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## **Rarefaction wave propagation and longitudinal sound velocities in shock compressed tantalum** ROBERT SCHARFF, Los Alamos National Laboratory

The purpose of this work is to investigate the bcc to hexagonal structural phase transition recently reported for shock compressed tantalum. Longitudinal sound velocities were obtained using a velocimetry diagnostic to record the shock and rarefaction wave arrival times at the sample/anvil interface in the reverse-ballistic plate impact geometry. This approach allows for the determination of the sound speed as a function of pressure and is sensitive to volume changes associated with phase transition behavior. The authors demonstrate that if elastic – plastic wave interactions are correctly determined, then the high pressure structural phase transition that has been previously reported is notably absent.