

Abstract Submitted
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Analyzing Strength Effects in Shocks, Backwards and Forwards¹

BRYAN REED, DAMIAN SWIFT, JAMES STOLKEN, ROGER MINICH, MUKUL KUMAR, Lawrence Livermore National Laboratory — Extraction of strength information from shock measurements is typically done in two ways: Forward calculation with an assumed strength model and backward calculation of the behavior consistent with the measurement and wave propagation physics. Both approaches can be troublesome when rate-dependent effects are important, and each is subject to its own blind spots. We present results showing significant agreement between the two approaches, using a multiscale strength model for the forward calculation and a general thermodynamic formalism for the backward calculation. The discrepancies are indicative of known limitations of the two approaches, e.g. the parameter sensitivity of LaGrangian integration schemes at late times. The points of agreement between these totally different methods enhance our confidence in both, while the points of disagreement highlight focus areas for future development efforts.

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