Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

Sound Speed Measurements in Zirconium using the Front Surface Impact Technique PAULO RIGG, Los Alamos National Laboratory — We have performed a series of experiments impacting zirconium samples of varying purity level directly onto lithium fluoride (LiF) windows to determine both the Hugoniot and sound speed as a function of stress up to 70 GPa. This front surface impact (FSI) geometry is useful for determining sound speed in shock-compression experiments because wave interactions are mostly eliminated and multiple sample thicknesses are not needed in each experiment. The experimental results show a kink in the sound speed above 30 GPa, which is where we expect to see the transition from the ω (hex-3) to β (bcc) phase. A rarefaction shock also forms in the release wave in experiments conducted above 30 GPa giving further evidence that this phase transition is being observed. In this presentation, I will present the details of the technique used to obtain and analyze the data and a summary of the results.

Paulo Rigg
Los Alamos National Laboratory

Date submitted: 19 Feb 2013 Electronic form version 1.4