

Abstract Submitted  
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**Conductivity measurements of multi-shock compressed deuterium** J.R. RYGG, D.G. HICKS, R.F. SMITH, G.W. COLLINS, O.L. LANDEN, LLNL — The transport properties of compressed hydrogenic materials affect the stability of accelerating inertial confinement fusion targets and the structure of gas-giant planets. Calculation of the electrical and thermal conductivities of hydrogen and deuterium is particularly challenging in the region of transition from an insulating molecular to a metallic state (near 1 MBar and several thousand K), because in this region the conductivities change by several orders of magnitude. Deuterium samples were compressed through this region up to multiple MBar by a sequence of laser-driven shocks. Results of simultaneous pressure, temperature, and optical reflectivity measurements of these samples will be reported. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. IM #LLNL-ABS-405478.

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