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**Compression of Deuterium Along Isentropes to Multi-TPa Pressures Measured with an Absolute Technique.<sup>1</sup>**

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Equation of state models for deuterium and other light elements have traditionally been tested experimentally along Hugoniot, primarily the principal Hugoniot. The compression path of DT fuel in inertial confinement fusion (ICF) follows isentropes to very high density, where little experimental data measuring the compression exist. We have developed an experimental platform to compress deuterium along isentropes similar to the ICF paths using the National Ignition Facility and to diagnose the density using a radiographic technique. Our approach combines spherical geometry with multi-shock reverberation to achieve near isentropic compression to multi-TPa pressures. Streaked radiography measures the volume of the compressed sample. We will report on initial results from the platform showing compression data at pressures approaching 10 TPa and we will discuss prospects for future improvements.

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