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Experiment to Measure the Strength of Lead to $\sim$ 1.5Mbar by Compression and Release using the Z Machine STEPHEN ROTHMAN, Atomic Weapons Establishment, Aldermaston, Reading, RG7 4PR, U.K., JUSTIN BROWN, JEAN-PAUL DAVIS, Sandia National Laboratory, Albuquerque, NM, 87185 — We are planning an experiment to infer the strength of lead at $\sim$ 1.5Mbar by ramp compression and release using the Z machine. Longitudinal and bulk sound speeds may be calculated from the measurement of the velocity of the interface between thin lead samples and a LiF window by an iterative process using either a transfer-function or characteristics-based method to map in-situ velocity onto measured window velocity. The hydrostatic response comes from analysis of the compression; the strength at each iteration step from the difference between the longitudinal and (extrapolated) bulk sound speeds. As lead is expected to be soft, the effect of its strength on the expansion on release is thought to be small, and may be treated as an error on the results, contrary to similar results for, e.g., Ta.

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