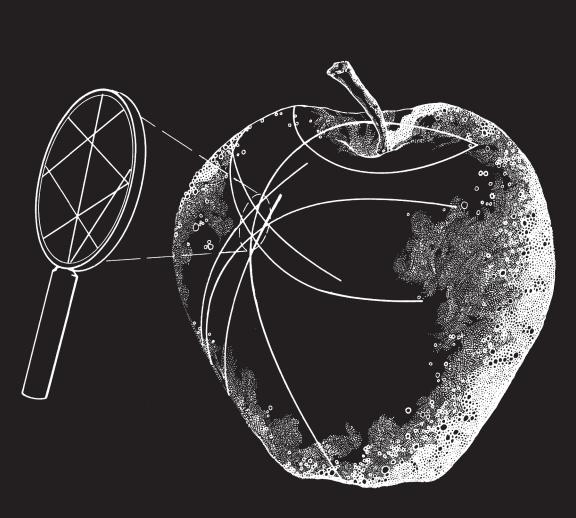
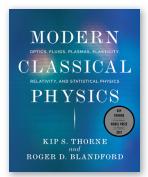


# Physics & Astrophysics 2018



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Kip S. Thorne, Co-Winner of the 2017 Nobel Prize in Physics



### New

### **Modern Classical Physics**

Optics, Fluids, Plasmas, Elasticity, Relativity, and Statistical Physics

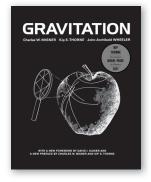
Kip S. Thorne & Roger D. Blandford

"Comprehensive, concise, and coherent, this is a marvelous summary of the essence of classical physics ... and an essential part of any physicist's toolkit." —David Stevenson, Caltech

This first-year, graduate-level text and reference book covers the fundamental concepts and twenty-first-century applications of six major areas of classical physics that every masters- or PhD-level physicist should be exposed to, but often isn't: statistical physics, optics (waves of all sorts), elastodynamics, fluid mechanics, plasma physics, and special and general relativity and cosmology. Its six main topical sections are also designed so they can be used in separate courses, and the book provides an invaluable reference for researchers.

2017. 1552 pages. 15 tables. 325 line illus. 24 color illus, 6 halftones,

Cl: 978-0-691-15902-7 \$125.00 | £104.95



### Gravitation

Charles W. Misner, Kip S. Thorne & John Archibald Wheeler With a new foreword by David I. Kaiser and a new preface by Charles W. Misner & Kip S. Thorne

"Gravitation is a classic." -David Spergel, Princeton University

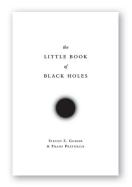
First published in 1973, Gravitation is a landmark graduate-level textbook that presents Einstein's general theory of relativity and offers a rigorous, full-year course on the physics of gravitation. This authoritative text has shaped the research of generations of physicists and astronomers, and the book continues to influence the way experts think about the subject.

2017. 1280 pages. 22 halftones. 277 line illus. \$60.00 | £49.95 CI: 978-0-691-17779-3

### Problem Book in Relativity and Gravitation

Alan P. Lightman, William H. Press, Richard H. Price & Saul A. Teukolsky

See page 10 for details.



### The Little Book of Black Holes

Steven S. Gubser & Frans Pretorius

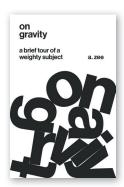
"Provides an elegantly brief introduction to the basic properties of black holes and their occurrence in the universe. I warmly recommend it to the general reader." -Roger Penrose, author of Fashion, Faith, and Fantasy in the New Physics of the Universe

Black holes, predicted by Albert Einstein's general theory of relativity more than a century ago, have long intrigued scientists and the public with their bizarre and fantastical properties. The physics governing how they behave and affect their surroundings is stranger and more mind-bending than any fiction. The Little Book of Black Holes takes readers deep into the mysterious heart of the subject, offering rare clarity of insight into the physics that makes black holes simple yet destructive manifestations of geometric destiny.

