

Abstract Submitted
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Experimental Measurement of Compression Isentropes to Multi-megabar Pressures¹ JEAN-PAUL DAVIS, Sandia National Laboratories — Isentropic ramp-wave loading of condensed matter has been hailed as a potential means to obtain accurate equation-of-state (EOS) data in the solid phase at relatively low temperatures and multimegabar pressures. In this range of pressure, isothermal diamond-anvil techniques have limited accuracy due to reliance on theoretical EOS of calibration standards; accurate isentropic compression data would help immensely in constraining EOS models. An isentropic compression technique developed using the Z Machine at Sandia as a magnetic drive has been extended to the multimegabar regime. Diagnostics typically consist of time-resolved velocity interferometry to monitor the back surfaces of samples having different thickness but subjected to the same magnetic loading. A number of design and analysis issues arise when attempting to extract a stress-density curve from such data. Following a brief discussion of these issues, recent results will be presented for quasi-isentropic compression of several materials to greater than 200 GPa.

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