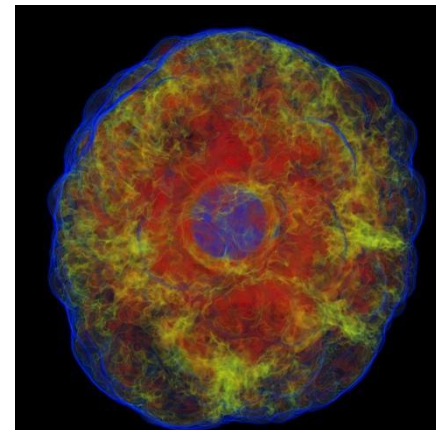
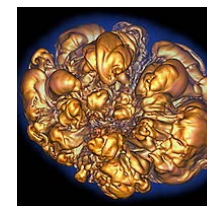
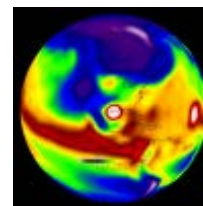
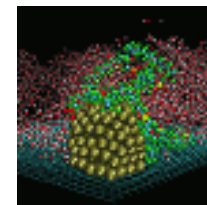
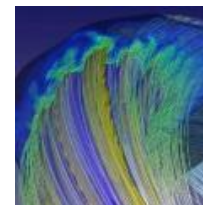
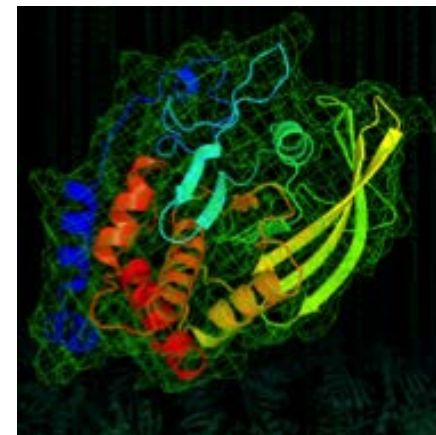
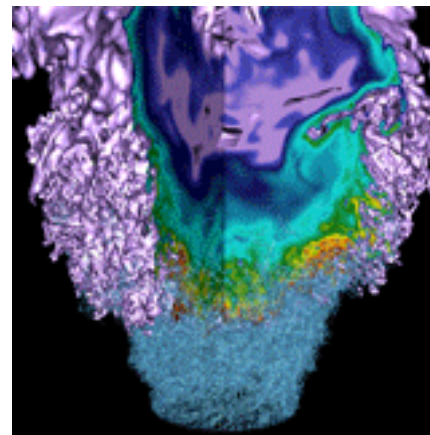


NERSC for CSGF Fellows



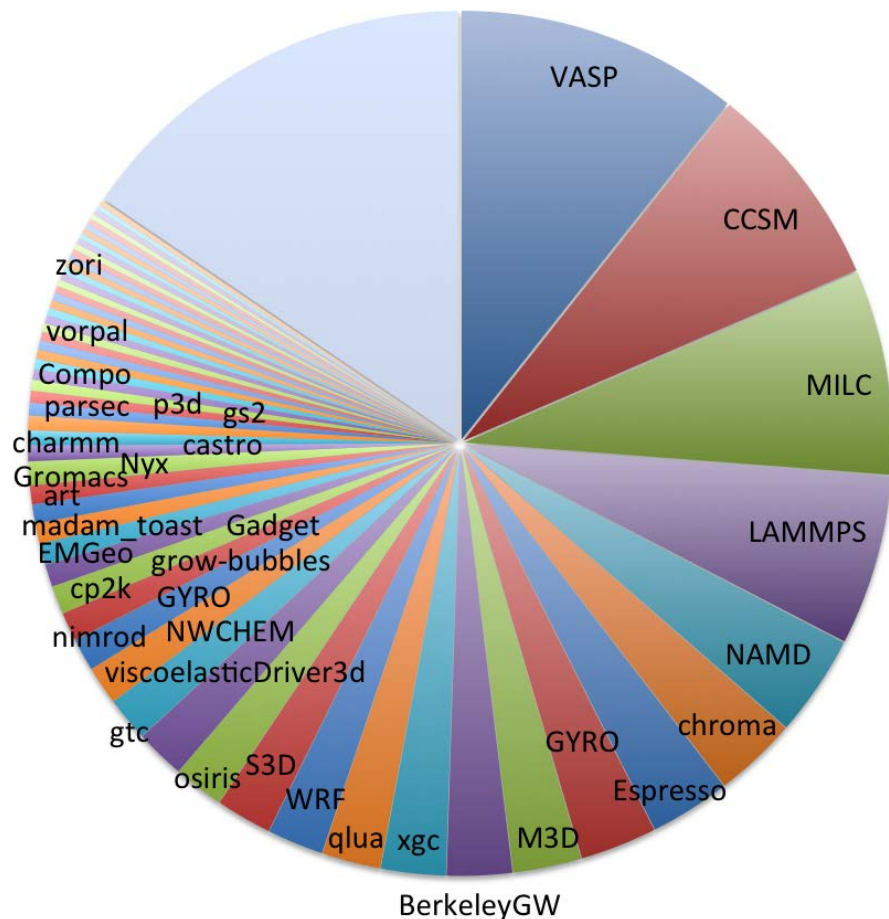
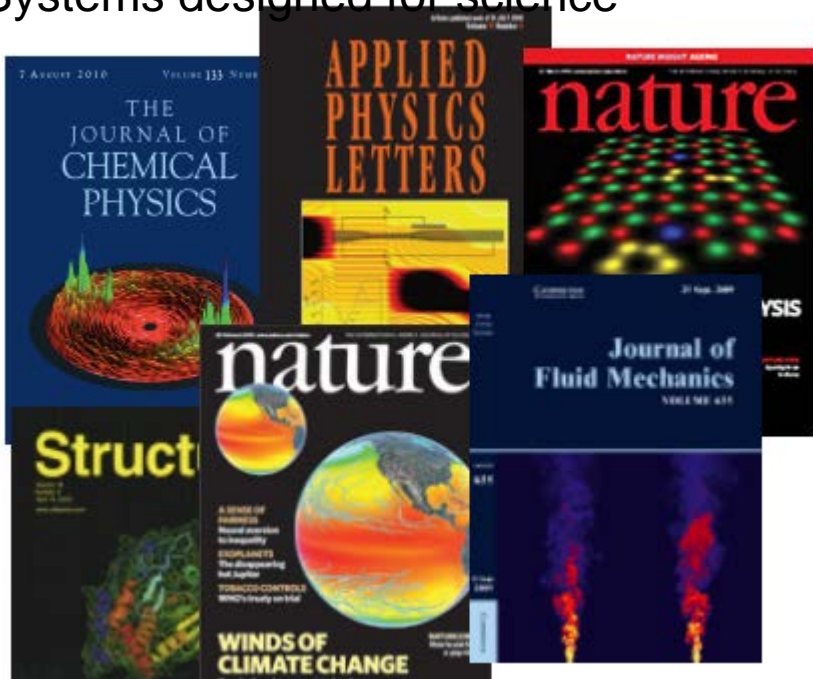
Jack Deslippe

