

Abstract Submitted
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Supra-Pressure Detonation of Aluminized Explosive RONALD BROWN, B. KAROSICH, J. GAMBLE, J. STORK, A. BIESTERVELD, T. MOORE, J. SINIBALDI, Naval Postgraduate School, M. WALPOLE, A. LINDFORS, K. JACKSON, R. KOONTZ, D. THOMPSON, NAWC-China Lake — Results suggest that there is a continuum of reactions induced behind a supra-pressure convergent shock front in explosive cores of coaxial charges. The pressures in convergent fronts continually increase at an increasing rate from the circumference to the charge axis. Furthermore the unreacted explosive enveloped within the front is prepressurized at Von Neumann states much greater than from divergent detonation. For the case where the initiating sleeve detonates at constant velocity, the convergent front in the core moves at comparable velocity, suggesting a nearly common Rayleigh line behavior along the front. The sustained chemistry across the front, however, differs along the radii because of the pressure-dependent equilibria. The velocity of a sustained front in a PBXN-111 core circumferentially initiated by thin sleeves of either PBXN-110 or PBXN-112 is increased by approximately 40 percent. Measured peak pressure is approximately 600 times greater than that in a divergent front resulting from point initiation.

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