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Phase kinetics and Nonlinear Wave Propagation ROGER MINICH, DANIEL ORLIKOWSKI, JEFFREY NGUYEN, LLNL, LLNL COLLABORATION — The properties of phase transitions in high pressure experiments are primarily inferred from velocity time histories. The recent development of the graded density impactor for tailoring pressure drives has provided information concerning phase transitions for thermodynamic paths different from a Hugoniot. The phase kinetics are encoded in the nonlinear wave propagation where dissipative and dispersive effects along with the nonlinear elastic response influence the shape of the wave. The observation of traveling wave structures suggest how to determine the relative contributions from the competing effects. A brief discussion of how the dissipation and dispersion in the nonlinear wave is related to a Langevin representation for the generation of new phase will be presented. Comparison to experimental data for Bi, Fe, and water will be shown.

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