NERSC

NERSC is the production computing center for the DOE Office of Science



- 4000 users, 500 projects
 - From 48 states; 65% from universities
 - Hundreds of users each day
 - 1500 publications per year
- Systems designed for science



NERSC General Resources



Edison (Cray XC30, IvyBridge)
5576 compute nodes: 24 cores, 64 GB
2.6 Petaflops Peak

Scratch Disk 6.4 PB with >140 GB/sec bandwidth ; Aries Interconnect



Hopper (Cray XE60)

6,384 compute nodes, 153,216 cores

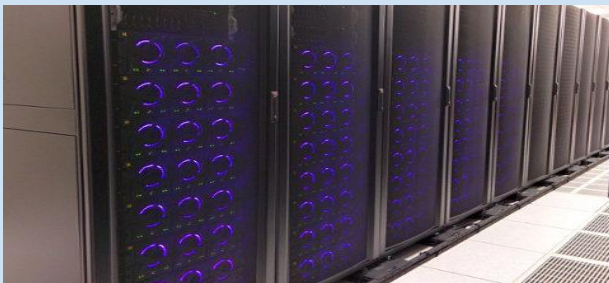
1.3 Petaflops Peak



Global Filesystem (NGF)

4PB Capacity Scratch

80GB/s Bandwidth



Archival Storage

40PB Capacity HPSS

80GB/s Bandwidth

Test Beds

Babbage (Xeon-Phi)

Dirac (GPU)

Other:

Expert consultants,
analytics/vis. res. (R Studio,
Visit), science gateways,
global project directories,
NX, Science Databases,
ESNET, Globus Online, web
resources and hosting,
training

The NERSC-8 System: Cori

- **Cori will begin to transition the workload to more energy efficient architectures**
- **Cray XC system with over 9300 Intel Knights Landing compute nodes**
 - Self-hosted, (not an accelerator) manycore processor with over 60 cores per node
 - On-package high-bandwidth memory
- **Data Intensive Science Support**
 - NVRAM Burst Buffer to accelerate applications
 - 28 PB of disk, 432 GB/sec I/O bandwidth
- **Robust Application Readiness Plan**
 - Outreach and training for user community
 - Application deep dives with Intel and Cray
 - 8 post-docs integrated with key application teams



Image source: Wikipedia

System named after Gerty Cori, Biochemist and first American woman to receive the Nobel prize in science.

NERSC Exascale Science Applications Program



- **NERSC will partner with selected projects (~20) to help prepare application codes for Cori**
- **The program will provide:**
 - early access to NERSC-8 hardware and testbed systems
 - special vendor training and optimization sessions
 - full-time postdocs for a subset (8) of selected teams
- **NERSC will advertise eight two-year postdoctoral research staff positions in a variety of fields**
- **Postdocs will have the opportunity to collaborate with scientists to use Cori and push scientific boundaries in their field of expertise; conduct applied research and development in energy-efficient high-performance scientific computing;**

Top 5 Reasons to Select NERSC for Postdoctoral Research



- 1. Be one of the first users of NERSC's next-generation supercomputer.**
- 1. Opportunity to work on one or more of the most challenging and important scientific computing problems in energy, materials, astrophysics, chemistry, and many other areas.**
- 1. Be involved in the most important/cutting-edge science going on in the world. Help support usable exascale.**
- 1. Work at a world-class high-end national computing facility providing innovative solutions with most impressive record of former postdoctoral scholars who have gone on to key positions in academia and industry.**

Top 5 Reasons to Select NERSC for Postdoctoral Research



5. Work in the heart of the Bay Area with all that the area has to offer in terms of culture, climate, and recreation.



Getting Your Own NERSC Account



To be able to run at NERSC you need to have an account and an allocation.

- An account is a username and password
- Simply fill out the Account Request Form:

https://nim.nersc.gov/nersc_account_request.php

- An allocation is a repository of CPU hours
- Good news! You already have an allocation!
- Repo m1266. Talk to me to get access.

Getting Your Own NERSC Account



- If you have exhausted your CSGF allocation, apply for your own allocation with DOE
- Research must be relevant to the mission of the DOE
- <https://www.nersc.gov/users/accounts/>
- Builds relationship with DOE program managers