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Enumerative Geometry and String Theory Cambridge University Press Provides an excellent balance between theory and applications in the ever-evolving field of water and wastewater treatment Completely updated and expanded, this is the most current and comprehensive textbook available for the areas of water and wastewater treatment, covering the broad spectrum of technologies used in practice today—ranging from commonly used standards to the latest state of the art innovations. The book begins with the fundamentals—applied water chemistry and applied microbiology—and then goes on to cover physical, chemical, and biological unit processes. Both theory and design concepts are developed systematically, combined in a unified way, and are fully supported by comprehensive, illustrative examples. Theory and Practice of Water and Wastewater Treatment, 2nd Edition: Addresses physical/chemical treatment, as well as biological treatment, of water and wastewater Includes a discussion of new technologies, such as membrane processes for water and wastewater treatment, fixed-film biotreatment, and advanced oxidation Provides detailed coverage of the fundamentals: basic applied water chemistry and applied microbiology Fully updates chapters on analysis and constituents in water; microbiology; and disinfection Develops theory and design concepts methodically and combines them in a cohesive manner Includes a new chapter on life cycle analysis (LCA) Theory and Practice of Water and Wastewater Treatment, 2nd Edition is an important text for undergraduate

and graduate level courses in water and/or wastewater treatment in Civil, Environmental, and Chemical Engineering.

A Brief History of String Theory Springer Science & Business Media

The leading mind behind the mathematics of string theory discusses how geometry explains the universe we see. Illustrations.

A First Course in String Theory Cambridge University Press

We are all agreed that your theory is crazy. The question which divides us is whether it is crazy enough. Niels Bohr Superstring theory has emerged as the most promising candidate for a quan tum theory of all known interactions. Superstrings apparently solve a problem that has defied solution for the past 50 years, namely the unification of the two great fundamental physical theories of the century, quantum field theory and general relativity. Superstring theory introduces an entirely new physical picture into theoretical physics and a new mathematics that has startled even the mathematicians. Ironically, although superstring theory is supposed to provide a unified field theory of the universe, the theory itself often seems like a confused jumble offolklore, random rules of thumb, and intuition. This is because the develop ment of superstring theory has been unlike that of any other theory, such as general relativity, which began with a geometry and an action and later evolved into a quantum theory. Superstring theory, by contrast, has been evolving backward for the past 20 years. It has a bizarre history, beginning with the purely accidental discovery of the quantum theory in 1968 by G. Veneziano and M. Suzuki. Thumbing through old math books, they stumbled by chance on the Beta function, written down in the last century by mathematician Leonhard Euler.

String Theory Demystified Springer

The essential beginner's guide to string theory The Little Book of String Theory offers a short, accessible, and entertaining introduction to one of the most talked-about areas of physics today. String theory has been called the "theory of everything." It seeks to describe all the fundamental forces of nature. It encompasses gravity and quantum mechanics in one unifying theory. But it is unproven and fraught with controversy. After reading this book, you'll be able to draw your own conclusions about string theory. Steve Gubser begins by explaining Einstein's famous equation E = mc2, quantum mechanics, and black holes. He then gives readers a crash course in string theory and the core ideas behind it. In plain English and with a minimum of mathematics, Gubser covers strings, branes, string dualities, extra dimensions, curved spacetime, quantum fluctuations, symmetry, and supersymmetry. He describes efforts to link string theory to experimental physics and uses analogies that nonscientists can understand. How does Chopin's Fantasie-Impromptu relate to quantum mechanics? What would it be like to fall into a black hole? Why is dancing a waltz similar to contemplating a string duality? Find out in the pages of this book. The Little Book of String Theory is the essential, most up-to-date beginner's guide to this elegant, multidimensional field of physics.

Ask a Manager Cambridge University Press Volume 2: Superstring Theory and Beyond, begins with an introduction to supersymmetric string theories and goes on to a broad presentation of the important advances of recent years. The book first introduces the type I, type II, and heterotic superstring theories and their interactions. It then goes on to present important recent discoveries about strongly coupled strings, beginning with a detailed treatment of D-branes and their dynamics, and covering string duality, M-theory, and black hole entropy, and discusses many classic results in conformal field theory. The final four chapters are concerned with four-dimensional string theories, and have two goals: to show how some of the simplest string models connect with previous ideas for unifying the Standard Model; and to collect many important and beautiful general results on world-sheet and spacetime symmetries.

Cosmology in Gauge Field Theory and String Theory Harper Collins

String theory has played a highly influential role in theoretical physics for nearly three decades and has substantially altered our view of the elementary building principles of the Universe. However, the theory remains empirically unconfirmed, and is

expected to remain so for the foreseeable future. So why do string theorists have such a strong belief in their theory? This book explores this question, offering a novel insight into the nature of theory assessment itself. Dawid approaches the topic from a unique position, having extensive experience in both philosophy and high-energy physics. He argues that string theory is just the most conspicuous example of a number of theories in high-energy physics where non-empirical theory assessment has an important part to play. Aimed at physicists and philosophers of science, the book does not use mathematical formalism and explains most technical terms.

Theory and Practice of Water and Wastewater Treatment American Mathematical Soc.

A clear, plain-English guide to this complex scientific theory String theory is the hottest topic in physics right now, with books on the subject (pro and con) flying out of the stores. String Theory For Dummies offers an accessible introduction to this highly mathematical "theory of everything," which posits ten or more dimensions in an attempt to explain the basic nature of matter and energy. Written for both students and people interested in science, this guide explains concepts, discusses the string theory's hypotheses and predictions, and presents the math in an approachable manner. It features in-depth examples and an easy-to-understand style so that readers can understand this controversial, cutting-edge theory.

