Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Characterization of Ar and Kr Kα self-emission in clustering gas jets NATHAN KUGLAND, UCLA and LLNL, TILO DOEPPNER, PAUL NEUMAYER, HYUN-KYUNG CHUNG, LLNL, CARMEN CONSTANTIN, UCLA, ANDREAS KEMP, SIEGFRIED GLENZER, LLNL, CHRISTOPH NIEMANN, UCLA and LLNL — Kα self-emission from Ar and Kr has been characterized by x-ray spectroscopy and x-ray imaging. The Kα x-rays were produced by irradiating clustering Ar and Kr gas jets with ultra-high intensity (10^{20} W/cm^2), ultra-short pulse (150-700 fs) lasers. These Kα sources are very high contrast (defined as the ratio of Kα to continuum radiation) and the Kα emission area is millimeter-scale. Such qualities make these sources useful for high-contrast diffraction and for backlighting large objects in extended-source geometries. This work was performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory, through the Institute for Laser Science and Applications, under contract DE-AC52-07NA27344. The authors also acknowledge support from Laboratory Directed Research and Development Grant No. 08-LW-004.

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Date submitted: 14 Jul 2008 Electronic form version 1.4