Numerical stability analysis for thin film flow

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Abstract

We discuss various aspects of numerical stability analysis of periodic roll wave solutions arising in equations of inclined thin film flow, with an eye toward the development of guaranteed error bounds. In particular, we rigorously verify stability of a family of periodic wave solutions arising in a generalized Kuramoto-Sivashinsky equation in the Korteweg-de Vries limit, that is, in the limit viscosity goes to zero.

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