Science Essentials John Dowling, Series Editor

2017. 200 pages. 29 line illus. Cl: 978-0-691-16372-7 \$19.95 | £14.95

catalog cover illustration by Kenneth Gwin



### **Forthcoming**

### On Gravity A Brief Tour of a Weighty Subject

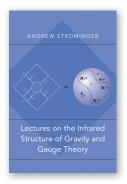
A. Zee

"This engaging and enjoyable book focuses on our modern understanding of gravity through general relativity. With an entertaining narrative, Zee examines the development of these concepts and how they mesh with other discoveries in physics. On Gravity makes for compelling reading."

—Pedro Ferreira, author of The Perfect Theory

Of the four fundamental forces of nature, gravity might be the least understood and yet the one with which we are most intimate. From the months each of us spent suspended in the womb anticipating birth to the moments when we wait for sleep to transport us to other realities, we are always aware of gravity. In On Gravity, physicist A. Zee combines profound depth with incisive accessibility to take us on a tour of Einstein's general theory of relativity. Concise and precise, and infused with Zee's signature freshness of style, On Gravity opens a unique pathway to comprehending relativity and gaining deep insight into gravity.

April 2018. 192 pages. 26 b/w illus. Cl: 978-0-691-17438-9 \$19.95 | £14.95 Not for sale in China, Taiwan, Singapore, and Hong Kong



### **Forthcoming**

### Lectures on the Infrared Structure of Gravity and Gauge Theory

**Andrew Strominger** 

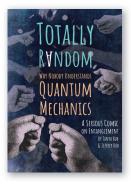
A Brief History of Time

"In the 1950s, Feynman and others brilliantly solved the ultraviolet problems in electromagnetics by renormalization, but the infrared properties of gauge theory were felt to be trivial and were neglected. However, Strominger's book shows that they are a rich field that may well hold the resolution of the black hole information paradox."

—Stephen Hawking, University of Cambridge and author of

Based on a popular Harvard University course taught by the author, this book gives a concise introduction to recent discoveries concerning the structure of gravity and gauge theory at very long distances. Uniquely connective and cutting-edge, Lectures on the Infrared Structure of Gravity and Gauge Theory takes students and scholars to the forefront of new developments in the discipline. Topics include soft theorems, the memory effect, asymptotic symmetries with applications to QED, Yang-Mills theory, quantum gravity, and black holes

March 2018. 184 pages. 25 color illus. Pa: 978-0-691-17973-5 \$49.95 | £41.95 Cl: 978-0-691-17950-6 \$125.00 | £104.95



### **Forthcoming**

# Totally Random Why Nobody Understands Quantum Mechanics (A Serious Comic of Entanglement)

Tanya Bub & Jeffrey Bub

"What a delight! *Totally Random* explores some of the strangest features of quantum theory—and introduces some of the most important new devices that exploit quantum weirdness—in a way that is accessible, smart, and funny. An entanglement page-turner!"

—David Kaiser, author of *How the Hippies Saved Physics* 

Totally Random is a comic for the serious reader who wants to really understand the central mystery of quantum mechanics-entanglement: what it is, what it means, and what you can do with it. This is a graphic experiential narrative that unpacks the deep and insidious significance of the curious correlation between entangled particles to deliver a gut-feel glimpse of a world that is not what it seems. A fresh and subversive look at our quantum world with some seriously funny stuff, Totally Random delivers a real understanding of entanglement that will completely change the way you think about the nature of physical reality.

June 2018. 260 pages. 250 b/w illus. Pa: 978-0-691-17695-6 \$22.95 | £18.95



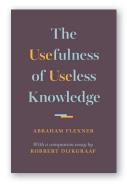
### **Forthcoming**

# The Secret Life of Science How It Really Works and Why It Matters

Jeremy J. Baumberg

- "A uniquely original analysis of how the global scientific research ecosystem works. [Baumberg] accurately describes how the publish-or-perish climate of research is just one of the many competitive challenges facing academic scientists on the long road to tenure."
- —Tony Hey, Chief Data Scientist, Rutherford Appleton Laboratory, Science and Technology Facilities Council

