

ANALYSIS OF MULTI-SHOCK INTERACTIONS

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The interaction of multiple, nearly equal strength shocks produces nonlinear overpressure amplification near the interaction point. The phenomenon has been studied both theoretically and experimentally in the past. Notably, Kuhl developed a shock cumulation theory which agreed well with test data for six shocks (MABS 6) and Sauer demonstrated similar agreement for three shocks (MABS 8). In previous undocumented work, the author extended such work to characterize convergence pressure enhancement factors as a function of incident pressure and number of shocks. This work is briefly summarized as a prelude to the current analysis.

Recent experimental data pertinent to this subject is the basis for evaluation of these prediction techniques. The most recent data is reviewed and comparisons with predictions are summarized. Comparisons with interacting unequal strength shocks will test the validity of the postulate by Ulrich and Mazzola that equal strength shock techniques can be used to model the unequal strength case (MABS 10).