

Chapter 5 Introduction to The Stability of Laminar Flows

1. [Introduction](#)

- a. Basic Concepts
- b. Historical Background
- c. Small Disturbance Stability Analysis
- d. Method of Normal Modes

2. Examples of Principle of Exchange of Stabilities: Cellular Convection/Secondary Flow

- a. [Taylor Instability](#)
- b. [Gortler Instability](#)
- c. [Bernard Instability](#)

3. Kelvin-Helmholtz Instability

- a. [Parallel Flow Different Velocity: Shear Layer Instability](#)
- b. [Parallel Flow Different Velocity and Density](#)

4. [Orr-Sommerfeld Equation](#)

5. [Inviscid Instability of Parallel Flows](#)

6. Viscous Instability of Parallel Flows

- a. [Viscous Instability of Parallel Flows \(1\)](#)
- b. [Viscous Instability of Parallel Flows \(2\)](#)

7. [Turbulent Transition and Transition Modeling](#)

- a. [Turbulent Transition and Transition Modeling \(1\)](#)
- b. [Turbulent Transition and Transition Modeling \(2\)](#)