

Abstract Submitted  
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**An iterative forward analysis technique to determine the equation of state of dynamically compressed materials<sup>1</sup>** SUZANNE ALI, RICHARD KRAUS, DAYNE FRATANDUONO, DAMIAN SWIFT, JON EGGERT, Lawrence Livermore Natl Lab — We developed an iterative forward analysis (IFA) technique with the ability to use hydrocode simulations as a fitting function for analysis of dynamic compression experiments. Current single experiment analysis techniques are frequently unable to decouple contributions to the measured material response. The IFA method enables global analysis of data from varied experimental platforms and time scales by optimizing over model parameters in the simulations, breaking the degeneracy in the material response. As validation, we simultaneously analyzed multiple magnetically driven ramp compression experiments on copper and compared with the conventional technique of analytically averaging results from Lagrangian analysis. Uncertainty propagation from the experimental uncertainties to the final stress-strain path was accomplished using both Monte Carlo and perturbation methods. Excellent agreement is obtained for both the material properties and the uncertainties.

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Suzanne Ali  
Lawrence Livermore Natl Lab

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