

LCLS: The World's First Hard X-ray Laser Achieves "First Light"

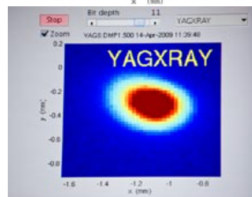
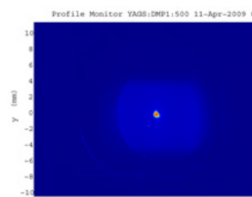
by Shawne Workman

The world's brightest X-ray source sprang to life last week at the U.S. Department of Energy's SLAC National Accelerator Laboratory. The Linac Coherent Light Source offers researchers the first-ever glimpse of high-energy or "hard" X-ray laser light produced in a laboratory.



Several members of the commissioning team work in the Main Control Center. (Photo by Brad Plummer.)

When fine tuning is complete, the LCLS will provide the world's brightest, shortest pulses of laser X-rays for scientific study. It will give scientists an unprecedented tool for studying and understanding the arrangement of atoms in materials such as metals, semiconductors, ceramics, polymers, catalysts, plastics, and biological molecules, with wide-ranging impact on advanced energy research and other fields.



The X-ray laser spot (red, top image) shows against a blue haze of non-coherent X-rays in this image from the Main Control Center. The spot is well under 1 millimeter in diameter (lower image).

"This milestone establishes proof-of-concept for this incredible machine, the first of its kind," said SLAC Director Persis Drell. "The LCLS team overcame unprecedented technical challenges to make this happen, and their work will enable frontier research in a host of fields. For some disciplines, this tool will be as important to the future as the microscope has been to the past."

Even in these initial stages of operation, the LCLS X-ray beam is brighter than any other human-made source of short-pulse, hard X-rays. Initial tests produced laser light with a wavelength of 1.5 Angstroms, or 0.15 nanometers—the shortest-wavelength, highest-energy X-rays ever created by any laser. To generate that light, the team had to align the electron beam with extreme precision. The beam cannot deviate from a

straight line by more than about 5 micrometers per 5 meters—an astounding feat of engineering.

Read more in the [full press release...](#)

Wellness Fair on Campus Next Wednesday

by Robbie DeBastiani

Next Wednesday, April 29, [BeWell @Stanford](#) will sponsor the university's fifth annual Wellness Fair. The fair will be held at Arrillaga Center for Sports and Recreation between 10 a.m. and 3 p.m.



Fair participants will have an opportunity to measure their current health status and learn new ways to improve exercise, eating and lifestyle habits. Here are just a few of the things offered to help you get active, eat better and unwind:

- Blood pressure, body fat, bone density, strength and flexibility, and cholesterol measurements
- A rock wall for climbing
- Healthy food demonstrations
- Information on new exercise classes
- Testing your sunglasses for level of protection
- Skin screening for sun damage
- Bike safety checks, and bike licensing
- Information about ergonomically correct workstations and healthy work postures
- More...

Avoid lines by scheduling an appointment in advance for the cholesterol test and to donate blood. For instructions, see the full [Wellness Fair announcement](#).

Events [\(see all | submit\)](#)

Today (12:30 p.m.) [Experimental Seminar: SiPIN Hybrid CMOS Arrays: A New Contender](#)

Today (4:15 p.m.) [Stanford Physics Colloquium: A Miniature Synchrotron using Inverse Compton Scattering](#)

Apr 22 (12:00 p.m.) [WIS Seminar: Vascular Disease—Getting Closure on Abnormal Leg Veins](#)

Access [\(see all\)](#)

[Underground Piping Work near Building 28](#)

Announcements [\(see all | submit\)](#)

Lab Announcements

[SMB Summer School 2009 Dates Announced](#)

[Beware of Sites Advertising Antivirus 2009](#)

Community Bulletin Board

[Registration Open: SLAC in the LHC Era—Ambitions from the SLUO Community](#)

Training

Lab Training [\(calendar | register\)](#)

Today (8:00 a.m.) [Forklift Operator Training](#)

Upcoming Workshops & Classes [\(more | register\)](#)

CANCELED: Apr 22 (9:00 a.m.) [Excel 2007 Level 1](#)

May 6 (1:00 p.m.) [Word Transition from Office 2003 to 2007](#)

May 6 (8:30 a.m.) [Excel Transition from Office 2003 to 2007](#)

News [\(submit\)](#)

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