Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Compact Laser-Compton X-ray Source at LLNL[1] YOONWOO HWANG, UC Irvine, ROARK MARSH, DAVID GIBSON, GERALD ANDERSON, CHRISTOPHER BARTY, LLNL, TOSHIKI TAJIMA, UC Irvine — The scaling of laser-Compton X-ray and gamma-ray sources is dependent upon high-current, low-emittance accelerator operation and implementation of efficient laser-electron interaction architectures. Laser-Compton X-rays have been produced using the unique compact X-band linear accelerator at LLNL operated in a novel multibunch mode, and results agree extremely well with modeling predictions. An Andor X-ray CCD camera and image plates have been calibrated and used to characterize the 30 keV laser-Compton X-ray beam. The X-ray source size and the effect of scintillator blur have been measured. K-edge absorption measurements using thin metallic foils confirm the production of narrow energy spread X-rays and results validate X-ray image simulations. Future plans for medically relevant imaging will be discussed with facility upgrades to enable 250 keV X-ray production.

[1]This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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Date submitted: 14 Jul 2016 Electronic form version 1.4