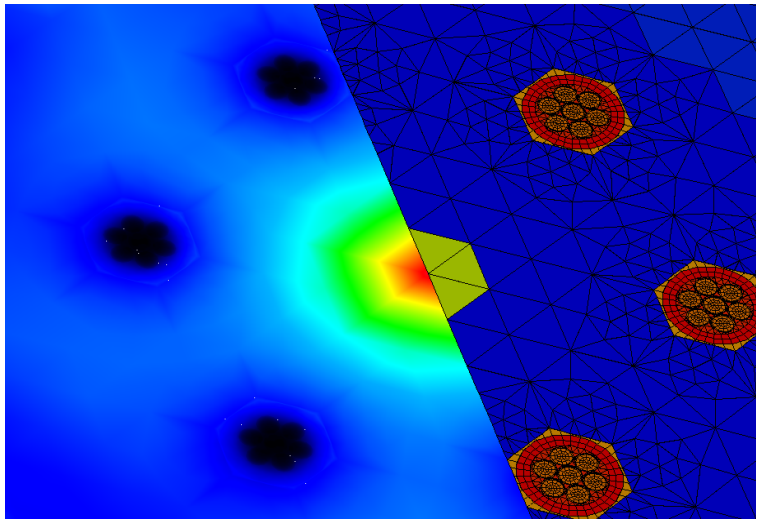
For the Week of August 31st, 2009

Tracking a Neutron's Odyssey through a Fast Reactor

Supercomputers at Oak Ridge help redesign the nuclear reactor

- Scientists have worked throughout the nuclear age to improve reactor design and minimize the need to store waste that will remain lethally dangerous for thousands of years.
- Jaguar is helping a team lead by Dinesh Kaushik of Argonne National Laboratory to develop and test neutron transport algorithms for a viable fast reactor that will use existing reactor waste as part of its fuel.
- Through high-fidelity simulations, the team hopes to greatly reduce the existing uncertainties and biases in reactor-design calculations.



Kaushik and his team are using Jaguar to perform research that can improve existing reactors as well as influence future reactor design. Image courtesy: Dinesh Kaushik, Argonne National Laboratory

"The time allocation will allow us to carry out more realistic reactor simulations, resulting in less uncertainty in the crucial reactor design and operational parameters."

– Principal Investigator Dinesh Kaushik

Cray XT5 Undergoes Upgrade

Oak Ridge's Jaguar supercomputer to reach speeds of over 2 petaflops

- ORNL's Cray XT supercomputer is going through an upgrade that will bring its peak processing performance to more than 2 quadrillion calculations per second (2 petaflops).
- The project will replace the 37,000-plus quad-core AMD Opteron processors in the system's XT5 partition with six-core processors, boosting the number of processing cores in the XT5 partition from 149,000 to 224,000.
- The upgrade is planned in five phases through November 2009.

Staff from Cray work to install the new processors for the Jaguar XT5.

Biophysics Workshop Draws Top Researchers, Students

Problems, issues, and future for biological, physical, and computational communities discussed

- More than 100 students and leading scientists convened in downtown Knoxville August 1-3 to detail current trends and possibilities in the biological, physical, and computational sciences.
- The workshop was held at the UT Conference Center and targeted senior undergraduate, graduate, and postdoctoral students in sciences such as physics, mathematics, computer science, chemistry, and biology.
- The first time event included 18 scientists as guest speakers, including Jeremy Smith, director of the ORNL Center for Molecular Biophysics and the UT/ORNL's Governor's Chair for UT/ORNL's Center for Molecular Biophysics

A few of the many students attending the biophysics workshop at the UT Conference Center.

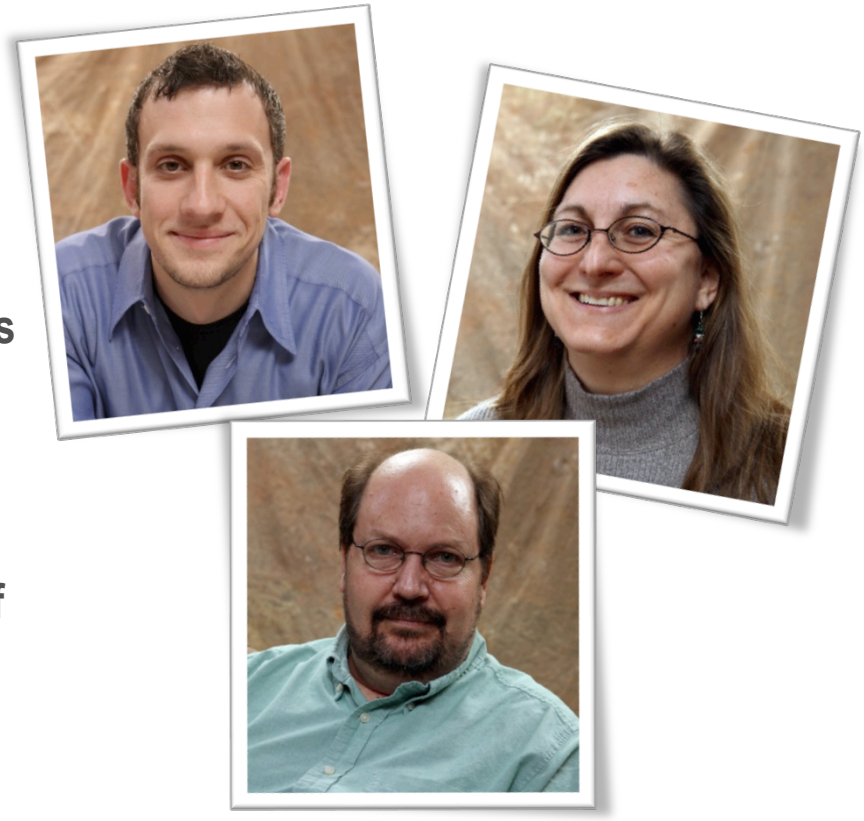
"To say that I was incredibly fortunate to attend would be an understatement. I must say that my interest in biophysics has increased quite a bit."

- Boloye Gomero, first year graduate student in computer science at the University of Tennessee.

OLCF Science Writers Recognized for Outstanding Achievements

Sweep 'best feature' awards in international competition

- OLCF science writers swept the gold, silver, and bronze categories for best feature article in a web-based/electronic publication in an international competition, the 2008 Magnum Opus Awards for Outstanding Achievement in Custom Media
- Scott Jones won the gold for "NCCS System Models Hummingbird Flight," Dawn Levy won the silver for "Resolution Revolution," and Leo Williams took the bronze for "Invisible Means of Support."
- To win these awards, presented annually in conjunction with the prestigious Missouri School of Journalism, the OLCF writers took on such competitors as The Walt Disney Company; Wyeth; Cargill, Inc.; Toyota Motor Sales, USA, Inc.; and Rodale Custom Publishing.



OLCF science writers Scott Jones (top left), Dawn Levy (top right), and Leo Williams (center).