

Abstract Submitted
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Simultaneous measurements of the X-ray and nuclear shock-bang times in ICF plasmas¹ G. SUTCLIFFE, H. SIO, H. RINDERKNECHT, J. FRENJE, A. ZYLSTRA, M. GATU JOHNSON, F. SEGUIN, C.K. LI, R. PETRASSO, MIT, J.R. RYGG, A. MACPHEE, A. MACKINNON, S. LE PAPE, L. BERZAK HOPKINS, LLNL, S.P. REGAN, C. SANGSTER, LLE, J. KILKENNY, GA, R. OLSON, LANL — Recent measurements of nuclear and x-ray shock-bang times in ICF implosions at OMEGA and the NIF provide new constraints on implosion modeling and may elucidate the underlying physics of e-i equilibration during the shock phase. As the ions are predominantly heated by the converging and rebounding shock, the ion temperature is initially much higher than the electron temperature and the difference relaxes at the e-i equilibration time scale. Nuclear and x-ray bang times are expected to differ because of different temperature dependence. At OMEGA, nuclear shock-bang time and burn history are routinely measured using streak camera diagnostics, while x-ray self-emission is observed with x-ray framing cameras. We are exploring the possibility of measuring both x-ray and nuclear shock-bang times with a single diagnostic with high relative accuracy, and will discuss the precision with which they can be made and the diagnostics necessary at OMEGA.

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