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Explicit time dependence of the Lagrangian velocity and ramp waves ROGER MINICH, DANIEL ORLIKOWSKI, Lawrence Livermore National Laboratory — In recent years new experimental techniques have been developed to study the propagation of nonlinear compression waves as they steepen and eventually approach a stationary Hugoniot state. In general the wave evolves from a low entropy state to a high entropy state with increasing Lagrangian coordinate. It is of interest to quantify how far the wave has deviated from an isentrope for accurate determinations of the equation of state. A new theoretical technique is being developed to exhibit the explicit time dependence of the Lagrangian velocity and therefore irreversibility in a wide range of experimental ramp waves. The technique is also demonstrated for theoretical nonlinear waves with varying degrees of irreversibility. The technique can be used to estimate corrections to the Lagrangian velocity for the determination of a more accurate equation of state.

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