# Physics Of Sailing

The Physics of NascarThe Physics of WarBefore the WindThe Physics of BaseballSail PerformanceThe Great Wide SeaStarsailingThe Aero- and Hydromechanics of Keel YachtsSpinning FlightThe Annapolis Book of SeamanshipThe Demon in the MachinePhysics Curiosities, Oddities, and NoveltiesCollecting Movie PostersThe Physics of BasketballAero-hydrodynamics and the Performance of Sailing YachtsSail PowerThe Science Behind SailingCOLLADAThe Big Book of Boy StuffSeaworthiness the Forgotten FactorThe Art and Science of SailsSailing For DummiesSailing - Philosophy For EveryoneFloat Your Boat!How to SailThe Glénans Manual of SailingSolar SailingThe Science of Sailing: A complete guide to the physics of sailing and the naval architecture governing the performance of sailing yachtsPhysics of SailingSolar SailsThe Complete Sailing Manual, 4th EditionFast Handling TechniqueThe Dawn of InnovationPassage to JuneauSail TrimWeather at SeaThe Symmetry of SailingThe Physics of Sailing ExplainedEnemy of All MankindRYA Stability & Buoyancy (G-G23)

## The Physics of Nascar

After Bart King interviewed hundreds of the wisest guys and smartest alecks for The Big Book of Boy Stuff, something awesome happened: the book became a classic! Hailed by critics and kids alike, it has sold hundreds of thousands of copies, and even won awards. In this updated and redesigned tenth anniversary edition, hijinks and hilarity are still front and center. Within these pages, boys can find a myriad of things to do, things to laugh at, and things they didn't know. Bart King, the veteran of many water balloon wars, taught middle school for many years. He's written other cool books, including The Big Book of Superheroes, The Pocket Guide to Girl Stuff, and The Big Book of Gross Stuff. Visit his website at www.bartking.net.

# The Physics of War

An estimated 4.1 million people in the United States participate in recreational sailing. Yet the large library of sailing literature leaves many of them high and dry. On one side are technical guides for America's Cup boat-builders; on the other, simplistic books for weekend sailors with little interest in science. In Float Your Boat! professional and amateur boaters alike will find intelligent and understandable answers to such questions as: What were the key innovations that made sailboats more

efficient? How do you increase the speed of a boat? How do sailboats travel into the wind? Why are so many explanations of sailing so wrong? Sailing enthusiast and physicist Mark Denny first traces the evolution of the sailing craft, from prehistoric coracles made of animal skins and antlers to the sailboatâ $\in$ TMs reinvention as a pleasure craft during the Industrial Revolution. He then identifies specific sailing phenomenaââ, ¬â $\in$ ?how wind drives modern Bermuda sloops, how torque determines stability, why hull speed existsââ, ¬â $\in$ ?and provides the key physics principles behind them. Whether you are an inquisitive landlubber who has never set foot in a boat, a casual weekend sailor, or an old salt who lives for the sea, Float Your Boat! is an accessible guide to the physics of sailing.

#### Before the Wind

A groundbreaking technical analysis of yacht design based on cutting edge research in the field of aero-hydrodynamics.

## The Physics of Baseball

Louis Friedman, Executive Director of the Planetary Society, presents the first comprehensive look at the science and history behind solar sailing and other designs for space travel. Serious science readers and space buffs alike will be fascinated by designs for the square sail, disk sail, and the heliogyro (which features flexible sails many kilometers long). Friedman compares solar sailing to other proposed propulsion sytems such as ion drives and laser propulsion, and takes an insider's look at the million-dollar JPL project of the late '70s, which was the first attempt at a working model. Illustrated.

#### Sail Performance

Drain three pointers, slam dunk easily, and sink that buzzer beater from half court with the help of simple science. Your coach, physicist John J. Fontanella, shows how you can improve your game if you take advice from Isaac Newton. As you read, relive some of the great moments in the gameââ, ¬â $\in$ ?this time with a scientist and diehard basketball fan as your color analyst. Find out why you ought to put spin on the ball. Get tips on how to improve your free throw and increase your percentage from the charity stripe. Youâ $\in$ TMl even learn how to shatter the backboard, if thatâ $\in$ TMs something youâ $\in$ TMve always dreamed of doing. With photographs and simple high school formulas, physics professor Fontanellaââ, ¬â $\in$ ?reveals the key pieces of

physics that underscore basketball. He covers almost every aspect of the game, weaving in stories from games heaelementsetementsetements played and games heaelementsetements seen, and tales from basketball history and folklore. Physics comes alive as you see how Kobe Bryant, Wilt "the Stilt" Chamberlain, Michael Jordan, Becky Hammon, and J. J. Reddick do naturally the things that Isaac Newton says they should.

