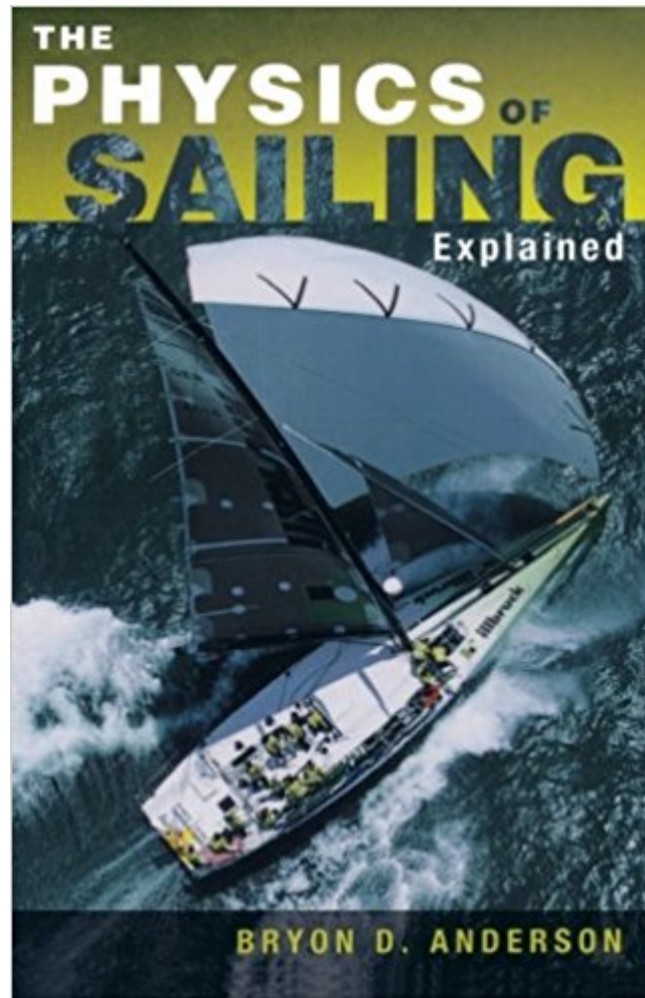




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# The Physics Of Sailing Explained



## Synopsis

What is the best shape for a sailboat? How does turbulence affect a sailboat's movement through the water? Why do some keels have wings? Is it true that some sailboats can sail faster upwind than downwind? Authoritative yet accessible, *The Physics of Sailing Explained* is the perfect book for all those sailors who want to enhance their understanding and enjoyment of life at sea. It will enable cruisers and racers alike to better grasp how sails, keels, and hulls work together to keep boats afloat, and will sharpen their skills with a more subtle and thorough appreciation of why various boat design features are present and why certain tactics work in certain situations. Anderson outlines the science behind sailing in a way that anyone can understand and benefit from without having to trudge through a physics text or become a naval architect. Concepts are conveyed simply, concisely, and with many examples and illustrations. With the help of this invaluable book, sailors will be better prepared to handle any situations that might arise on the water.

## Book Information

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## Customer Reviews

Brian Anderson is well qualified to write on how sail boats sail, being a lecturer in physics as well as a keen cruiser and racer. If you have ever wondered why you were being overtaken by a similar boat to yours which seems to be doing everything you are doing but still managing that extra speed, this book will explain the reason and next time out he may not get in front. A wealth of subjects such as vortex formation, surface resistance, induced drag and even parasitic resistance (not an antibiotics!) are all discussed and explained. The black and white photographs and illustrations

