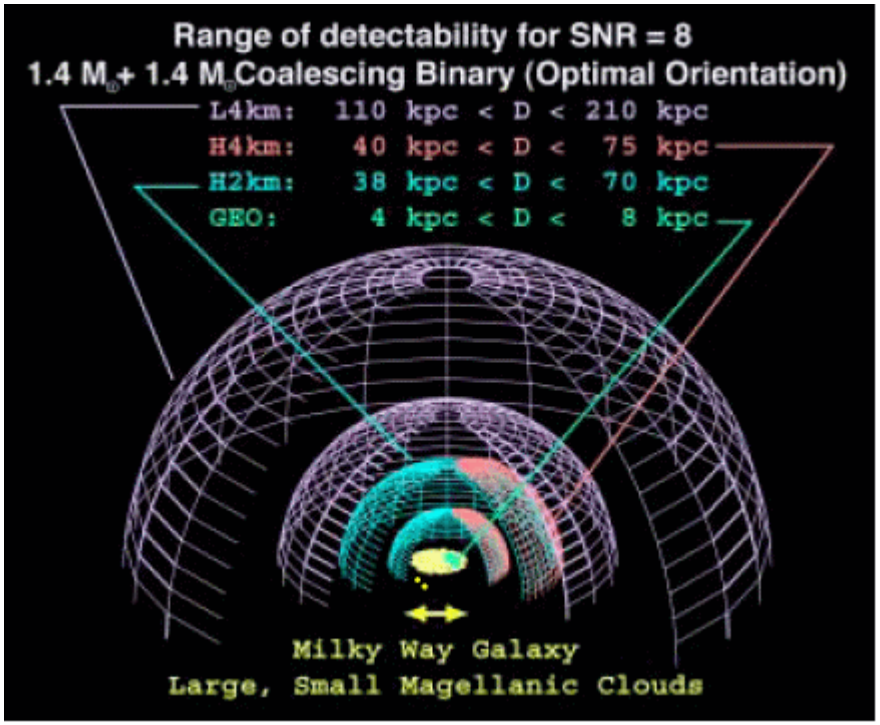

Image illustrates sensitivity to Inspirals.
Image courtesy LIGO

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Used for Astronomy

SDSS, the Sloan Digital Sky Survey

Creating detailed optical images covering more than a quarter of the sky, and a 3-D map of about a million galaxies and quasars

2.5-meter telescope on Apache Point, NM

NGC 5257 and 5258, two spiral galaxies in the constellation Virgo, are seen in the midst of a collision that has taken on the order of a billion years. *Image courtesy SDSS*

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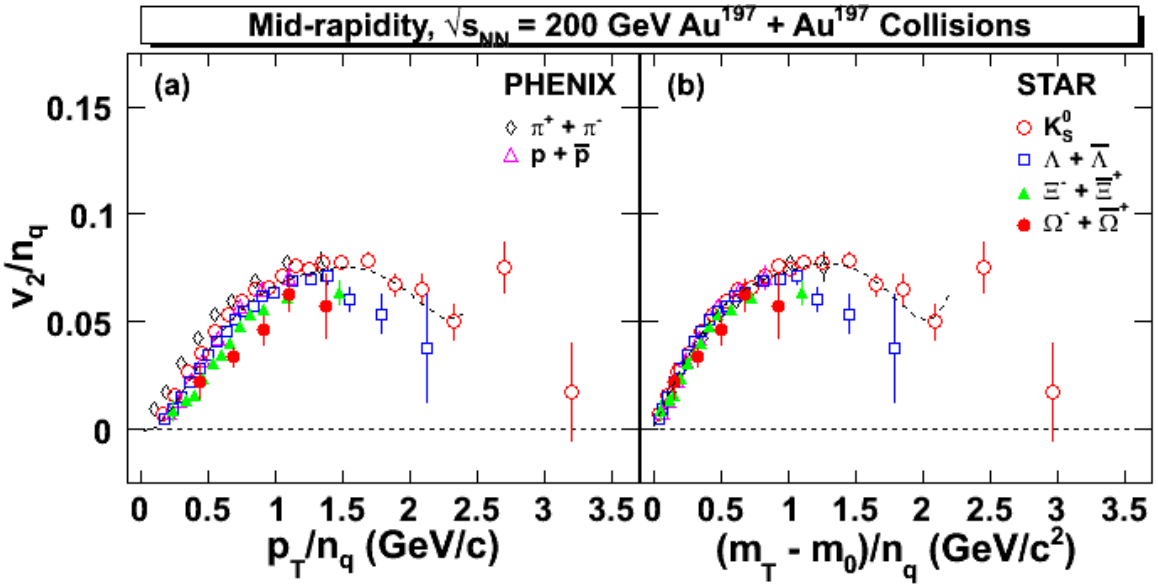
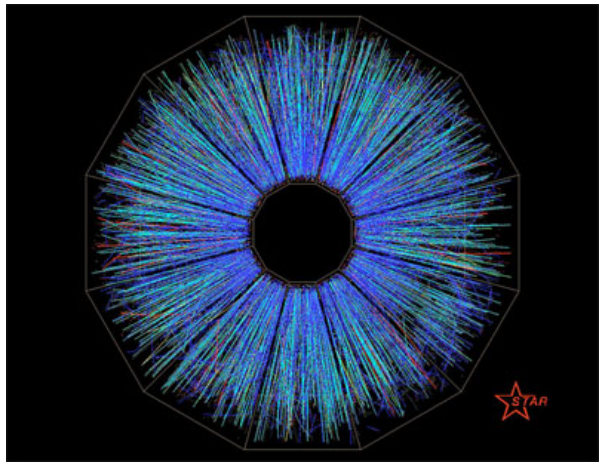
Used for Nuclear Physics