We take the advance of science as given. But is the scientific enterprise truly as healthy as we tend to think? How does the system itself shape what scientists do? The Secret Life of Science takes a clear-eyed and provocative look at the current state of global science, shedding light on a cutthroat and tightly tensioned enterprise that even scientists themselves often don't fully understand. The Secret Life of Science explains why this hypercompetitive environment is stifling the diversity of research and the resiliency of science itself, and why new ideas are needed to ensure that the scientific enterprise remains healthy and vibrant. May 2018. 256 pages. 41 b/w illus. Cl: 978-0-691-17435-8 \$29.95 | £24.95



#### New

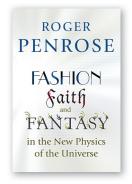
### Usefulness of Useless Knowledge

Abraham Flexner With a companion essay by Robert Dijkgraaf

"These two eloquent essays are

timely and timeless treasures." -Sean B. Carroll, author of The Serengeti Rules and Brave Genius In his classic essay "The Usefulness of Useless Knowledge," Abraham Flexner, the founding director of the Institute for Advanced Study in Princeton and the man who helped bring Albert Einstein to the United States, describes a great paradox of scientific research. The search for answers to deep questions, motivated solely by curiosity, often leads not only to the greatest scientific discoveries but also to the most revolutionary technological breakthroughs. In short, no quantum mechanics, no computer chips. This brief book also includes Flexner's timeless 1939 essay alongside a new companion essay by Robbert Dijkgraaf, the Institute's current director, in which he shows that Flexner's defense of the value of "the unobstructed pursuit of useless knowledge" may be even more relevant today than it was in the early twentieth century.

2017. 104 pages. CI: 978-0-691-17476-1 \$9.95 | £8.95



### **New in Paperback**

### Fashion, Faith, and Fantasy in the New Physics of the Universe

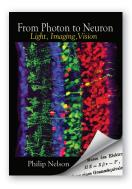
Roger Penrose

"An extremely original, rich, and thoughtful survey of today's most fashionable attempts to decipher the cosmos on its smallest and largest scales."

—Science

What can fashionable ideas, blind faith, or pure fantasy possibly have to do with the scientific quest to understand the universe? Surely, theoretical physicists are immune to mere trends, dogmatic beliefs? Acclaimed physicist and bestselling author Roger Penrose argues that researchers working at the extreme frontiers of physics are just as susceptible to these forces as anyone else. In this provocative book, he argues that fashion, faith, and fantasy, while sometimes productive and even essential in physics, may be leading today's researchers astray in three of the field's most important areas-string theory, quantum mechanics, and cosmology. The result is an important critique of some of the most significant developments in physics today.

2017. 520 pages. 186 line illus.
Pa: 978-0-691-17853-0 \$17.95 | £14.95
Cl: 978-0-691-11979-3 \$29.95 | £19.95
Winner of the 2017 PROSE Award in
Chemistry & Physics, Association of
American Publishers



### From Photon to Neuron Light, Imaging, Vision Philip Nelson

"Nelson masterfully blends the natural sciences to explore how we perceive and control light." —Adam Cohen, Harvard University

From Photon to Neuron provides undergraduates with an accessible introduction to the physics of light and offers a unified view of a broad range of optical and biological phenomena. Along the way, this richly illustrated textbook builds the necessary background in neuroscience, photochemistry, and other disciplines. With its integrated approach, From Photon to Neuron can be used as the basis for many interdisciplinary courses. The goal is always for students to gain the fluency needed to derive every result for themselves, so the book includes a wealth of exercises, including many that guide students through computer-based solutions.

2017. 512 pages. 300 color illus.
Pa: 978-0-691-17519-5 \$49.50 | £41.95
Cl: 978-0-691-17518-8 \$110.00 | £91.95

### **Forthcoming**

### A Student's Guide to Python for Physical Modeling Updated Edition

Jesse M. Kinder & Philip Nelson

March 2018. 176 pages. 5 color illus. Pa: 978-0-691-18057-1 \$24.95 | £19.95 Cl: 978-0-691-18056-4 \$75.00 | £62.95



### Forthcoming

### Molecular Machines A Materials Science Approach

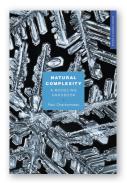
Giovanni Zocchi

"Stimulating. Zocchi presents a new and refreshing perspective on old fundamental problems. [This] is an important book."

