
Self-sustaining regime of flame acceleration in channel and mechanism of detonation formation

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The paper studies numerically the features of transient acceleration of the flame and sequential detonation formation inside three-dimensional rectangular channel filled with hydrogen-oxygen mixture. The features of the flame evolution are analyzed for flames with different topology of the reaction surface. It is shown that independent on the geometry factors and the features of the flow inside the channel the detonation forms as a result of flame acceleration in a self-sustaining regime determining the pressure increase in the reaction zone.

Keywords: *transient combustion regimes, deflagration-to-detonation transition, hydrogen safety, numerical simulation.*

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