

Abstract Submitted  
for the SHOCK19 Meeting of  
The American Physical Society

**Quantitative High Speed Imaging for a Sympathetic Detonation Study** DANA DUKE, AMY BAUER, JEREMY DANIELSON, ROBERT GONZALES, DAVID OSCHWALD, Los Alamos National Laboratory — An experiment was performed which tested the sympathetic detonation of a plastic encased cylinder of high explosive (HE) charge by an identical neighbor placed ~6cm away. The two cylindrical charges consisted of a plane wave lens in a delrin case, driven by an RP-1 detonator. A high speed Shimadzu HPV-X camera was focused on the packages to record 128 images, backlit with a magnesium bulb. In this work, we developed a quantitative analysis technique for high speed video footage of HE drives to verify sympathetic detonation. We measure the position of the expanding cases and record this position as a function of time. In the experiment, we first performed three separate measurements of single experimental charges. Comparisons were made between: a single HE charge, an HE charge impacting on a “dummy” plastic charge, and an HE charge on an HE charge. The disassembly speeds of the “dummy” and the “live” charges were compared and exhibited sympathetic detonation. In this talk, the high speed images will be shown and the analysis technique demonstrated.  
LA-UR-19-21554

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Date submitted: 25 Feb 2019

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