—Anatoly B. Kolomeisky, author of *Motor Proteins and Molecular Motors* 

Molecular Machines presents a dynamic new approach to the physics of enzymes and DNA from the perspective of materials science. Unified around the concept of molecular deformability, this book describes the complex molecules of life from the innovative perspective of materials properties and dynamics, in contrast to structural or purely chemical approaches. It covers a wealth of topics, including nonlinear deformability of enzymes and DNA, the chemo-dynamic cycle of enzymes, supra-molecular constructions with internal stress, Brownian motion, and barrier crossing. Essential reading for researchers in materials science, engineering, and nanotechnology, the book also describes the landmark experiments that have established the materials properties and energy landscape of large biological molecules.

July 2018. 208 pages. 94 b/w illus. Cl: 978-0-691-17386-3 \$65.00 | £54.95



#### New

### Natural Complexity A Modeling Handbook

Paul Charbonneau

"The appeal of this book is twofold. It provides practical examples of computational modeling. It also motivates readers by detailing breathtaking systems in the real world. The combination is winning."

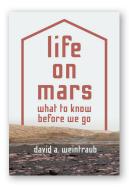
—Aimee Norton, Stanford University

This book provides a short, hands-on introduction to the science of complexity using simple computational models of natural complex systems—with models and exercises drawn from physics, chemistry, geology, and biology. By working through the models and engaging in additional computational explorations suggested at the end of each chapter, readers very quickly develop an understanding of how complex structures and behaviors can emerge in natural phenomena as diverse as avalanches, forest fires, earthquakes, chemical reactions, animal flocks, and epidemic diseases. Self-contained and accessible, Natural Complexity enables readers to form their own answers to the questions of what natural complexity is and how it arises.

Primers in Complex Systems

2017. 376 pages. 19 tables. 62 color illus. 28 line illus. 1 halftone.

Pa: 978-0-691-17035-0 \$49.50 | £41.95 Cl: 978-0-691-17684-0 \$99.50 | £83.95



## Forthcoming Life on Mars What to Know Before We Go

David A. Weintraub

"Weintraub's well-written and easy-to-read book will appeal to anyone interested in Mars and the search for life."

—Alfred McEwen, director of the Planetary Image Research Laboratory, University of Arizona

Does life exist on Mars? This book tells the complete story of the quest to answer one of the most tantalizing questions in astronomy. But it is more than a history. *Life on Mars* explains what we need to know before we go.

David Weintraub tells why, of all the celestial bodies in our solar system, Mars has beckoned to us the most. He traces how our ideas about life on Mars have been refined by landers and rovers, telescopes, spectroscopy, and even a Martian meteorite.

Life on Mars is also a book about how science is done—and undone—in the age of mass media. It shows how Mars mania has obscured our vision since we first turned our sights on the planet and encourages a healthy skepticism toward the media hype surrounding Mars.

May 2018. 320 pages. 8 color illus + 38 b/w illus.

Cl: 978-0-691-18053-3 \$29.95 | £24.95



### New

### Welcome to the Universe

The Problem Book

Neil deGrasse Tyson, Michael A. Strauss & J. Richard Gott

"This book ... will be a valuable resource for anyone teaching introductory astronomy and an exhilarating challenge for students who want to sharpen their wits against the cosmos."

—David Weinberg, Ohio State University

Whether you're a student or teacher, citizen scientist or science enthusiast, your guided tour of the cosmos just got even more hands-on with Welcome to the Universe: The Problem Book. Here is the essential companion to Welcome to the Universe, a New York Times bestseller that was inspired by the enormously popular introductory astronomy course for nonscience majors that Neil deGrasse Tyson, Michael A. Strauss, and J. Richard Gott taught together at Princeton. This problem book features more than one hundred problems and exercises used in the original course ideal for anyone who wants to deepen their understanding of the original material and to learn to think like an astrophysicist.

