

Abstract Submitted
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Focusing Betatron Radiation Produced by Laser Wakefield Accelerated Electrons with a Spherically Curved Crystal¹ M. VARGAS, W. SCHUMAKER, F. DOLLAR, V. CHVYKOV, G. KALINTCHENKO, V. YANOVSKY, A. MAKSIMCHUK, K. KRUSHELNICK, A.G.R. THOMAS, Center for Ultrafast Optical Science, University of Michigan — Laser Wakefield Acceleration in the bubble regime can be used to accelerate electrons to GeV energies while simultaneously wiggling them to produce a synchrotron like x-ray radiation. Using HERCULES, a 100TW TiSapphire laser, 30fs pulses are focused onto a 5mm He gas jet to accelerate electrons in the bubble regime. The betatron x-rays produced by the transverse motion of the accelerated electrons are focused onto a detector by a spherically curved quartz, and other crystals. This result shows the feasibility of dynamic studies of crystal diffraction, with femtosecond level accuracy, using pump probe techniques.

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