

## BIFURCATIONS IN TWO BOUNDARY-VALUE PROBLEMS FOR THE KURAMOTO-SIVASHINSKY EQUATION <sup>1</sup>

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We study the boundary-value problems for the Kuramoto-Sivashinsky equation governing the known technological process in nanoelectronics, namely, the plate processing by the ion flow. We consider the classical case for this equation [1–3]

$$u_t = -u_{xxxx} - bu_{xx} + a_2(u_x)^2 + b_2u_xu_{xx} + a_3(u_x)^3 + b_3(u_x)^2u_{xx} \quad (1)$$

with the boundary conditions

$$u_{xx}(t, 0) = u_{xx}(t, 1) = u_{xxx}(t, 0) = u_{xxx}(t, 1) = 0 \quad (2)$$

or

$$u(t, 0) = u(t, 1) = u_{xx}(t, 0) = u_{xx}(t, 1) = 0. \quad (3)$$

The stability of the homogeneous equilibriums are investigated as well as the local bifurcations of the spatially inhomogeneous solutions. For the boundary-value problem (1), (2) it is shown [2] that there exist local attractors formed by the set of unstable solutions. The bifurcation problems can be reduced to investigate any systems of ordinary differential equations (normal forms) by the method of the invariant manifolds.

### REFERENCES

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