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**The effect of profile symmetry on the nonlinear stability of mixing layers.** (English)

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Stud. Appl. Math. 83, No. 4, 287-317 (1990).

**Summary:** The nonlinear stability of arbitrary mixing-layer profiles in an incompressible, homogeneous fluid is studied in the high-Reynolds-number limit where the critical layer is linear and viscous. The type of bifurcation from the marginal state is found to depend crucially on the symmetry properties of the basic-state profile. When the velocity profile on the mean flow is perfectly symmetric, the bifurcation is stationary. When the symmetry of the profile is broken, the bifurcation is Hopf. The nonsymmetry of the mixing layer also introduces some changes in the critical layer and the matching of flow quantities across it.

**MSC:**

**76E30** Nonlinear effects in hydrodynamic stability  
**76E05** Parallel shear flows in hydrodynamic stability  
**35Q35** PDEs in connection with fluid mechanics

Cited in 1 Document

**Keywords:**

nonlinear stability of arbitrary mixing-layer profiles; incompressible, homogeneous fluid; type of bifurcation; basic-state profile

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**References:**

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