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The Dynamics of Unsteady Detonation with Diffusion CHRISTOPHER ROMICK[1], University of Notre Dame, TARIQ ASLAM[2], Los Alamos National Laboratory, JOSEPH POWERS[3], University of Notre Dame — We consider an unsteady one dimensional detonation with diffusion. The system studied is a standard one step kinetics model whose inviscid stability properties are well characterized. The introduction of diffusion creates an interaction between the length scales of reaction and diffusion thus delaying the onset of instability of the system when the length scales of diffusion and reaction overlap. This interaction is admitted in systems of complex kinetics where the finest reaction length scales are comparable to those of a viscous shock.

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