#### The Great Wide Sea

Interested in learning to sail but feel like you're navigating in murky waters? Sailing for Dummies, Second Edition introduces the basics of sailing, looks at the different types of sailboats and their basic parts, and teaches you everything you need to know before you leave the dock. In Sailing for Dummies, Second Edition, two U.S. sailing champions show you how to: Find and choose a sailing school Use life jackets correctly Tie ten nautical knots Handle sailing emergencies (such as capsizing and rescuing a man overboard) Launch your boat from a trailer, ramp, or beach Get your boat from point A to point B (and back again) Predict and respond to water and wind conditions Read charts, plot your course, use a compass, and find your position at sea Sailing for Dummies shows you that getting out on the water is easier than you think. The authors keep the sailor-speak to a minimum where possible, but give you a grasp of the terminology you need to safely and effectively communicate with your crew. A textbook, user's manual, and reference all in one, this book takes the intimidation out of sailing and gives you the skills and confidence you need to get your feet wet and become the sailing pro you've always wanted to be. Anchors away!

# Starsailing

How and why does sail boat performance depend on the configuration and trim of boat and sails? This book provides the yachtsman with answers in a relatively straightforward account of the physical mechanisms of sailing. It presents an accessible overview of the fluid dynamic aspects of sailing and sailing technology, addressing both aeromechanics and hydromechanics. Readers are provided with the basic principles of physics and general mechanics that will assist their understanding of the fluid mechanics of sailing yachts. Rich appendices cover not only in-depth, mathematical-physical treatments and derivations for those wishing to explore further, but also helpful summaries of basic mathematical notions for those wishing to refresh their knowledge. This work explores keel yachts, specifically single-masted mono-hulls with 'fore-and-aft', Bermuda-rigged sails. However, much of it is applicable to other types of sailing vessels such as multi-hulls, yachts with multiple masts, windsurf boards and the

like. Yachtsmen, yacht designers and professionals of sailing technology will all find something of interest in this work which provides explanations of the mechanics of sailing in a way that is scientifically justified, whilst remaining appealing to those wishing to use their knowledge on-board a sailing vessel. For some years I'm teaching a course on "Sailing Yacht Design" in the master class of yacht design. Actually, I've found your book the best one about physics of a sailing yacht I've ever read. Edward Canepa, assistant professor in Fluid Machinery at the University of Genova (Italy) very impressed, no wonder it took so long. It is "everything I ever wanted to know about sailing but was afraid to ask"! Frank Woodward, former computational fluid dynamicist at the Boeing Company and Analytical Methods Inc., and a cruising yachtsman

# The Aero- and Hydromechanics of Keel Yachts

Guide for both cruisers and racers that takes a look at the latest materials and rigging methods and simplifies the purchase and upkeep of a proper sail inventory.

## Spinning Flight

Sail Performance, based on C A Marchaj's classic Sailing Theory & Practice, has established itself as the standard work on the subject and is now acclaimed as a milestone in sailing literature. From wind tunnel tests which he has conducted, Tony Marchaj describes how the factors of wind speed, sail area, sail shape, sail setting, the hull, angle of heel, wind gradient and steadiness of the wind all affect sail power, and why certain rigs are superior in power and efficiency to others. Sail Performance is a major work which is acclaimed for its analysis of the factors that contribute to an efficient sailing rig. 'Should be on the bookshelf of every serious amateur and professional sailor' Nautical Magazine

