

Abstract Submitted
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Optimization of NIF scale backlighters for radiographing thin shell capsule surrogates in indirect drive* R.K. KIRKWOOD, J. MILOVICH, D. MEEKER, D. KALANTAR, E. DEWALD, O.L. LANDEN, LLNL — To produce sufficiently symmetric implosions for indirect drive ignition with the NIF laser, we will require laser illuminated foils as x-ray backlighters for radiographing distortions on surrogate thin shells. The back lit x-ray images will be used as a basis for tuning beam pulse shape, timing, and other aspects of target design, to achieve optimum symmetry of implosion. The accuracy of the symmetry measurement is limited by the backlighter x-ray flux, photon statistics, and other noise sources, as well as the resolution of the camera, and the uniformity of the source.. We have performed experiments on the Omega laser to test the backlighter configuration and imaging system with NIF relevant beam intensities, x-ray energies, and beam incidence and detector viewing geometry. The x-ray source is imaged with gated x-ray pin hole cameras and optics similar to those planned for the NIF ignition experiments to determine uniformity and x-ray flux is detected with absolutely calibrated diodes to determine conversion efficiency. Results of these experiments will be discussed in the context of the measurement accuracy under ignition conditions.

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