

Abstract Submitted  
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**On the Initiation Mechanism in Exploding Bridgewire and Laser Detonators**<sup>1</sup> D. SCOTT STEWART, MIE, University of Illinois, Urbana, IL, K. THOMAS, S. CLARKE, H. MALLETT, M MARTINEZ, A. MUNGER, DX-1, Los Alamos National Laboratory, J. SAENZ, TAM, University of Illinois — Since its invention by Los Alamos during the Manhattan Project era the exploding bridgewire detonator (EBW) has seen tremendous use and study. Recent development of a laser-powered device with detonation properties similar to an EBW is reviving interest in the basic physics of the Deflagration-to-Detonation (DDT) process in both of these devices,[1]. Cutback experiments using both laser interferometry and streak camera observations are providing new insight into the initiation mechanism in EBWs. These measurements are being correlated to a DDT model of compaction to detonation and shock to detonation developed previously by Xu and Stewart, [2]. The DDT model is incorporated into a high-resolution, multi-material model code for simulating the complete process. Model formulation and predictions against the test data will be discussed. REFS. [1] A. Munger, J. Kennedy, A. Akinci, and K. Thomas, Dev. of a Laser Detonator, 30th Int. Pyrotechnics Seminar, Fort Collins, CO, (2004). [2] Xu, S. and Stewart, D. S. Deflagration to detonation transition in porous energetic materials: A model study. J. Eng. Math., 31, 143-172 (1997)

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