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Sound speed measurements in shock compressed tantalum ROBERT SCHARFF, PAULO RIGG, ROBERT HIXSON, Los Alamos National Laboratory — Shock compression experiments were performed on tantalum to determine the longitudinal sound speed on the Hugoniot from 36 to 105 GPa. Tantalum samples were impacted directly on to lithium fluoride windows at velocities ranging from 2.5 to 5.0 km/s and the resulting particle velocity profiles at the sample/window interface were recorded using optical velocimetry techniques. The time of arrival of the rarefaction wave from the back surface of the tantalum sample was then used to determine the longitudinal sound speed at the corresponding impact stress. In contrast to recently reported work, we see no evidence of a phase transition in the tantalum in this stress range.

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