Abstract Submitted
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Time- and spatially-resolved characterization of halfraum radiation temperature using a VISAR interferometer measurement of quartz shock velocity at the National Ignition Facility[1] S. MACLAREN, P. CELLIERS, A. COOPER, M. FOORD, A. MOORE, H.-S. PARK, M. SCHNEIDER, R. SEUGLING, R. WALLACE, P. YOUNG, LLNL — A VISAR diagnostic has recently been commissioned at the National Ignition Facility (NIF). Experiments will be conducted using a 500 micron quartz window with a 70 micron aluminum ablator. This package is located at the back plane of a 5 mm diameter halfraum driven by 80 beams from the NIF laser delivering a total of 240 kJ. The VISAR records the speed of the shock resulting from the 9 ns laser pulse at it traverses the quartz window. The spatial dimension of the VISAR field of view will capture the radial uniformity of the drive pressure from the halfraum. 2-D integrated simulations have been run predicting the shock speed and pressure uniformity, and results will be compared. Because the ablation pressure that drives the shock has a power law dependence on the drive temperature, there should be a similar power law scaling between the measured shock velocity and the drive temperature. This scaling will be examined with comparisons to the radiation drive temperature in the simulations, as well as with comparisons to the NIF DANTE measurement of power from the halfraum laser entrance hole.

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