

Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Asymptotic Solutions of Detonation Propagation in a 2D Circular Arc. MARK SHORT, CHAD MEYER, JAMES QUIRK, Los Alamos National Laboratory — The large pressure of the product gas generated by detonating high explosives causes lateral motion of the explosive at the material interface between the explosive and its confinement. In turn, this leads to streamline divergence and curvature of the detonation front (typically in a divergent fashion). The propagation of a detonation front in a given geometry depends on the amount of curvature generated. Here we describe an asymptotic analysis of detonation propagation in a 2D circular arc, examining dependencies of the motion on the size of the inner and outer arc radii, and the relation between the detonation velocity and curvature for different types of explosive.

Mark Short
Los Alamos National Laboratory

Date submitted: 29 Jul 2015

Electronic form version 1.4