Abstract Submitted
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The Interaction of Explosively Generated Plasma with Explosives

DOUGLAS TASKER, Los Alamos Natl Lab, LANL TEAM — It has been shown that the temperature of explosively generated plasma (EGP) is of the order of 1 eV and plasma ejecta can be focused to achieve velocities as high as 25 km/s. These high velocity plasma can readily penetrate a wide range of materials including metals. Proof-of-principle tests were performed to determine if EGP could be used for explosive ordnance demolition and other applications. The test goals were: to benignly disable ordnance containing relatively sensitive high performance explosives (PBX-9501); and to investigate the possibility of interrupting an ongoing detonation in a powerful high explosive (again PBX-9501) with EGP. Experiments were performed to establish the optimum sizes of plasma generators for the benign deactivation of high explosives, i.e., the destruction of the ordnance without initiating a detonation or comparable violent event. These experiments were followed by attempts to interrupt an ongoing detonation by the destruction of the unreacted explosive in its path. The results were encouraging. First, it was demonstrated that high explosives could be destroyed without the initiation of a detonation or high order reaction. Second, ongoing detonations were successfully interrupted with EGP. LA-UR-15-20612.

Douglas Tasker
Los Alamos Natl Lab

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