

**Schmid, Peter J.**

**Nonmodal stability theory.** (English) [Zbl 1296.76055](#)

Davis, Stephen H. (ed.) et al., Annual review of fluid mechanics. Vol. 39. Palo Alto, CA: Annual Reviews (ISBN 0-8243-0739-9/hbk). Annual Review of Fluid Mechanics 39, 129-162 (2007).

Summary: Hydrodynamic stability theory has recently seen a great deal of development. After being dominated by modal (eigenvalue) analysis for many decades, a different perspective has emerged that allows the quantitative description of short-term disturbance behavior. A general formulation based on the linear initial-value problem, thus circumventing the normal-mode approach, yields an efficient framework for stability calculations that is easily extendable to incorporate time-dependent flows, spatially varying configurations, stochastic influences, nonlinear effects, and flows in complex geometries.

For the entire collection see [\[Zbl 1106.76006\]](#).

**MSC:**

- [76E09](#) Stability and instability of nonparallel flows in hydrodynamic stability
- [76E30](#) Nonlinear effects in hydrodynamic stability
- [76-02](#) Research exposition (monographs, survey articles) pertaining to fluid mechanics

[Cited in 118 Documents](#)

**Keywords:**

[transient growth](#); [transition](#); [non-normal operators](#); [pseudospectra](#); [transfer function](#); [impulse response](#)