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Sound velocity measurements in shock compressed Al and Cu
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SOREQ NRC COLLABORATION, IAEC COLLABORATION, NRC NEGEV
COLLABORATION — Sound velocity measurements are useful for mapping the
phase diagram of materials and for calibration of their EOS outside the principle
Hugoniot. A common method is the overtake method, in which a flyer plate is ac-
celerated towards two or more targets of different thickness. In the present work,
experimental results of sound velocity measurements in shock compressed Al and
Cu are presented with comparison to data published in literature. The experimental
setup was designed and optimized for obtaining high accuracy results. This design
took into account the following factors: 2D effects such as edge rarefactions orig-
inating in the flyer plate, targets and the windows, EOS accuracy, thickness and
diameters tolerances, error correlations and expected experimental uncertainties.

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