

Abstract Submitted  
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**Proton Radiography of Self-Generated Fields in Strongly-shocked, Low-Density Systems** RUI HUA, UCSD, SIO HONG, MIT, YUAN PING, LLNL, CHRISTOPHER MCGUFFEY, FARHAT BEG, UCSD, RIP COLLINS, LLNL, UCSD COLLABORATION, LLNL TEAM, MIT COLLABORATION — Anomalies, in ICF database, have raised challenges to the exclusively hydrodynamic models used in simulation, bringing to light the kinetic effect, which could be a dominated factor in shock phase because of the increasing ion-ion mean free path. Significance of multi-species effects, as well as self-generated electric fields at the shock front has been revealed and considered in recent simulations. [1] First observation of the shock front electric fields was achieved in an ICF implosion experiment [C.K. Li] [2]. To quantify dependence of the field generation on shock parameters, a shock imaging platform by broadband proton radiography was developed on OMEGA-EP. From the first shot day, shock propagation and proton deflection at shock front were clearly seen in gas targets. Varying laser conditions will be carried out on the second shot day in September. The results, as well as the electric field characteristics inferred through analytical and theoretical methods will be presented. This work was performed under DOE contract DE-AC52-07NA27344 with support from OFES Early Career program and LLNL LDRD program

[1] C.Bellei, et al. Phys. Plasmas. 20, 012701, (2013)

[2] C.K.Li, et al., Phys. Rev. Lett .100, 225001 (2008)

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