# The Annapolis Book of Seamanship

Completely revised and updated to address changes in technology, this new edition is the definitive guide to the art and science of sailing. Since the publication of the widely hailed first edition in 1983, The Annapolis Book of Seamanship has set the standard by which other books on sailing are measured. Used throughout America as a textbook in sailing schools and Power Squadrons, The Annapolis Book of Seamanship thoroughly and clearly covers the fundamental and advanced skills of modern sailing. This edition of Annapolis is a major overhaul. Over half the book has been revised; old topics and

features have been updated, and many new ones have been introduced. The design has been modernized, and many color illustrations have been added. As big and detailed as Annapolis is, the wealth of technical information (including dozens of step-by-step instructions) is presented here in a way that is uniquely readable; it's both useful and easy to use. This is because John Rousmaniere and artist Mark Smith bring to Annapolis decades of experience both as sailors and as professional communicators. Annapolis emphasizes the standard skills and proven methods that eliminate error and confusion, ensure security in emergencies, and allow every sailor more time for enjoyment on the water. Much has changed on the water since 1983 when this book was originally published. Black buoys are now green, the Global Positioning Satellite navigation system (GPS) is almost universally used, new types of anchors and sails have appeared, safety skills and gear are vastly improved, many more women are commanding boats, and catamarans and trimarans are common where only monohulls used to sail. But for all these modern developments, the basic skills and spirit of sailing have not changed at all. Sail trimming, keeping up steerageway, maintaining the dead reckoning plot, heaving-to -- these fundamentals are as important now as ever and receive much attention here. Among the innovations in this edition are: \* Basic skills in early chapters: Fundamental sailing and boat-handling skills and gear, which are introduced in chapters 1, 2, and 3. \* "Hands On" segments: Three dozen special sections, each devoted to a particular seamanship problem and an expert solution. \* More how-to tips: Additional rules of thumb that quide a crew quickly and successfully through seamanship problems. \* New coverage of multihulls: Advice on evaluating, anchoring, and handling catamarans and trimarans under sail (including in storms). \* More on emergencies: New material on emergencies, safety, and heavy-weather sailing, including a section on preparing a docked boat for a hurricane. \* Equipment updates: Expanded coverage of the use and care of modern gear and hardware, including radar, GPS, rescue devices, and asymmetrical spinnakers. \* Terminology: Full definition and illustration of major terms when they're first introduced, with alternative language provided in parentheses. \* Gender: The use of feminine personal pronouns, which reflect the fact that more women are captaining and sailing boats than ever before. From navigation and seamanship to boat and gear maintenance, from pleasure cruising to heavy-weather sailing, here is the definitive, state-of-the-art quide that provides systematic step-by-step techniques to see you through every situation on deck and in the cockpit.

#### The Demon in the Machine

Why must a boat make leeway in order to sail to windward? How can a helmsman prevent downwind rolling? Why is a sail able to produce a force at right angles to the wind direction? These and many other

important questions are addressed by the authors in this detailed study of the motive forces of a yacht.

#### Physics Curiosities, Oddities, and Novelties

This is the world's largest and most complete boating reference, the standard to which all other works on sailing are compared. Originated by the renowned Glenans sailing school, the work covers everything a sailor needs to know — the nature of sailing, types and parts of boats, mechanics of wind forces, sail maneuvers for every course and type of weather, meteorology, reading seascapes, navigation techniques, planning and carrying out day trips and long-term cruises. Thousands of diagrams, drawings and photos, including foldout charts and navigation maps, make every aspect of sailing easy to understand. If there's room for only one book aboard your sailing vessel, be sure to take along the one that's been called "the yachtsman's bible".

## Collecting Movie Posters

Blending scientific fact and sports trivia, Robert Adair examines what a baseball or player in motion does—and why. How fast can a batted ball go? What effect do stitch patterns have on wind resistance? How far does a curve ball break? Who reaches first base faster after a bunt, a right— or left—handed batter? The answers are often surprising—and always illuminating. This newly revised third edition considers recent developments in the science of sport such as the neurophysiology of batting, bat vibration, and the character of the "sweet spot." Faster pitchers, longer hitters, and enclosed stadiums also get a good, hard scientific look to determine their effects on the game. Filled with anecdotes about famous players and incidents, The Physics of Baseball provides fans with fascinating insights into America's favorite pastime.

