

Abstract Submitted
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Modeling Sensitivity Analysis of the Interface Temperature of Dynamically Compressed Iron¹ DAVID BRANTLEY, ERIC SHI, MINTA AKIN, Lawrence Livermore Natl Lab — Precise measurements of the bulk temperature of iron at Earth’s core pressures provides a critical constraint on the iron equation of state, and is a vital input in generating accurate models of the Earth’s core. Dynamic compression experiments offer a promising path into the relevant high pressure – high temperature regime, however temperature measurements of shock compressed opaque materials are challenging due to the small optical depth, non-ideal effects, and often poorly known physical properties in this sector of P-T space. In this talk, I present a detailed sensitivity analysis of the iron interface temperature resulting from dynamic compression of iron at our two-stage light gas gun facilities. Hydrocode simulations are employed to examine the impact of several effects including equation of state, thermal conductivity, and the presence of gaps.

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