



# Aerothermodynamics of Turbomachinery: Analysis and Design

Naixing Chen

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## DESCRIPTION

Computational Fluid Dynamics (CFD) is now an essential and effective tool used in the design of all types of turbomachine, and this topic constitutes the main theme of this book. With over 50 years of experience in the field of aerodynamics, Professor Naixing Chen has developed a wide range of numerical methods covering almost the entire spectrum of turbomachinery applications. Moreover, he has also made significant contributions to practical experiments and real-life designs.

The book focuses on rigorous mathematical derivation of the equations governing flow and detailed descriptions of the numerical methods used to solve the equations. Numerous applications of the methods to different types of turbomachine are given and, in many cases, the numerical results are compared to experimental measurements. These comparisons illustrate the strengths and weaknesses of the methods – a useful guide for readers. Lessons for the design of improved blading are also indicated after many applications.

- Presents real-world perspective to the past, present and future concern in turbomachinery
- Covers direct and inverse solutions with theoretical and practical aspects
- Demonstrates huge application background in China
- Supplementary instructional materials are available on the companion website

*Aerothermodynamics of Turbomachinery: Analysis and Design* is ideal for senior undergraduates and graduates studying in the fields of mechanics, energy and power, and aerospace engineering; design engineers in the business of manufacturing compressors, steam and gas turbines; and research engineers and scientists working in the areas of fluid mechanics, aerodynamics, and heat transfer.

Supplementary lecture materials for instructors are available at [www.wiley.com/go/chenturbo](http://www.wiley.com/go/chenturbo)

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## ABOUT THE AUTHOR

**Naixing Chen** is a Professor of Aerodynamics at Institute of Engineering Thermophysics, Chinese Academy of Sciences, where he has been working for nearly 30 years since 1980 and had served as the former Director (1986 -1992) and Honorary Chairman of Scientific Committee (1992 - 1999). He worked as an Associate Professor and Deputy Division Head at the Institute of Mechanics, Chinese Academy of Sciences from 1978 to 1980. He was an Honorary Visiting Professor of the University of Auckland, New Zealand, from 1997 to 1999.

Since 1980s, Chen has been member of organizing or advisory committee of a couple of international conferences in his research field. He is also a very active with the editorial boards of journals. Chen also holds considerable honors including State Award of Natural Science (2002, Chinese government).

Chen has been very active in R & D in the area of aero-thermodynamics of turbomachinery for more than 50 years. He is one of the three leading authors of a very popular and influential textbook in China in the field of trubomachinery. He received a Diploma Engineering Degree and a Master Degree from The Moscow Baumann Technical University, both in turbomachinery.

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