

# LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: July 6-13, 2009.

## Tech Radar sheds light on LLNL supercomputers



### Dawn is one of the newest supercomputers at Lawrence Livermore National Laboratory

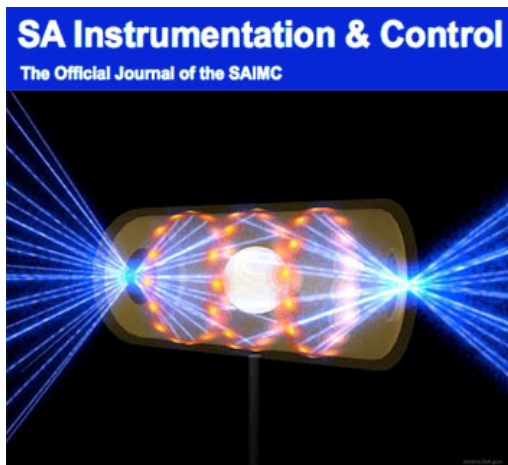
As particles collide and congeal, atoms crash into one another and a wave of energy rolls into a tight coil as a nuclear bomb detonates.

But not to fear. This is just a simulation running on a supercomputer at the Lawrence Livermore Lab. With 500 teraflops of processing power at their fingertips, researchers have gazed straight into the eye of an atomic explosion. What they've seen is classified.

Happily, researchers aren't too frustrated, as simulating a nuclear explosion can provide more telling and useful results than letting one off for real.

To read more about the next-generation of computers, go to <http://www.techradar.com/news/computing/building-the-computer-that-could-halt-nuclear-armageddon-613121>

## SA Instrumentation & Control touts NIF



**This artist's rendering shows a National Ignition Facility target pellet inside a hohlraum capsule with laser beams entering through openings on either end.**

Scientists have been working to achieve self-sustaining nuclear fusion and energy gain in the laboratory for more than half a century. The ability to create fusion in the laboratory is one step closer to reality.

The National Ignition Facility (NIF) was approved by Congress as a cornerstone in the U.S. nuclear weapons "Stockpile Stewardship Program" to ensure the safety and reliability of the nation's nuclear deterrent without full-scale underground testing. It uses 192 lasers to heat and compress a small amount of hydrogen fuel to the point where nuclear fusion reactions take place.

NIF is the crown joule of laser science. Fusion experiments are scheduled for 2010.

For more information, go to

<http://instrumentation.co.za/regular.aspx?pkIRegularid=4155&pkICategoryID=65>

**Lab's Special Response Team shines**



**A member of the Lab's Special Response Team (SRT) strategized during the recent U.S. National SWAT Championships.**

Performing under fire is the essence of Special Weapons and Tactics (SWAT) team competitions and the Laboratory's Special Response Team can count itself among the nation's elite.

LLNL's Special Response Team (SRT) finished third at the U.S. National SWAT Championships, an international competition, narrowly ceding to the first place team from Canada and second place counter-terrorism team from Germany. DOE teams performed well with Hanford finishing fourth and NNSA's Office of Secure Transport (OST) team sixth.

The annual championship, which includes some of the world's best SWAT teams, was held at the U.S. Shooting Academy in Tulsa, Okla. June 18-20. This year, 18 teams competed in the championship. The competition consists of eight events with teams competing head-to-head. Officers compete in full tactical gear and are provided limited rounds for each event.

LLNL finished just one point behind the German GSG-9 team, a counterterrorism team mobilized after the massacre at the 1972 summer Olympics in Munich, Germany. The top team with 16 points was Bruce Power from the Canadian equivalent of DOE. GSG-9 scored 21 and LLNL 22 points (the last place team finished with 132 points).

For more information, go to [https://newsline.llnl.gov/\\_rev02/articles/2009/jul/07.10.09-swat.php](https://newsline.llnl.gov/_rev02/articles/2009/jul/07.10.09-swat.php)

**LLNL's geothermal program full steam ahead**



**The Geysers, Sonoma County, Calif. -- geothermal plant.**

Twenty years ago, the Lab had a thriving geothermal program. But as funding dwindled, the program did as well.

But thanks to a new flow of money from the Department of Energy Geothermal Technologies Program Office, the LLNL research will soon flourish again.

Earlier this year, DOE issued a call for proposals. Each national lab was allowed to submit four and Livermore had three out of four proposals selected for funding. Each program will receive from \$400,000 to \$600,000 each year for three years. Under the Recovery Act, DOE's Energy Efficiency and Renewable Energy has received \$400 million to invest in geothermal research.

"We've worked really, really hard to get here," said Jeff Roberts, LLNL geothermal program leader. "The program was cut significantly in the past because geothermal energy production wasn't necessarily a priority. But last summer, oil prices were high, climate change is being considered more seriously and there is a strong interest in renewable energy, especially wind and geothermal."

Geothermal power is extracted from heat stored in the earth. Though it has been used directly for space heating and bathing since ancient Roman times, it also is used to generate electricity. A significant aspect of geothermal power is that it is a baseline power that isn't intermittent like wind or solar.

For more, go to <https://newsline.llnl.gov/rev02/articles/2009/jul/07.10.09-geothermal.php>

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# NEWSLINE

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## Photo of the week



**Bird's eye view: A view into the National Ignition Facility target chamber of the Final Optics Damage Inspection (FODI) system -- used to monitor the condition of the final optics in the NIF beamlines.**

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LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

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