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Sound Velocity and Strength of Beryllium along the Principal Hugoniot using Quartz Windows CHAD MCCOY, Sandia National Laboratories, MARCUS KNUDSON, Sandia National Laboratories/ Washington State University, MICHAEL DESJARLAIS, Sandia National Laboratories — The measurement of the interface wave profile is a traditional method to determine the strength of a shocked material. A novel technique was developed to enable wave profile measurements with quartz windows, extending the range of pressures where wave profile measurements are possible beyond lithium fluoride windows. The technique uses the quartz sound velocity to map Lagrangian characteristics from the shock front back to the material interface and determine the particle velocity profile in a sample. This technique was applied to experiments conducted on beryllium at the Sandia Z Accelerator. We present measurements of the longitudinal and bulk sound velocity across the beryllium shock-melt transition and the strength of solid beryllium for pressures from 130 to 200 GPa. Sandia National Laboratories is a multi-mission laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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