The STAR Collaboration

Determining the properties of matter
in the early universe



Preliminary STAR result shown at Hard Probes 2006 by Y. Lu, based on analysis of events transferred to China over the Grid.



Collision of gold beams in the STAR detector.

Image © Brookhaven National Laboratory

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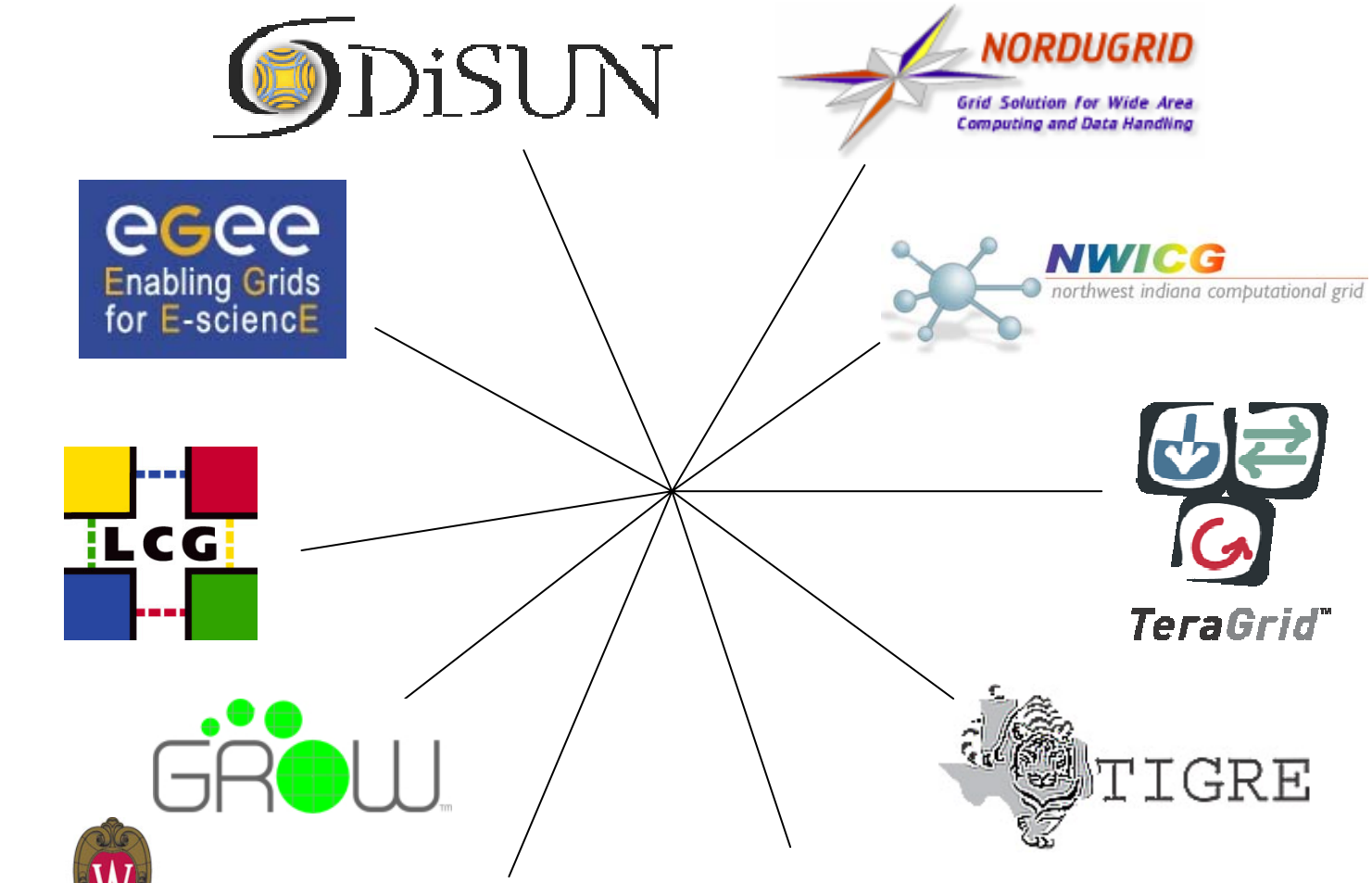
OSG Partners



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