# The Physics of Basketball

"How did a single manhunt spark the modern era of multinational capitalism? Henry Avery was the seventeenth century's most notorious pirate. The press published wildly popular—and wildly inaccurate—reports of his nefarious adventures. The British government offered enormous bounties for his capture, alive or (preferably) dead. But Steven Johnson argues that Avery's most lasting legacy was his inadvertent triggering of a new model for the global economy. Enemy of All Mankind focuses on one key event—the attack of an Indian treasure ship by Avery and his crew—and its surprising repercussions

across time and space. Johnson uses the extraordinary story of Henry Avery and his crimes to explore the emergence of the modern global marketplace: a densely interconnected planet ruled by nations and corporations. Like the bestselling How We Got To Now and The Ghost Map, Enemy of All Mankind crosses disciplinary boundaries to recount its history: the chemistry behind the invention of gunpowder; the innovations in navigation that enabled the age of exploration; the cultural history of pirates; the biographical history of Avery and his crew; the rise of the Moghul dynasty; and the commercial ambition of the East India Company. In this compelling work of history and ideas, Johnson deftly traces the path from a single struck match to a global conflagration"—

# Aero-hydrodynamics and the Performance of Sailing Yachts

Explains the art of good sail trim with the aid of superb colour diagrams and photographs.

#### Sail Power

COLLADA is a COLLAborative Design Activity for establishing an open standard Digital Asset schema for interactive 3D applications. This book explains in detail how to use the COLLADA technology in a project utilizing 3D assets, and ultimately how to create an effective content creation pipeline for the most complex development. Errata are posted at

#### The Science Behind Sailing

While still mourning the death of their mother, three brothers go with their father on an extended sailing trip off the Florida Keys and have a harrowing adventure at sea.

## COLLADA

#### The Big Book of Boy Stuff

From the author of the bestselling High Performance Sailing and Higher Performance Sailing comes the first scientific analysis of what makes fast sailors fast. Eschewing the idea that luck or innate talent are the keys to success, Frank Bethwaite shows how knowledge truly is power. Making use of video cameras  $\frac{Page}{7/16}$ 

aligned to GPS read-outs to track the fastest racers, he meticulously analyses what winners do and how they do it, to show the rest of us how to get the best out of a racing craft. Frank Bethwaite's previous books were groundbreaking bibles that applied scientific theories to how sails and hulls interact with wind and water to influence boat speed. But whilst they applied scientific theories to boat construction, they didn't apply science to practical boat handling. This book fills that gap, and then goes further. Budding racers of all levels will welcomethis unique book as a godsend. It will inform, instruct and enable them toemploy the techniques (and timing) of the most successful racers, and make racingmore competitive for participants, and more exciting for those of us watching.

# Seaworthiness the Forgotten Factor

#### The Art and Science of Sails

An essential reference book for sailing enthusiasts, now in its fourth edition with a foreword by quadruple Olympic gold medalist Ben Ainslie. Learn the basics of sailing, master navigation, and maintain your boat with The Complete Sailing Manual, written by instructor and former British national champion Steve Sleight. This authoritative text has clear, annotated diagrams and photographs that answer questions about any sailing situation with thorough coverage of all aspects of sailing and boat ownership. Look up how to rig a dinghy, tie basic knots, or save someone who fell overboard. Revised and updated to include the latest developments in equipment, safety, and activities, including foiling, long-distance cruising, and high-speed, apparent wind-sailing, and newest technology such as modern performance systems and electronic navigation. All rules, regulations, and best practices are also up to date. From the novice to the experienced sailor, The Complete Sailing Manual is the perfect book for anyone interested in sailing.

#### Sailing For Dummies

Solar sailing — using the sun as a propellant — offers the possibility of low-cost long-distance missions that are impossible with conventional spacecraft. This first comprehensive book on this propulsion method provides a detailed account of solar sailing, at a high technical level, but in a way accessible to the scientifically informed layperson. Solar sail orbital dynamics and solar radiation pressure form the foundations of the book, but the engineering design of solar sails is also considered,

along with potential mission applications.

## Sailing - Philosophy For Everyone

An Enlightening Way to Navigate through Mind-Boggling Physics Concepts Physics Curiosities, Oddities, and Novelties highlights unusual aspects of physics and gives a new twist to some fundamental concepts. The book covers both classical and modern physics in an engaging, straightforward style. The author presents perplexing questions that often lack satisfying answers. He also delves into the stories of famous and eccentric past scientists. Many examples reveal interesting ideas, including how: Newton had trouble determining the mass of the moon An electric motor is an electric generator run in reverse Time travel that violates causality is not possible Schrödinger's cat may be both dead and alive, and there may be two of each one of us to observe the two possibilities Particle physics and the basic laws of thermodynamics can appear simple yet are very complicated Accessible to nonspecialists and beginning students, this book provides insight into physics using minimal mathematics and jargon. It summarizes many fascinating aspects of physics employing only essential formulas. Some familiar formulas are written in standard form while other equations are written in words for greater clarity.

