Abstract Submitted
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In-Situ Diffraction on the National Ignition Facility (NIF) JON EGGERT, DAVE BRAUN, RYAN RYGG, AMY LAZICKI, DAYNE FRATANDUONO, RAY SMITH, FEDERICA COPPARI, RICK KRAUS, DAMIAN SWIFT, JIM MCNANEY, YUAN PING, KERRI BLOBAUM, MIKE WILSON, MARIUM AHMED, GILBERT COLLINS, TOM ARSENLIS, LLNL, LLNL-SHOCK PHYSICS GROUP TEAM — Ramp compression experiments have opened a path toward the measurement of extreme states of compression for solid-state materials on lasers, pulsed power, and gas guns. While most experiments have measured wave profiles as an integrated probe of the material state, there is a trend toward making direct measurements of the material state in situ using diffraction, phase-contrast imaging, EXAFS, and XANES. This past year we succeeded in obtaining high-quality diffraction on the NIF using the TARget Diffraction In Situ (TARDIS) diagnostic. I will present some of our NIF results on lead and tantalum, including the prospects for determining not only structure, density, and stress, but also temperature and grain size in these experiments. I will close with future plans for further improving TARDIS.

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