Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Numerical study of detonation ignition via converging shock waves CHRISTIAN SCHMITZ, MILTIADIS PAPALEXANDRIS, Univ Catholique de Louvain — In this talk we present results of a numerical study on gaseous detonation ignition via converging shock waves in reflectors. In our study, chemical kinetics is modelled by a three-step chain-branching mechanism possessing an explosion limit. According to our simulations, as soon as the shock reflects from the apex of the domain, the temperature and pressure behind it can exceed the explosion limit, thus initiating rapid burning. However, the subsequent expansion of the reflected shock might eventually inhibit detonation ignition. To explore further the interplay between these mechanisms, we discuss results of parametric studies with respect to confinement geometries and present estimates for the minimum shock strength required for detonation ignition.

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Date submitted: 01 Jul 2014 Electronic form version 1.4