#### Float Your Boat!

Examines the science of war, demonstrating the close connection between the discovery of basic physical principles and the development of weaponry over the ages.

#### How to Sail

Describes industry in America between the War of 1812 and the Civil War and how this period of growth in the first half of the century built the platform for Carnegie, Rockefeller and Morgan in the second half. 35,000 first printing.

#### The Glénans Manual of Sailing

Most people view movie posters as an expensive form of expendable advertising. Others, however, see the posters as valuable art. If you are in the latter category, this is the work for you. All facets of collecting movie posters are covered in this guide book. The history of the movie poster is first

presented, including a look at how the early studios influenced the development of posters. Next is a brief look at the world of movie art collecting. This is followed by a reference section that provides comprehensive explanations of the most commonly used terms in the field. Getting your collection started is the next topic, giving novice and more experienced collectors information on publications and materials available, where to go to purchase posters, where to go for help and other items. A concluding section details the proper care and handling of movie art materials, along with methods for restoration.

## Solar Sailing

The weather affects everyone at sea, whether you are pottering along the coast, motoring from port to port or sailing to another continent. This book explains the basic principles that govern the weather from a practical, on the water, sailor's point of view. It goes through global, regional and then local weather patterns so you understand what is happening, how this might change and why. Armed with this knowledge and understanding you will be more confident to make decisions about when and when not to venture out to sea and what to expect if things change while you are out there. Simon Rowell shares his experience as a round-the world skipper and world-class weather forecaster. He explains the basic physics creatively and puts it in context with real situations to enable you to apply weather theory to practical sailing scenarios. Hundreds of illustrations aid the communication of what can be a complex subject, enabling you to better understand the weather and increase your enjoyment and safety when out on the water. This book is part of Fernhurst Books' Skipper's Library series of practical books for the cruising sailor.

# The Science of Sailing: A complete guide to the physics of sailing and the naval architecture governing the performance of sailing yachts

A physicist explores the science of speed racing and the #1 spectator sport in America in the perfect gift for both NASCAR and science fans. Every NASCAR fan—at one time or another—asks the same question: Why isn't my favorite driver winning? This is your chance to discover how much more there is to NASCAR than "Go fast, turn left and don't crash." If you've ever wondered why racecars don't have mufflers, how "bump drafting" works, or what in the world "Let's go up a pound on the right rear and add half a round of wedge" means, The Physics of NASCAR is for you. In this fast—paced investigation into the adrenaline—pumping world of NASCAR, a physicist with a passion uncovers what happens when the rubber hits the road and 800—horsepower vehicles compete at 190 miles per hour only inches from one another. Diandra Leslie—

Pelecky tells her story in terms anyone who drives a car—and maybe occasionally looks under the hood—can understand. How do drivers walk away from serious crashes? How can two cars travel faster together than either car can on its own? How do you dress for a 1800°F gasoline fire? In simple yet detailed, high—octane prose, this is the ultimate thrill ride for armchair speed demons, auto science buffs, and NASCAR fans at every level of interest. Readers, start your engines.

## Physics of Sailing

All vessels need to be buoyant in order to float, and need to be stable in order to stay upright. This edition of RYA Stability and Buoyancy (which includes a glossary of terms, explaining all the technical jargon) deals with everything relating to these issues and also includes hazards common to most boats, including: - Bad loading - Breaking waves - Resonant rolling - Broaching in a following sea - Characteristics of different boat types, (i.e. sailing dinghies, small catamarans, offshore and coastal monohull sailing boats) - Maximum safe heel angle Filled with top tips throughout, this book is perfect for: - Instructors - the ideal, clear and simple reference tool to aid you in teaching this subject - Coded vessels - the perfect guide on this critical subject matter - Yachtmaster candidates - clearly explains the AVS which candidates should know of their boats and other areas.

#### Solar Sails

Have you ever wanted to learn how to sail? How to Sail: An Introduction to Sailing for Beginners will have you sailing in no time! You will learn the basics of sailing, the different types of sailboats and their parts, sailing terms and everything else that you need to know before you get on the water. Happy Sailing!

