Abstract Submitted
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**Laser induced sub-nanosecond shock and ramp compression of Al and Zr**[1] PAULIUS GRIVICKAS, MIKE ARMSTRONG, JONATHAN CROWHURST, HARRY RADOUSKY, JOSEPH ZAUG, RYAN AUSTIN, JON BELOF, Lawrence Livermore National Laboratory, HPC GROUP TEAM — Quasi-isentropic ramp waves generated by short laser pulses have been shown to have several advantages in studies of a material's EOS. An open question, however, remains; at what strain rates do the kinetics of material transformation become the limiting factor for such an approach? To address this question, we have subjected thin 0.2 – 0.5 um films of Al and Zr to both shock and ramp wave compression using sub-nanosecond laser pulses. Velocimetry data was collected using an ultrafast interferometry with 10 ps resolution and analyzed using the Lagrangian method. The results obtained are compared to the corresponding Hugoniot and isentrope curves reported in the literature at longer time scales. In Al we discuss the dependence of the elastic precursor on the strain rate, while in Zr we focus on the changes relevant to the material's phase transitions.

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