Abstract Submitted
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Shock Timing and Radiation Temperature in National Ignition Campaign Holhraum Tuning Experiments using the Dante X-Ray Spectrometer[1] H.B. RADOUSKY, H.F. ROBEY, K. WIDMANN, J.D. MOODY, O.L. LANDEN, Lawrence Livermore National Laboratory — Indirect drive ignition on the National Ignition Facility (NIF) utilizes a sequence of four shocks to compress a spherically-shaped fuel capsule within a laser heated gold hohlraum target. The soft x-ray power diagnostic DANTE, provides the important capability of measuring the spectrally and temporally resolved absolute x-ray emission flux from the hohlraum. Up to 18 x-ray diodes are fielded on DANTE which allows continuous spectral coverage from 50eV to 20,000 eV. This spectral range fully covers the black body radiation and the characteristic M-band and L-band emission from the high-Z target. Energetics experiments on NIF produce over 10 TW/sr of peak x-ray flux which corresponds to peak radiation temperatures near 300 eV (3.5 Million Deg. K). The Dante measured flux and radiation temperature are correlated with measurements of important shock parameters such as the break out times and shock velocity for the complex shock timing sequence. We will discuss the rationale for this shock configuration and show how recent Dante data can improve confidence in tuning adjustments to the laser and target parameters for achieving ignition.

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