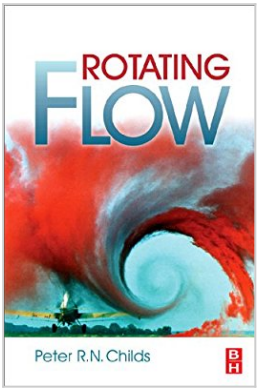

Rotating Flow

By Peter R. N. Childs

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Rotating flow is critically important across a wide range of scientific, engineering and product applications, providing design and modeling capability for diverse products such as jet engines, pumps and vacuum cleaners, as well as geophysical flows. Developed over the course of 20 years' research into rotating fluids and associated heat transfer at the University of Sussex Thermo-Fluid Mechanics Research Centre (TFMRC), Rotating Flow is an indispensable reference and resource for all those working within the gas turbine and rotating machinery industries. Traditional fluid and flow dynamics titles offer the essential background but generally include very sparse coverage of rotating flows—which is where this book comes in. Beginning with an accessible introduction to rotating flow, recognized expert Peter Childs takes you through fundamental equations, vorticity and vortices, rotating disc flow, flow around rotating cylinders and flow in rotating cavities, with an introduction to atmospheric and oceanic circulations included to help deepen understanding. Whilst competing resources are weighed down with complex mathematics, this book focuses on the essential equations and provides full workings to take readers step-by-step through the theory so they can concentrate on the practical applications.

- A detailed yet accessible introduction to rotating flows, illustrating the differences between flows where rotation is significant and highlighting the non-intuitive nature of rotating flow fields
- Written by world-leading authority on rotating flow, Peter Childs, making this a unique and authoritative work
- Covers the essential theory behind engineering applications such as rotating discs, cylinders, and cavities, with natural phenomena such as atmospheric and oceanic flows used to explain underlying principles
- Provides a rigorous, fully worked mathematical account of rotating flows whilst also including numerous practical examples in daily life to highlight the relevance and prevalence of different flow types
- Concise summaries of the results of important research and lists of references included to direct readers to significant further resources

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Editorial Review

Review

*"In the book, real engineering applications and natural examples are provided and design-oriented correlations of bulk parameters are frequently given throughout the book…I recommend this book for those graduate students who want a thorough theoretical and modelling foundation in the topic of rotating flow."--**Contemporary Physics,** **December 19, 2012***

About the Author
Peter Childs is the Professorial Lead in Engineering Design at the Imperial College London and Joint Course Director for the Innovation Design Engineering program run in conjunction with the Royal College of Art, London. He has spent the last 20 years actively involved in industrial research and development, including projects for the likes of Ford, Rolls-Royce, Siemens, Alstom, DaimlerChrysler and Volvo. He is a fellow of the Institution of Mechanical Engineers, and the American Society of Mechanical Engineers, and has won the American Society of Mechanical Engineers International Gas Turbine Institute John P Davies award for exceptional contribution to the literature of gas turbine technology.

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