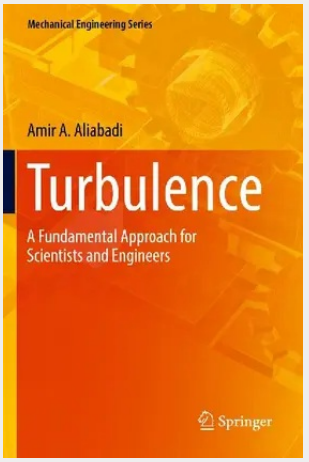
Aliabadi

Turbulence

A Fundamental Approach for Scientists and Engineers



This textbook explains turbulent flows using an introductory but fundamental approach to teaching the core principles, striking a balance between theoretical and practical aspects of the topic without overwhelming the reader with mathematical detail. It is aimed at students in various engineering disciplines—mechanical, civil, environmental—and the geosciences. It is divided in five parts. Part 1 provides the fundamentals of turbulence, main hypotheses, and analysis tools; Part 2 illustrates various measurement techniques used to study turbulent flows; Part 3 explains the modelling and simulation frameworks to study turbulent flows; Part 4 describes brief applications of turbulence in engineering and sciences; and Part 5 presents basic statistical, mathematical, and numerical tools.

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Combines theoretical, computational, experimental, and applied aspects of the topic

Reinforces concepts with practice problems at the end of each chapter

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