## The Complete Sailing Manual, 4th Edition

More frisbees are sold each year than baseballs, basketballs and footballs combined. Yet these familiar flying objects have subtle and clever aerodynamic and gyrodynamic properties which are only recently being documented by wind tunnel and other studies. In common with other rotating bodies discussed in this readily accessible book, they are typically not treated in textbooks of aeronautics and the literature is scattered in a variety of places. This book develops the theme of disc-wings and spinning aerospace vehicles in parallel. Since many of the examples are recreational, anyone who enjoys these

activities will likely find it profitable and enjoyable. In addition to spinning objects of various shapes, several exotic manned aircraft with disc planforms have been proposed and a prototypes built these include a Nazi 'secret weapon' and the De Havilland Avrocar, also discussed in the book. Boomerangs represent another category of spinning aerodynamic body whose behavior can only be understood by coupling aerodynamics with gyrodynamics. The narrative, supported by equations and graphs, explains how the shape and throw of a boomerang relates to its trajectory. The natural world presents still other examples, namely the samaras or 'seed-wings' of many tree species, which autorotate during their descent, like a helicopter whose engine has failed. The flight performance of these spinning wings directly affects the dispersal and thus the evolutionary competitiveness of the trees concerned. Samaratype configurations are also considered for instrumentation and other payload dispersal applications. In short, the book discusses a range of familiar, connected, but largely undeveloped, topics in an accessible, but complete, manner. From the reviews of the first edition: "In his fascinating book Spinning Flight, Ralph Lorenz provides a rich feast of examples of spinning bodies . The book is well organized . The discussion in the book should be accessible to readers with some elementary understanding of aerodynamic principles. For the expert, the book is full of open problems . Its scope is extensive . In this respect, there may be something for everyone within its attractively designed cover ." (H. K. Moffatt, Nature, Vol. 444, December, 2006) "If you liked physics at school, then this book is for you. It concerns itself with flying objects that spin through the air, and even tells you how to impress your friends with the biomechanics of Frisbees. there is plenty of information at all levels, and the book has a wealth of detail that only an aerospace engineer like Lorenz could have come up with." (Len Fisher, BBC Focus, February, 2007)

#### Fast Handling Technique

'The most important work on sailing matters' Little Ship Club A survey of the seaworthiness of modern yacht designs, this revised edition is based on the highest degree of practical and academic research, and shows how modern yachts often sacrifice safetyfor speed.

## The Dawn of Innovation

Solar sail technology is very close to becoming an engineering reality and it will soon be used in the exploration of the solar system and beyond. This fascinating book provides an accessible introduction to solar sails and details how they work and what they will be used for in the exploration of space. It

also examines current plans for solar sails and how advanced technology, such as nanotechnology, might enhance their performance. Coverage shows how solar sail propulsion will make space exploration more affordable and demonstrates how access to destinations within (and beyond) the solar system will become within reach.

#### Passage to Juneau

This volume reveals the wisdom we can learn from sailing, a sport that pits human skills against the elements, tests the mettle and is a rich source of valuable lessons in life. Unravels the philosophical mysteries behind one of the oldest organized human activities Features contributions from philosophers and academics as well as from sailors themselves Enriches appreciation of the sport by probing its meaning and value Brings to life the many applications of philosophy to sailing and the profound lessons it can teach us A thought-provoking read for sailors and philosophers alike

#### Sail Trim

With the same rigorous observation (natural and social), invigorating stylishness, and encyclopedic learning that he brought to his National Book Award-winning Bad Land, Jonathan Raban conducts readers along the Inside Passage from Seattle to Juneau. The physical distance is 1,000 miles of difficult-and often treacherous-water, which Raban navigates solo in a 35-foot sailboat. But Passage to Juneau also traverses a gulf of centuries and cultures: the immeasurable divide between the Northwest's Indians and its first European explorers— between its embattled fishermen and loggers and its pampered new class. Along the way, Raban offers captivating discourses on art, philosophy, and navigation and an unsparing narrative of personal loss.

