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# Phenomenological Approach to 3D Spinning Combustion Waves: Numerical Experiments with a Rectangular Rod

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## ABSTRACT

Spinning waves are observed in solid flames and detonation when the plane uniformly propagating reaction front loses stability and breaks down into zones of intensive reaction. In this work, we analyze a 3D phenomenological model of such phenomena formulated in the form of a sixth-order nonlinear partial differential equation for the position of the front. We present numerical results for the case when the front propagates through a rod with a rectangular cross section. Over time, a nontrivial self-sustained regime establishes. The steepest sections of the front are observed to move primarily across the rod, which is also typical for the spinning waves in cylindrical geometry.