Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Sound Velocity in Shocked Iron to ~2700 GPa[1] MARGARET HUFF, LINDA CRANDALL, J.R. RYGG, BRIAN HENDERSON, MOHAMED ZAGHOO, G.W. COLLINS, Lab for Laser Energetics, CHAD MCCOY, Sandia National Labs, DAYNE FRATANDUONO, PETER CELLIERS, JON EGGERT, Lawrence Livermore National Labs — Measurements of the sound speed in a shock-compressed material have long been sought because they provide important information about the thermodynamic derivative in the equation of state of that material at high pressure. Specifically, constraining the sound speed in iron at high pressures can be useful to planetary science and geophysics to understand core formation and dynamo physics. We present measurements of shockcompressed iron sound speed to pressures of ∼400 to 2700 GPa. A novel nonsteady wave-analysis technique[2] allows us to infer sound speed from the relative arrival times of pressure perturbations that transited the shocked sample material and an adjacent reference material. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

[1]DOE NNSA Award Number DE-NA0001944
[2]D. E. Fratanduono *et al.*, J. Appl. Phys. **116**, 033517 (2014).

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Date submitted: 08 Jul 2020 Electronic form version 1.4