2017. 264 pages. 13 line illus.
Pa: 978-0-691-17781-6 \$35.00 | £27.95
Cl: 978-0-691-17780-9 \$65.00 | £54.95



## Welcome to the Universe An Astrophysical Tour

Neil deGrasse Tyson, Michael A. Strauss & J. Richard Gott

"The authors maintain the individual charms of their distinct voices chapter by chapter so the reader has the visceral sense of science shared, passed from one mind to another, almost as though through an oral history—ultimately, a warm welcome to the universe."

—Janna Levin, author of *Black* Hole Blues and Other Songs from Outer Space

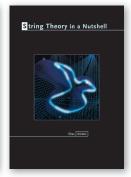
Welcome to the Universe is a personal guided tour of the cosmos by three of today's leading astrophysicists. Describing the latest discoveries in astrophysics, the informative and entertaining narrative propels you from our home solar system to the outermost frontiers of space. How do stars live and die? Why did Pluto lose its planetary status? What are the prospects of intelligent life elsewhere in the universe? Answering these and many other questions, the authors open your eyes to the wonders of the cosmos.

2016. 472 pages. 100 color illus.
CI: 978-0-691-15724-5 \$39.95 | £29.95
A New York Times Bestseller
Honorable Mention for the 2017 PROSE
Award in Cosmology & Astronomy,
Association of American Publishers









### The Standard Model in a Nutshell

Dave Goldberg

"Has the potential to become the standard book for an introductory course on the Standard Model."

—Craig Copi, Case Western Reserve University

Provides a comprehensive and accessible introduction to one of the most important subjects in modern physics, revealing why the Standard Model really is as elegant as physicists say.

2017. 320 pages. 66 line illus. 12 tables. 9 halftones.

Cl: 978-0-691-16759-6 \$85.00 | £70.95

### Condensed Matter in a Nutshell

Gerald D. Mahan

2010. 592 pages. 162 line illus. 35 tables. Cl: 978-0-691-14016-2 \$105.00 | £87.95 Not for sale in South Asia

### Quantum Mechanics in a Nutshell

Gerald D. Mahan

2009. 416 pages. 58 line illus. CI: 978-0-691-13713-1 \$105.00 | £87.95

### String Theory in a Nutshell

Elias Kiritsis

2007. 608 pages. 18 halftones. 44 line illus. 7 tables.

Cl: 978-0-691-12230-4 \$97.50 | £81.95 Not for sale in South Asia

### Group Theory in a Nutshell for Physicists

A. Zee

"Clearly written, this book makes an ideal text for a graduate course in physics on the subject."

—Barry Simon, California Institute of Technology

This book is a user-friendly and classroom-tested text that focuses on the aspects of group theory physicists most need to know. Also included: a concise review of the linear algebra needed for group theory, making the book ideal for self-study.

2016. 632 pages. 65 line illus. 3 halftones. Cl: 978-0-691-16269-0 \$90.00 | £74.95 Honorable Mention for the 2017 PROSE Award in Textbook/Best in Physical Sciences & Mathematics, Association of American Publishers

### Einstein Gravity in a Nutshell

A. Zee

2013. 888 pages. 50 halftones. 150 line illus. Cl: 978-0-691-14558-7 \$99.95 | £83.95 One of Choice's Outstanding Academic Titles for 2013

### Quantum Field Theory in a Nutshell

A. Zee

2010. 608 pages. 95 line illus. Cl: 978-0-691-14034-6 \$85.00 | £70.95 Not for sale in South Asia

### Statistical Mechanics in a Nutshell

Luca Peliti

2011. 416 pages. 74 line illus. 6 tables. CI: 978-0-691-14529-7 \$99.95 | £83.95

## Astrophysics in a Nutshell Second Edition

Dan Maoz

"The presentation of so much material ... is done very skillfully." —Leon Mestel, *Observatory* 

This has become the text of choice in astrophysics courses for science majors at top universities in North America and beyond. This expanded and fully updated second edition, is a brief but thorough introduction to the observational data and theoretical concepts underlying modern astronomy.

