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Equation of state measurements in Ta₂O₅ aerogel JOSHUA MILLER, TOM BOEHLY, DAVID MEYERHOFER, University of Rochester, JON EGGERT, Lawrence Livermore National Laboratory — The examination of the equation of state of Ta₂O₅ aerogel using laser driven shock compression has been performed at OMEGA. The foams, with densities in the range of 0.1 to 0.25 g/cc, were loaded by shocks with pressures in the range of 50 to 300 Gpa. Hugoniot parameters inferred from mechanical measurements of the shock evolution and temperatures inferred from the shock front self-emission were resolved on the sub-nanosecond time scale during this study. Comparisons between these experimental results and the existing qEOS model show that the aerogel is much more compressible than qEOS predicts at pressures below 100 GPa. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC03-92SF19460, the University of Rochester, and the New York State Energy Research and Development Authority. The support of DOE does not constitute an endorsement by DOE of the views expressed in this article.

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