Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Shock induced cavity collapse. JONATHAN SKIDMORE, HUGO DOYLE, BRETT TULLY, MATTHEW BETNEY, PETA FOSTER, TIM RINGROSE, ROHAN RAMASAMY, JAMES PARKIN, TOM EDWARDS, NICHOLAS HAWKER, First Light Fusion — . Results from the experimental investigation of cavity collapse driven by a strong planar shock (>6km/s) are presented. Data from high speed framing cameras, laser backlit diagnostics and time-resolved pyromety are used to validate the results of hydrodynamic front-tracking simulations. As a code validation exercise, a 2-stage light gas gun was used to accelerate a 1g Polycarbonate projectile to velocities exceeding 6km/s; impact with a PMMA target containing a gas filled void results in the formation of a strong shockwave with pressures exceeding 1Mbar. The subsequent phenomena associated with the collapse of the void and excitation of the inert gas fill are recorded and compared to simulated data. Variation of the mass density and atomic number of the gas fill is used to alter the plasma parameters furthering the extent of the code validation.

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Date submitted: 15 Jul 2016 Electronic form version 1.4