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Simulation of NIF Ignition Shock Timing Diagnostics RICK OLSON, SNL, DAVID BRADLEY, PETER CELLIERS, HARRY ROBEY, LLNL — In previous Omega experiments, time-resolved measurements of hohlraum radiation temperature were made via interferometer measurement of quartz shock velocity.[1] In the present work, the data of Ref. 1 are used to confirm the validity of two new "synthetic diagnostics" (rad-hydro code postprocessor simulations of the diagnostics). The synthetic VISAR provides a simulated streaked image showing time-resolved fringe shifts of a line-imaging velocity interferometer.[2] The simulated VISAR "data" can be unfolded to provide a recording of the shock velocity within the interior of an optically-transparent material (eg., quartz in the Ref 1 data or liquid deuterium in the NIF ignition campaign). The synthetic SOP provides a simulated intensity-time image of a streaked optical pyrometer.[3] The simulated SOP "data" can be unfolded to provide shock breakout times and time-resolved shock front intensity. These two synthetic diagnostics include a variety of realistic experimental and diagnostic uncertainties. Both were developed for use in a NIF simulated ignition campaign, and were utilized in a series of simulated ignition campaign "shots" in which the shocks were empirically tuned so as to converge to a successful simulated NIF ignition attempt. 1. R. E. Olson *et al.*, Rev. Sci. Instrum. 77, 10E523 (2006). 2. P. M. Celliers *et al.*, Rev. Sci. Instrum. 75, 4916 (2004). 3. J. A. Oertel *et al.*, Rev. Sci. Instrum. 70, 803 (1999).

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