Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

**X-ray beam source from a Self-modulated laser wakefield accelerator** NUNO LEMOS, Univ of California - Los Angeles, FELICIE ALBERT, LLNL, K. A. MARSH, J. L. SHAW, UCLA, P KING, U Texas, S PATANKAR, J RALPH, B. B. POLLOCK, LLNL, J. L. MARTINS, L. D. AMORIM, GoLP/IPFN - IST, F. S. TSUNG, UCLA, C GOYON, A PAK, J. D. MOODY, LLNL, W SCHUMAKER, F FIUZA, S. H. GLENZER, SLAC, B. M. HEGELICHAND, U Texas, A SAUNDERS, R. W. FLACONE, UC Berkeley, C JOSHI, UCLA — To diagnose material properties under extreme conditions of temperature and pressure the development of a directional, small-divergence, small source size and short pulse duration x-ray source has become essential. In this work we explore through experiments and PIC simulations the betatron radiation generated in self-modulated laser-wakefield accelerators. The experiment was preformed at the Jupiter Laser Facility, LLNL where electrons with energies up to 200 MeV and Betatron x-rays with critical energies >10 keV were observed. OSIRIS 2D PIC simulations indicate that the x-ray critical energy directly scales with the $a_0$ of the laser and can easily be increased to critical energies exceeding 50 keV using a laser with $a_0$ of 3.

Nuno Lemos
Univ of California - Los Angeles

Date submitted: 19 Jul 2016 Electronic form version 1.4