

Abstract Submitted
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On a physics-based model equation for shock-position evolution in PMMA MARK LIEBER, MICHAEL MURPHY, MATTHEW BISS, Los Alamos National Laboratory — A governing differential equation for shock position in PMMA was derived from momentum conservation and an assumed exponential decay law for shock pressure. A new multi-diagnostic characterization method for measuring detonator output in PMMA witness blocks provided temporally-resolved, 1-D, shock-position data that was iteratively fit by solutions to the governing equation via a unique genetic algorithm solver. The goal was to calculate a solution that describes the temporal evolution of shock pressure in PMMA starting at the detonator interface. The exponential decay law was under investigation using experimental data, where different regimes were being considered for the decay coefficient. A successful solution provides extensive performance information that is directly relevant to the understanding and characterization of detonator function.

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