2016. 312 pages. 77 line illus. 21 halftones. Cl: 978-0-691-16479-3 \$85.00 | £70.95 Winner of the Chambliss Award, American Astronomical Society

### Classical Electromagnetism in a Nutshell

**Anupam Garg** 

2012. 712 pages. 52 halftones. 122 line illus. Cl: 978-0-691-13018-7 \$115.00 | £95.95

### Elementary Particle Physics in a Nutshell

Christopher G. Tully

2011. 320 pages. 135 halftones. Cl: 978-0-691-13116-0 \$97.50 | £81.95

### Nuclear Physics in a Nutshell

Carlos A. Bertulani

2007. 488 pages. 118 tables. 50 line illus. Cl: 978-0-691-12505-3 \$99.95 | £83.95



### Doing Global Science A Guide to Responsible Conduct in Global Research

InterAcademy Partnership

- "A comprehensive code of conduct for scientific research."
- —Maria Spiropulu, California Institute of Technology

2016. 192 pages. 11 line illus. Cl: 978-0-691-17075-6 \$14.95 | £12.95



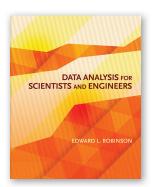
## Physics and Technology for Future Presidents

An Introduction to the Essential Physics Every World Leader Needs to Know

Richard A. Muller

- "An amazing and very entertaining book."
- —David Goodstein, California Institute of Technology

2010. 536 pages. 136 color illus. 13 tables. CI: 978-0-691-13504-5 \$69.95 | £58.95



### Data Analysis for Scientists and Engineers

Edward L. Robinson

- "An excellent overview of modern statistical techniques."
- —Jeremy Kasdin, Princeton University

2016. 408 pages. 96 line illus. 7 tables. CI: 978-0-691-16992-7 \$75.00 | £62.95

### Why You Hear What You Hear

An Experimental Approach to Sound, Music, and Psychoacoustics

Eric J. Heller

"The best text I know on how sound actually works.... [I]t is so fully informed by Heller's particular scientific genius" —David Politzer, Nobel Laureate in Physics

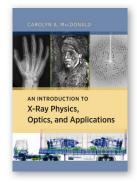
2012. 624 pages. 397 color illus. CI: 978-0-691-14859-5 \$120.00 | £99.95

### Applications of Modern Physics in Medicine

Mark Strikman, Kevork Spartalian & Milton W. Cole

- "[This book] should lead to the creation of new physics courses all over the world."
- —Gerald Miller, University of Washington

2014. 304 pages. 4 tables. 8 color illus. 101 line illus. 24 halftones. Cl: 978-0-691-12586--2 \$78.50 | £65.95



### An Introduction to X-Ray Physics, Optics, and Applications

Carolyn A. MacDonald

"[An] insightful book."
—Andrew Maidment, University
of Pennsylvania

This book provides a comprehensive introduction to the physics of a wide range of x-ray applications, optics, and analysis tools.

2017. 368 pages. 36 halftones. 215 line illus. 5 tables.
CI: 978-0-691-13965-4 \$80.00 | £66.95

### Mathematical Methods for Geophysics and Space Physics

William I. Newman

"Elegant and nicely written."
—Francis Nimmo, University of California, Santa Cruz

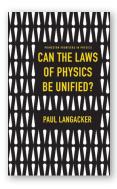
2016. 272 pages. 42 line illus. Cl: 978-0-691-17060-2 \$75.00 | £62.95

### Statistical and Thermal Physics With Computer Applications

Harvey Gould & Jan Tobochnik

- "This is an ambitious book written by two experienced researchers and teachers."
- —Joel L. Lebowitz, Rutgers University

2010. 536 pages. 105 line illus. 35 tables. Cl: 978-0-691-13744-5 \$115.00 | £95.95



### Can the Laws of Physics Be Unified?

Paul Langacker

"A useful and informative book that brings the standard model to a broad audience of scientists and aspiring scientists who are interested in the current status of particle physics."

- Tom Lubensky, University of Pennsylvania

The standard model of particle physics describes our current understanding of nature's fundamental particles and their interactions, yet gaps remain. Once complete, however, the standard model could provide a unified description of the very building blocks of the universe. Researchers have been chasing this dream for decades, and many wonder whether such a dream can ever be made a reality. Can the Laws of Physics Be Unified? is a short introduction to this exciting frontier of physics. The book is accessibly written for students and researchers across the sciences, and for scientifically minded general readers. This book describes the promising theoretical ideas and new experiments that could provide answers and weighs our prospects for establishing a truly unified theory of the smallest constituents of nature and their interactions.

