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**High-Brightness  $\sim$ keV Source and Diagnostic Development** C. STOECKL, W. THEOBALD, P.A. JAANIMAGI, P. NILSON, M. STORM, J.A. DELETTREZ, R. EPSTEIN, T.C. SANGSTER, Laboratory for Laser Energetics, U. of Rochester, D. HEY, A.J. MACKINNON, H.-S. PARK, P.K. PATEL, R. SHEPHERD, LLNL, J. GREEN, K.L. LANCASTER, P.A. NORREYS, RAL — High-energy-petawatt (HEPW), laser-driven backlighter sources with photon energies from  $\sim 1$  to  $\sim 3$  keV have a broad range of applications in high-energy-density physics and inertial confinement fusion. Backlighter source development studies have been performed on the VULCAN petawatt laser at RAL and the Multi-Terawatt laser at LLE and will be continued on OMEGA EP. The x-ray emission was measured on aluminum flat-foil targets. A conversion efficiency of up to  $1 \times 10^{-5}$  1/eV/sr from laser energy into the Al He $_{\alpha}$ -line energy was observed. Assuming a circular emission region with a FWHM of  $\sim 25$   $\mu$ m and an emission time of 30 ps a brilliance of  $\sim 15$  J/eV/ps/sr/cm $^2$  can be inferred. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement DE-FC52-92SF19460.

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