

The Beams and Applications Seminar Series

The Jefferson Lab Light Source Program.

Gwyn Williams
**Thomas Jefferson National
Accelerator Facility**

Bldg. 401, Room B2100
Friday, March 06, 1:30 pm
Host: Kwang-Je Kim, ASD

We will present details of the JLab light sources, and will make comparisons with storage ring sources and x-ray FELs. We will also present some of the key applications that are planned.

Jefferson Lab operates a fourth generation light source currently operating in the infrared, but with possibilities of going to shorter wavelengths, into the VUV and X-ray region. The facility is based on an Energy Recovered Linac (ERL), which has a significant advantage in brightness over a conventional electron storage ring (synchrotron) source. Both terms contributing to the brightness are enhanced. The power is enhanced by multiparticle coherent effects, while the source size is smaller because the horizontal emittance is approximately equal to the vertical emittance (round beams). This type of source has additional advantages in that the bunch lengths are in the 100's of femtosecond range, allowing ultrafast phenomena to be studied in the time domain. The JLab facility operates a 1-14 micron oscillator FEL, and a broadband THz source. These sources provide 120/1 microJoules/pulse respectively at 75 MHz. Recently installed is a UVFEL oscillator which is designed to reach 250nm in the first harmonic with 25 microJoules/pulse. Thus the 3rd harmonic will provide useful power at 80 nm. Higher electron beam energies and other machine upgrades could allow the present facility to reach 1nm.

For more information visit

http://aps.anl.gov/News/Meetings/Beams_and_Applications_Seminars/

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(mnolasco@aps.anl.gov, 630-252-6159) to arrange for a gate pass.