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Experimental Observations of Detonator Function LAURA SMILOWITZ, BRYAN HENSON, DENNIS REMELIUS, DAVID OSCHWALD, NATALYA SUVOROVA, KEITH THOMAS, Los Alamos National Laboratory —
Exploding bridge wire, EBW, detonators are one of a few types of commercially available detonators. Their use is widespread, and they have been successfully used for over a half century. However, despite their robust function, the mechanism of function remains controversial. References definitively attributing EBW function to either shock or deflagration can both be found. In this work, we have applied a suite of diagnostics to observing the function of commercial EBW detonators. These diagnostics include traditional current, voltage, and light output as well as the addition of table-top flash radiography and the application of ultra-high speed cameras. We observe an initial thermal response spatially coincident and preceding what will be the apparent center of initiation of detonation. This initial response is observed in the IR, but not in the visible. This talk will present the experimental observations from our diagnostics and attempt to define what we know from direct observation as well as present a hypothesis for mechanism consistent with both our observations, and those previously reported by other groups.

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