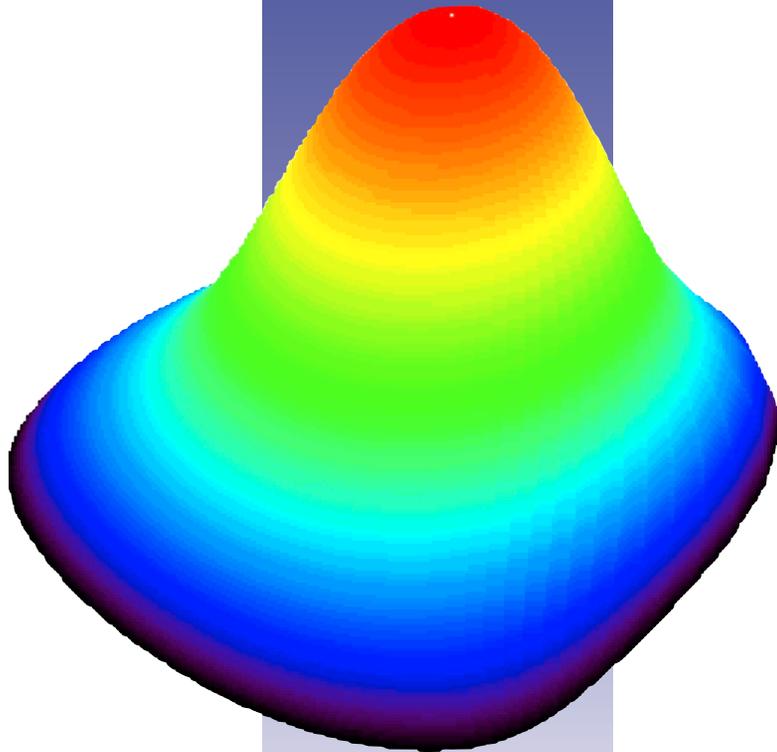


NETWORK PANEL: THE NATIONAL FUSION COLLABORATORY

**D.P. Schissel
General Atomics**

**Presented at
SciDAC PI Meeting**

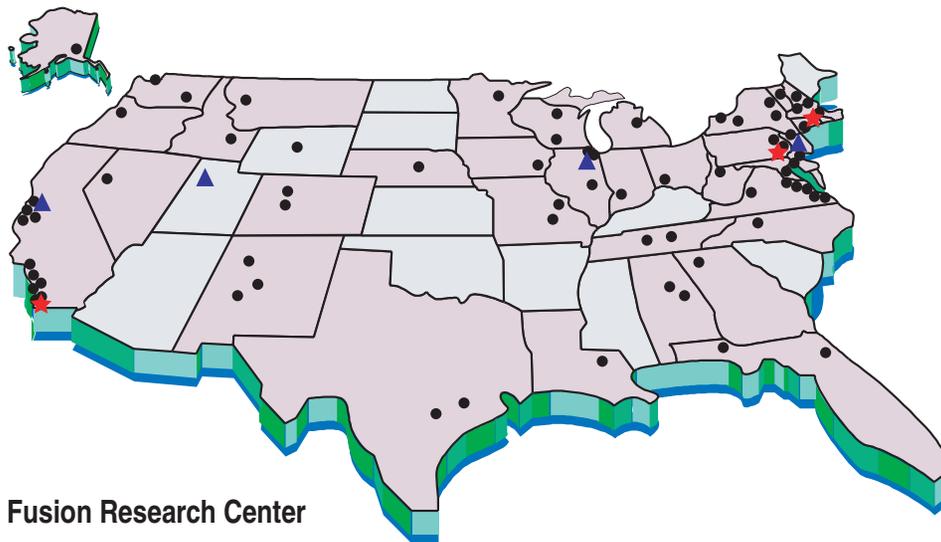
**January 15–17, 2002
Reston, Virginia**



*NIMROD simulated pressure stored
in MDSplus and visualized with IDL*

THE MAGNETIC FUSION COMMUNITY HAS 40 US SITES IN 37 STATES

Over 1000 Magnetic Fusion Scientists in the United States - ESNET



- Fusion Research Center
- ★ Large Fusion Experiment
- ▲ CSET Partner

- **Three main experimental facilities**
 - CA, NJ, MA worth ~\$1B
 - Pulsed experiments with 15 min cycle
 - ~500 MB/pulse and growing
- **Theory & simulation community**
 - Non-linear 3D plasma models
 - Compare theory & experiment
 - Data sizes similar to other apps
- **Unified data access**
 - Client/Server model
 - TCP/IP based over ESNET

THE PULSED NATURE OF FUSION EXPERIMENTS RAISE A NETWORK QUALITY OF SERVICE ISSUE

- **~500 MB/pulse analyzed in 15 minutes**
 - Results of analysis change the setup for the next pulse
 - 100s of “knobs” can be adjusted per pulse
- **Successful Fusion Grid from the Fusion Collaboratory Pilot will**
 - Spread analysis across the U.S.
 - Dramatically increase the amount of analyzed data between pulses
 - Increase data & visualization bits back to the experiment
- **Fusion Collaboratory contemplating preemptive scheduling for analysis**
 - Required to insure experimental analysis has highest priority
 - Do we need a similar concept for the network?