

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

The Jefferson Lab VUV-FEL at 10 eV and above¹ GWYN WILLIAMS, Jefferson Lab, FEL TEAM — We will present details of the vacuum ultraviolet performance of the Jefferson Lab Free Electron Laser. The JLab FEL is oscillator-based [1] and uses a superconducting energy recovered linac for CW RF operation at up to 75 MHz. Lasing at a fundamental wavelength of 372 nm, the third harmonic is at 124 nm, corresponding to a photon energy of 10 eV. The energy per pulse in the fundamental is 20 microJoules, which at 9 MHz yields an average power of 180 Watts. The pulses have a FWHM of order 300 fs, which essentially determines the optical bandwidth. The third harmonic, which is a 0.1 - 1% fraction of this, is considerably brighter than any other source in the region. Further, being an FEL, there is a wide range of tunability in the 1 eV to 15 eV range. Additional reach is possible with increased electron beam energy, and some options will be discussed in the talk.

[1] S. Benson et al. Nucl. Instrum. Methods A582, 14-17 (2007).

¹We acknowledge funding from ONR, AFRL and DOE-BES under contract AC05-06OR23177.

Gwyn Williams
Jefferson Lab

Date submitted: 30 Nov 2010

Electronic form version 1.4