

Abstract Submitted
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Production of K- α Emission X-Rays from Laser Solid Interactions for use in Phase Contrast Imaging THOMAS BATSON, ZHEN ZHAO, BIXUE HOU, JOHN NEES, A.G.R. THOMAS, KARL KRUSHELNICK, University of Michigan — Phase contrast X-ray imaging represents significant potential for radiographical medical applications. The relativistic lambda cubed laser at the University of Michigan produces 30 fs laser pulses at a peak intensity of $5 \times 10^{18} W/cm^2$. When focused onto solid targets, the resulting plasma formation produces small source size and monochromatic K- α X-rays well suited to the purpose of imaging, since the spatial coherence of the X-ray source is inversely dependent on source size. In addition, the laser's repetition rate of 500 Hz allows long time scale production of the X-rays. Currently work is underway to accurately measure the X-ray source size, which will precisely determine the spatial coherence of the X-ray pulses. Radiographic images will then be taken with a range of coated and uncoated metal laser targets and studied for phase contrast characteristics.

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