complement the text as the reader goes from basics such as a boat's maximum speed is fundamentally determined by its length, to a description of Bernoulli's Principle and the effect of the Coriolis force. Clearly and logically written this is an invaluable book for anyone who wants to do a little more than just messing about in boats. (Cruising) Anderson offers a clear and thorough discussion of sailing, pointed toward people who race their boats but of interest to anyone who sails. Starting with the design of hulls and keels, he analyzes the various ways in which water retards the motion of a boat and shows how they are minimized. He then discusses the physics of sails and the complicated motion of the air that flows around them, and finally the physics of weather and ocean currents. The author shows the general pattern of winds at high and low altitudes and how it is altered by the great land masses, and then follows on how the winds in turn guide the currents below them. There is mathematics, high school style, particularly to explain some surprising aspects of hull shape, but this is neatly segregated into boxes to oblige readers who like to sail in a light breeze. This book will surprise many who think there is not much about boat design that is not obvious. (CHOICE) Books on the how and what of sailing abound, but few go into great depth to answer the why questions why sailboats behave as they do and the physical properties involved. The Physics of Sailing Explained by Bryon Anderson attempts to answer some of these questions. A thin little book at fewer than 150 pages, The Physics of Sailing Explained is not intended for physicists or for yacht and sail designers. It is, however, intended as a basic primer for those interested in gaining a better understanding of the fundamental principles of sailing, and therefore a better appreciation of the sport as a whole. Anderson explores, in layman terms, the mechanics of such phenomena as lift, resistance, turbulence and weather. Our familiar friends Bernoulli and Coriolis are given due treatment, as are such lesser-known names as Reynolds and Van der Waals. A professor of physics at Kent State University, Anderson backs up some of the more important theories with hard equations for the mathematically inclined. Fortunately, knowing these derivations are not necessary to understanding the text. Illustrations, while rather simple from a graphic-design standard, help further explain the principle. (Sailing)

Bryon D. Anderson is a professor of physics at Kent State University and an avid sailor. As a graduate student, he spent many summers sailing Lake Erie, even making a trip to Canada and back, and has since developed a passion for cruising and club racing. This is his first nautical book.

The major virtue of this book is its organization. The successive consideration of hulls, keels, sails and weather seems to work well. Other reviewers and the Inside feature make clear the simplified

mathematical and physical nature of the presentation. I certainly like the boxed derivations as a format but they are not challenging to a practicing engineer. Though my professional background is in consumer products I have several naval architecture and aerodynamics undergraduate texts that are at a much deeper level and I have a couple of the Marchaj books as well. I certainly wish the structure of this book could be used to create a 400 to 500 page study that would be at that level. I am not aware that any of the books in the bibliography at the end of the book tie together all the elements covered here, though each of them may be much deeper in some one aspect. In all, this was an interesting and entertaining book and doesn't take long to read. I found the sketches and photos appropriate and helpful at the level this work was pitched to. It does seem to me that this would be a good place to start if you really wanted to dip your toe in the water on this subject but it may well leave you wanting more.

Great little book for down time reading. The writer has a talent for simplifying the physics involved, but does provide the math for those wanting it. Remember this is not a how to guide but why things happen kind of book. It will give you appreciation for different boat designs. Liked it so much I bought one for a friend.

I had read a borrowed copy years ago and finally decided this was a book I needed to have in my personal library as I refer to it all the time in sailing discussion. and their merchant came through in a big way for me. This book explains a lot about why things work as they do and helps you become a better sailor.

Great little technical book. I am enjoying it

Oversimplified and not always as accurate as I would like.

This is better read at your desk with a pad and paper nearby. There are a few areas where you will need to run a few math problems to really 'get' this book. This is more of a college upper classman read than a warm winter night read. Once past the math and the tougher parts, you might start to look for more subjects like blocks and running rigging and the physics involved with them. Additionally, I'd like to see more about the why of some of the design trade offs in some of the faster racing boats (Americas Cup, Volvo Ocean, etc.). Also a good discussion of the tradeoffs in hull design for different purposes would be nice.

This is a unique book somewhat bridging the qualitative and quantitative. Organization is good, starting with the hull, then keel, sails and lastly weather. My fellow sailors snuck it away when they could, and I think we did learn some things. Good was the hull speed derivation and shallow water wave speed derivation, and the discussions of scaling factors for the other technical parameters. Disappointing was that there were no other derivations and also that some of the figures are not well labeled (for instance, is cord length on Figures 3.8 a horizontal or vertical dimension?). Hopefully in a year or two there may be another edition, putting in somewhat more physics. Get this if you want a quick read to start to bridge the gap between the coffee table sailing books and proper yacht engineering tomes.

The book is advertized as the book explaining the physics of sailing. The book has a promising start while deriving the hull speed formula over several pages. But that's unfortunately about it. The book is really shallow on actual science of sailing. The book is only a 150 pages on a large font, you'll read it in a day. The book makes also oversimplification of the phenomena involved. Eg it describes the sail with the grade school anecdote 'air travels a longer distance leeward to the sail, thus creating lower pressure'. While that might explain part of the physics involved, my sailmaker seems to have way better models... If just want a quick read on physics involved, this is your book. If you want to deepen your understanding, I'd go somewhere else. I learned a lot more from the old 'High performance sailing' by Frank Bethwaite.

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