

Abstract Submitted  
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**A numerical study of the dynamic inelasticity under compression-shear ramp wave loading**<sup>1</sup> JOW DING, Washington State University, C. SCOTT ALEXANDER, JAMES ASAY, Sandia National Laboratories — A new experimental technique has recently been developed at Sandia National Labs to measure the dynamic material strength at high pressures using “magnetically applied pressure shear (MAPS)” ramp waves. The objective of this study is to use numerical simulation to gain insight on the inelastic material response to such loading and develop a knowledge basis for further development and improvement of the technique. Two different materials were studied. One was FCC aluminum which was described by a simple viscoplastic model and the other was BCC tantalum described by a dislocation density based model developed in a previous work. The responses of these models to non-proportional compression-shear loading; effects of rate sensitivity, pressure dependence of strength, and wave interaction on shear wave propagation; and the correlation between in-situ inelastic behavior and measured experimental output were investigated and compared with the available experimental data.

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