SOME RECENT EXPERIMENTAL STUDIES OF TRANSITION TO DETONATION IN GASEOUS MIXTURES

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Abstract:

The paper will report the results of recent experimental observations of flame acceleration and possible subsequent transition to detonation. The experiments include macroscopic field-scale observations of flame acceleration and onset of detonation in a straight pipe as well as more detailed laboratory based observations of shock-flame interaction and flame growth following direct ignition of gases at elevated temperatures. Based on these observations, and supporting numerical computations, the paper concludes with a discussion of the nature of transition to detonation in gases. Parallels are also drawn with some observations of deflagration to detonation transition in solid explosives.