#### Weather at Sea

'A gripping new drama in science if you want to understand how the concept of life is changing, read this' Professor Andrew Briggs, University of Oxford When Darwin set out to explain the origin of species, he made no attempt to answer the deeper question: what is life? For generations, scientists have struggled to make sense of this fundamental question. Life really does look like magic: even a humble bacterium accomplishes things so dazzling that no human engineer can match it. And yet, huge advances in molecular biology over the past few decades have served only to deepen the mystery. So can

life be explained by known physics and chemistry, or do we need something fundamentally new? In this penetrating and wide-ranging new analysis, world-renowned physicist and science communicator Paul Davies searches for answers in a field so new and fast-moving that it lacks a name, a domain where computing, chemistry, quantum physics and nanotechnology intersect. At the heart of these diverse fields, Davies explains, is the concept of information: a quantity with the power to unify biology with physics, transform technology and medicine, and even to illuminate the age-old question of whether we are alone in the universe. From life's murky origins to the microscopic engines that run the cells of our bodies, The Demon in the Machine is a breath-taking journey across the landscape of physics, biology, logic and computing. Weaving together cancer and consciousness, two-headed worms and bird navigation, Davies reveals how biological organisms garner and process information to conjure order out of chaos, opening a window on the secret of life itself.

#### The Symmetry of Sailing

Breaking down the complicated concepts of speed, acceleration, torque, fluid mechanics, and surface physics, Physics of Sailing provides a lively, easily accessible introduction to the basic science underlying the sport of sailing. It illustrates the many ways physics can be used to understand the principles of sailboat propulsion and how a scienti

# The Physics of Sailing Explained

Bryon D Anderson is a writer and scientist with a special interest in sail.

## Enemy of All Mankind

Following The Highest Tide, Border Songs, and Truth Like the Sun, Jim Lynch now gives us a grand and idiosyncratic family saga that will stand alongside Ken Kesey's Sometimes a Great Notion. Joshua Johannssen has spent all of his life surrounded by sailboats. His grandfather designed them, his father built and raced them, his Einstein-obsessed mother knows why and how they work (or not). For Josh and his two siblings, their backyard was the Puget Sound and sailing their DNA. But both his sister and brother fled many years ago: Ruby to Africa and elsewhere to do good works on land, and Bernard to god-knows-where at sea, a fugitive and pirate. Suddenly thirty-one, Josh-who repairs boats of all kinds in a Steinbeckian marina south of Seattle-is pained and confused by whatever the hell went wrong with his

volatile family. His parents are barely speaking, his mystified grandfather is drinking harder, and he himself—despite an endless and comic flurry of online dates—hasn't even come close to finding a girlfriend. But when the Johannssens unexpectedly reunite for the most important race in these waters—all of them together on a classic vessel they made decades ago—they will be carried to destinies both individual and collective, and to a heart—shattering revelation. Past and present merge seamlessly and collide surprisingly as Jim Lynch reveals a family unlike any other, with the grace and humor and magic of a master storyteller. From the Hardcover edition.

# RYA Stability & Buoyancy (G-G23)

\*This is THE book on the aero- and hydromechanics of sailing.\*Contains full and scientifically justified descriptions of the dependence of the performance of sailing yachts on their configuration and the underlying physical mechanisms.\*Bridges the gap between the few existing books on the aero- and hydrodynamics of sailing and the more popular books that deal with the "what and how" but not with the "why" of sailing yacht configurations and boat trim. \*New edition that also covers the recently evolved technology of foiling.REVIEWS (OF THE 1ST EDITION): From the December 2015 issue of the Dutch sailing magazine "Zeilen" (translated): "Decades of research and development in fluid dynamics, but also his experience as a cruising yachtsman, have put author Joop Slooff in the position to write a new standard work on the behavior of keel yachts in wind and water. In his preface the author states that it is his ambition to bridge the gap between the few existing scientific books on the aero- and hydrodynamics of sailing and the more popular books that describe the 'what' and 'how' but not so much the 'why' of boat trim. For this purpose the author treats the basic principles of the forces acting on a sailing yacht, but he describes also how these principles translate to the boat and its sails. In the world of sailing Slooff is known for his involvement in the development of the winged keel of the America's Cup winning yacht Australia II. His book is an excellent work for the dedicated yachtsman who is interested in the 'why' and the scientific background of the behavior of his or her boat in wind and water". Comment (Dec. 2015) by Edward Canepa, assistant professor in Fluid Machinery at the University of Genova (Italy): "For some years I'm teaching a course on "Sailing Yacht Design" in the master class of yacht design. Actually, I've found your book the best one about physics of a sailing yacht I've ever read". Comment (Dec. 2015) by Frank Woodward, former computational fluid dynamicist at the Boeing Company and Analytical Methods Inc., and a cruising yachtsman (retired): "very impressed, no wonder it took so long. It is 'everything I ever wanted to know about sailing but was afraid to ask' !"

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