Abstract Submitted
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Quantitative Analysis of X-ray Self Emission in ICF Implosions Using Orthogonal Images[1] LAURA ROBIN BENEDETTI, S. R. NAGEL, N. IZUMI, S. F. KHAN, T. MA, A. PAK, LLNL, G. A. KYRALA, LANL, P. PATEL, D. K. BRADLEY, LLNL — Laser-driven experiments can create implosion cores that are hot and dense enough for inertially-confined fusion. This implosion method is inherently three-dimensional, where loss of symmetry often indicates reduced performance. However, the symmetry of the core at stagnation is typically only diagnosed by images of x-ray self emission along two orthogonal lines of sight. We report on a method to use x-ray self-emission images along multiple lines of sight to infer quantitative properties of the implosion. Specifically we find that we can use absolute x-ray yields to quantify variations in the compressed fuel and shell that surrounds the core. In addition, we can use the spatial variations in x-ray brightness to estimate volumes of very asymmetric hotspots that are otherwise not well described by spherical or ellipsoidal approximations.

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