2017. 288 pages. 18 line illus. 11 halftones. 5 tables. Cl· 978-0-691-16779-4 \$35.00 | £27.95





### How Do You Find an Exoplanet?

John Asher Johnson

"Johnson's enthusiasm for his vibrant field is palpable in this valuable, concise guide."

—Lewis Dartnell, New Scientist

An authoritative primer on the four key techniques that planet hunters use to detect the signals of planets orbiting distant stars.

2015, 200 pages, 17 line illus, 1 halftone. Cl: 978-0-691-15681-1 \$35.00 | £27.95 One of Choice's Outstanding Academic Titles for 2016

### **How Did the First Stars** and Galaxies Form?

Abraham Loeb

"Loeb's infectious excitement stirs desire to join him in these endeavors."

-Science

2010, 216 pages, 17 line illus, 14 halftones. Pa: 978-0-691-14516-7 \$35.00 | £27.95 Winner of the 2012 Chambliss Astronomical Writing Award, American Astronomical Society





### What Does a Black Hole Look Like?

Charles D. Bailyn

"[A] concise and authoritative book."

-W. Niel Brandt, Pennsylvania State University

While once on the border between physics and sci- fi, this book shows how black holes are becoming objects of study.

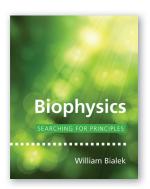
2014, 224 pages, 16 line illus, 4 halftones. Cl: 978-0-691-14882-3 \$37.50 | £31.95

### What Are Gamma-Ray Bursts?

Joshua S. Bloom

"This is a marvelous book." —Neil Gehrels, NASA Goddard Space Flight Center 2010. 272 pages. 27 line illus.

Pa: 978-0-691-14557-0 \$35.00 | £27.95



### **Biophysics** Searching for Principles William Bialek

"[This book] takes readers on an incredible journey in discovering fascinating ways in which biological phenomena can be viewed and studied. The technical adroitness and more importantly, the unique way of thinking about biological problems, in the reviewer's opinion, makes the book a must-read for any aspiring biophysicists."

-Angie Ma, Contemporary Physics Interactions between the fields of physics and biology reach back over a century, and some of the most significant developments in biology have involved collaboration across this disciplinary boundary. For a new generation of physicists, the phenomena of life pose exciting challenges to physics itself, and biophysics has emerged as an important subfield of this discipline. Here, William Bialek provides the first graduatelevel introduction to biophysics aimed at physics students. Featuring numerous problems and exercises throughout, Biophysics emphasizes the unifying power of abstract physical principles to motivate new and novel experiments on biological systems.

2013. 640 pages. 62 color illus. 14 halftones. 129 line illus.

CI: 978-0-691-13891-6 \$99.95 | £83.95 William Bialek, Winner of the 2013 Swartz Prize for Theoretical and Computational Neuroscience, Society for Neuroscience



### **Ecological Mechanics** Principles of Life's Physical Interactions

Mark Denny

"The author has written a truly magnificent book illustrating how physical principles affect organic form-function relationships across a broad spectrum of aquatic and terrestrial life forms.... Denny distinguishes himself as an excellent teacher as well as a superb scientist."

-Karl J. Niklas, Quarterly Review of Biology

2016, 536 pages, 160 line illus. Cl: 978-0-691-16315-4 \$79.95 | £66.95

### Air and Water The Biology and Physics of Life's Media

Mark W. Denny

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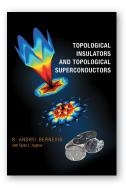


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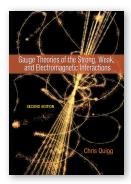
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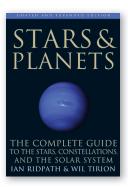
"With an insider's insight and a storyteller's eye for detail, Gott ... [mixes] accessible science with entertaining anecdotes and personal stories, [offering] a thorough, vivid, and fascinating look at the cosmic web that makes up our universe."

