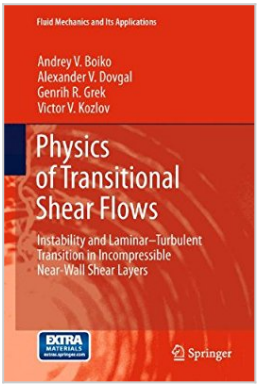

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications)

By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov

Starting from fundamentals of classical stability theory, an overview is given of the transition phenomena in subsonic, wall-bounded shear flows. At first, the consideration focuses on elementary small-amplitude velocity perturbations of laminar shear layers, i.e. instability waves, in the simplest canonical configurations of a plane channel flow and a flat-plate boundary layer. Then the linear stability problem is expanded to include the effects of pressure gradients, flow curvature, boundary-layer separation, wall compliance, etc. related to applications. Beyond the amplification of instability waves is the non-modal growth of local stationary and non-stationary shear flow perturbations which are discussed as well. The volume continues with the key aspect of the transition process, that is, receptivity of convectively unstable shear layers to external perturbations, summarizing main paths of the excitation of laminar flow disturbances. The remainder of the book addresses the instability phenomena found at late stages of transition. These include secondary instabilities and nonlinear features of boundary-layer perturbations that lead to the final breakdown to turbulence. Thus, the reader is provided with a step-by-step approach that covers the milestones and recent advances in the laminar-turbulent transition. Special aspects of instability and transition are discussed through the book and are intended for research scientists, while the main target of the book is the student in the fundamentals of fluid mechanics. Computational guides, recommended exercises, and PowerPoint multimedia notes based on results of real scientific experiments supplement the monograph. These are especially helpful for the neophyte to obtain a solid foundation in hydrodynamic stability.

To access the supplementary material go to extras.springer.com and type in the ISBN for this volume.

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications)

By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov

Starting from fundamentals of classical stability theory, an overview is given of the transition phenomena in subsonic, wall-bounded shear flows. At first, the consideration focuses on elementary small-amplitude velocity perturbations of laminar shear layers, i.e. instability waves, in the simplest canonical configurations of a plane channel flow and a flat-plate boundary layer. Then the linear stability problem is expanded to include the effects of pressure gradients, flow curvature, boundary-layer separation, wall compliance, etc. related to applications. Beyond the amplification of instability waves is the non-modal growth of local stationary and non-stationary shear flow perturbations which are discussed as well. The volume continues with the key aspect of the transition process, that is, receptivity of convectively unstable shear layers to external perturbations, summarizing main paths of the excitation of laminar flow disturbances. The remainder of the book addresses the instability phenomena found at late stages of transition. These include secondary instabilities and nonlinear features of boundary-layer perturbations that lead to the final breakdown to turbulence. Thus, the reader is provided with a step-by-step approach that covers the milestones and recent advances in the laminar-turbulent transition. Special aspects of instability and transition are discussed through the book and are intended for research scientists, while the main target of the book is the student in the fundamentals of fluid mechanics. Computational guides, recommended exercises, and PowerPoint multimedia notes based on results of real scientific experiments supplement the monograph. These are especially helpful for the neophyte to obtain a solid foundation in hydrodynamic stability.

To access the supplementary material go to extras.springer.com and type in the ISBN for this volume.

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov Bibliography

- Sales Rank: #5656540 in Books
- Published on: 2011-09-15
- Original language: English
- Number of items: 1
- Dimensions: 9.21" h x .69" w x 6.14" l, 1.20 pounds
- Binding: Hardcover
- 272 pages

Editorial Review

From the Back Cover

Starting from fundamentals of classical stability theory, an overview is given of the transition phenomena in subsonic, wall-bounded shear flows. At first, the consideration focuses on elementary small-amplitude velocity perturbations of laminar shear layers, i.e. instability waves, in the simplest canonical configurations of a plane channel flow and a flat-plate boundary layer. Then the linear stability problem is expanded to include the effects of pressure gradients, flow curvature, boundary-layer separation, wall compliance, etc. related to applications. Beyond the amplification of instability waves is the non-modal growth of local stationary and non-stationary shear flow perturbations which are discussed as well. The volume continues with the key aspect of the transition process, that is, receptivity of convectively unstable shear layers to external perturbations, summarizing main paths of the excitation of laminar flow disturbances. The remainder of the book addresses the instability phenomena found at late stages of transition. These include secondary instabilities and nonlinear features of boundary-layer perturbations that lead to the final breakdown to turbulence. Thus, the reader is provided with a step-by-step approach that covers the milestones and recent advances in the laminar-turbulent transition. Special aspects of instability and transition are discussed through the book and are intended for research scientists, while the main target of the book is the student in the fundamentals of fluid mechanics. Computational guides, recommended exercises, and PowerPoint multimedia notes based on results of real scientific experiments supplement the monograph. These are especially helpful for the neophyte to obtain a solid foundation in hydrodynamic stability.

To access the supplementary material go to extras.springer.com and type in the ISBN for this volume.

Users Review

From reader reviews:

Katie Phillips:

Information is provisions for folks to get better life, information presently can get by anyone at everywhere. The information can be a knowledge or any news even a concern. What people must be consider while those information which is from the former life are difficult to be find than now's taking seriously which one is appropriate to believe or which one the resource are convinced. If you get the unstable resource then you get it as your main information it will have huge disadvantage for you. All of those possibilities will not happen inside you if you take Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) as your daily resource information.

Michael Hill:

Can you one of the book lovers? If so, do you ever feeling doubt if you find yourself in the book store? Try and pick one book that you never know the inside because don't judge book by its include may doesn't work

at this point is difficult job because you are frightened that the inside maybe not since fantastic as in the outside seem likes. Maybe you answer may be Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) why because the amazing cover that make you consider about the content will not disappoint anyone. The inside or content is actually fantastic as the outside or cover. Your reading 6th sense will directly guide you to pick up this book.

James Ensor:

You could spend your free time you just read this book this publication. This Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) is simple to develop you can read it in the park your car, in the beach, train in addition to soon. If you did not get much space to bring the printed book, you can buy the actual e-book. It is make you easier to read it. You can save the particular book in your smart phone. Thus there are a lot of benefits that you will get when you buy this book.

Linda Hill:

In this era which is the greater man or who has ability to do something more are more special than other. Do you want to become one among it? It is just simple approach to have that. What you are related is just spending your time very little but quite enough to enjoy a look at some books. Among the books in the top record in your reading list is definitely Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications). This book that is certainly qualified as The Hungry Mountains can get you closer in becoming precious person. By looking right up and review this guide you can get many advantages.

Read Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov for online ebook

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov books to read online.

Online Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov ebook PDF download

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov Doc

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov Mobipocket

Physics of Transitional Shear Flows: Instability and Laminar–Turbulent Transition in Incompressible Near-Wall Shear Layers (Fluid Mechanics and Its Applications) By Andrey V. Boiko, Alexander V. Dovgal, Genrih R. Grek, Victor V. Kozlov EPub