

Abstract Submitted
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The Crystal Backlighter Imager: a spherically-bent crystal imager for radiography on the National Ignition Facility GARETH HALL, Lawrence Livermore National Laboratory, CHRISTINE KRAULAND, General Atomics, JUSTIN BUSCHO, ROBIN HIBBARD, THOMAS MCCARVILLE, ROGER LOWE-WEBB, SHANNON AYERS, DANIEL KALANTAR, THOMAS KOHUT, G. ELIJAH KEMP, DAVID BRADLEY, PERRY BELL, OTTO LANDEN, NATHANIEL BREWSTER, KENNETH PISTON, Lawrence Livermore National Laboratory — The Crystal Backlighter Imager (CBI) is a quasi-monochromatic, near-normal incidence, spherically-bent crystal imager being developed for the NIF, which will allow ICF capsule implosions to be radiographed close to stagnation for the first time. This has not been possible using the previous pinhole-based area-backlighter configuration, as the self-emission from the capsule hotspot overwhelms the backlighter in the final stages of the implosion. CBI mitigates the broadband self-emission from the capsule hot spot by using the extremely narrow bandwidth (a few eV) inherent to imagers based on near-normal-incidence Bragg x-ray optics. The development of a diagnostic with the capability to image the capsule during the final stages of the implosion (r less than 200 μ m) is important, as it will allow the shape, integrity and density of the shell to be measured, and will allow the evolution of features, such as the fill tube and capsule support structure, to be imaged close to bang time. The concept and operation of the 11.6keV CBI diagnostic will be discussed, and the first results from experiments on the NIF will be presented. Prepared by LLNL under Contract DE-AC52-07NA27344.

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