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J. Richard Gott was among the first cosmologists to propose that the structure of our universe is made up of clusters of galaxies intricately connected by filaments of galaxies-a magnificent structure now called the "cosmic web" and mapped extensively by teams of astronomers. Here is his gripping insider's account of how a generation of undaunted theorists and observers solved the mystery of the architecture of our cosmos. The Cosmic Web shows how ambitious telescope surveys are transforming our understanding of the cosmos, and how the cosmic web holds vital clues to the origins of the universe and the next trillion years that lie ahead. July 2018. 288 pages. 16 color illus + 44 b/w

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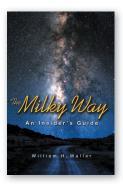
—Sean Carroll, author of Spacetime and Geometry: An Introduction to General Relativity

Important and useful to every student of relativity, this book is a unique collection of some 475 problems—with solutions—in the fields of special and general relativity, gravitation, relativistic astrophysics, and cosmology. The problems are expressed in broad physical terms to enhance their pertinence to readers with diverse backgrounds.

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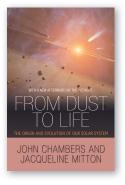
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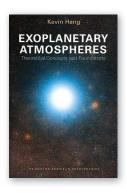
Donald K. Yeomans With a new preface by the author

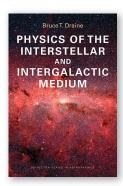
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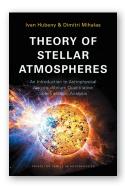
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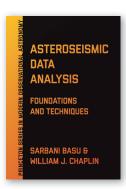
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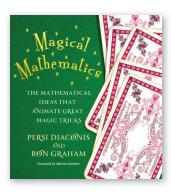
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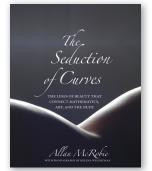


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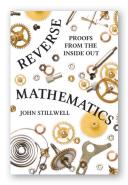
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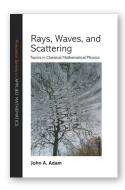
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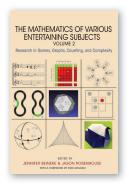
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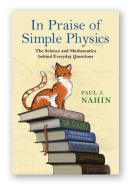
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June 2018. 328 pages. 6 tables. 65 b/w illus. Pa: 978-0-691-18098-4 \$19.95 For sale only in the United States, its dependencies, and the Philippines

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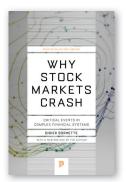
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Robert P. Kirshner
With an epilogue by the author

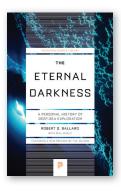
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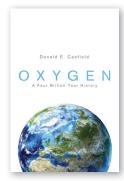
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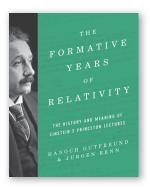
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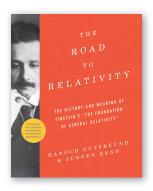
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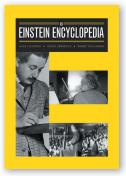
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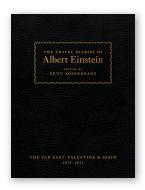
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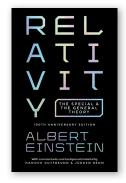
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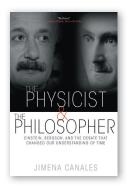
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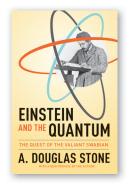
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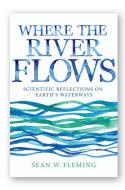
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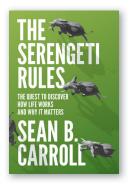
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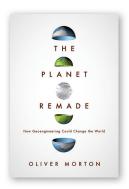
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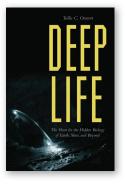
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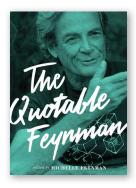
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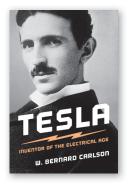
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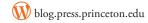
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