A First Course In String Theory (South Asian Edtion) 2/E Princeton University Press Explores the early stages of the development of string theory; essential reading for physicists, historians and philosophers of science. *Superstring Theory* Cambridge University Press During its forty year lifespan, string theory has always had the power to divide, being called both a 'theory of everything' and a 'theory of

nothing'. Critics have even questioned whether it qualifies as a scientific theory at all. This book adopts an objective stance, standing back from the question of the truth or falsity of string theory and instead focusing on how it came to be and how it came to occupy its present position in physics. An unexpectedly rich history is revealed, with deep connections to our most well-established physical theories. Fully self-contained and written in a lively fashion, the book will appeal to a wide variety of readers from novice to specialist.

The Theoretical Minimum Springer Science & Business Media

This book provides an accessible introduction to loop quantum gravity and some of its applications, at a level suitable for undergraduate students and others with only a minimal knowledge of college level physics. In particular it is not assumed that the reader is familiar with general relativity and only minimally familiar with quantum mechanics and Hamiltonian mechanics. Most chapters end with problems that elaborate on the text, and aid learning. Applications such as loop quantum cosmology, black hole entropy and spin foams are briefly covered. The text is ideally suited for an undergraduate course in the senior year of a physics major. It can also be used to introduce undergraduates to general relativity and quantum field theory as part of a 'special topics' type of course.

The Complete Idiot's Guide to String Theory Cambridge University Press This book introduces the theory of modular forms, from which all rational elliptic curves arise, with an eye toward the Modularity Theorem. Discussion covers elliptic curves as complex tori and as algebraic curves; modular curves as Riemann surfaces and as algebraic curves; Hecke operators and Atkin-Lehner theory; Hecke eigenforms and their arithmetic properties; the Jacobians of modular curves and the Abelian varieties associated to Hecke eigenforms. As it presents these ideas, the book states the Modularity Theorem in various forms, relating them to each other and touching on their applications to number theory. The authors assume no background in algebraic number theory and algebraic geometry. Exercises are included.

<u>A Primer on String Theory</u> Il Saggiatore
This textbook provides an introduction to string field theory (SFT). String theory is usually formulated in the worldsheet formalism, which describes a single string (first-quantization). While this approach is intuitive and could be pushed far due to the exceptional properties of two-dimensional theories, it becomes cumbersome for some questions or even fails at a more fundamental level. These motivations have led to the development of SFT, a description of string theory using the field theory formalism (second-quantization). As a field theory, SFT provides a rigorous and constructive formulation of string theory. The main focus of the book is the construction of the closed bosonic SFT. The accent is put on providing the reader with the foundations, conceptual understanding and intuition of what SFT is. After reading this book, the reader is able to study the applications from the literature. The book is organized in two parts. The first part reviews the notions of the worldsheet theory that are necessary to build SFT (worldsheet path integral, CFT and BRST quantization). The second part starts by introducing general concepts of SFT from the BRST quantization. Then, it introduces off-shell string amplitudes before providing a Feynman diagrams interpretation from which the building blocks of SFT are extracted. After constructing the closed SFT, the author outlines the proofs of several important properties such as background independence, unitarity and crossing symmetry. Finally, the generalization to the superstring is also discussed.

String Theory For Dummies Princeton University Press
This book guides the reader through string theory, one of the most exciting and challenging areas of modern theoretical physics. It is ideal for graduate students and researchers in modern string theory, and will make an excellent textbook. It contains exercises with solutions, and homework problems with solutions.

<u>A Short Introduction to String Theory</u>
McGraw Hill Professional
From the creator of the popular website Ask a Manager and New York's work-advice columnist comes a witty, practical guide to 200 difficult professional conversations—featuring all-new advice! There's a reason Alison Green has been called "the Dear Abby of the work world." Ten years as a workplace-advice columnist have taught her that people avoid awkward conversations in the office because they simply don't know what to say. Thankfully, Green does—and in this incredibly helpful book, she tackles the tough discussions you may need to have during your career. You'll learn what to say when • coworkers push their work on you—then take credit for it • you accidentally trash-talk someone in an email then hit "reply all" • you're being micromanaged—or not being managed at all • you catch a colleague in a lie • your boss seems unhappy with your work • your cubemate's loud speakerphone is making you homicidal • you got drunk at the holiday party Praise for Ask a Manager "A must-read for anyone who works . . . [Alison Green's] advice boils down to the idea that you should be professional (even when others are not) and that communicating in a straightforward manner with candor and kindness will get you far, no matter where you work." —Booklist (starred review) "The author's friendly, warm, no-nonsense writing is a pleasure to read, and her advice can be widely applied to relationships in all areas of readers' lives. Ideal for anyone new to the job market or new to management, or anyone hoping to

improve their work experience." —Library Journal (starred review) " I am a huge fan of Alison Green' s Ask a Manager column. This book is even better. It teaches us how to deal with many of the most vexing big and little problems in our workplaces—and to do so with grace, confidence, and a sense of humor." —Robert Sutton, Stanford professor and author of The No Asshole Rule and The Asshole Survival Guide " Ask a Manager is the ultimate playbook for navigating the traditional workforce in a diplomatic but firm way." —Erin Lowry, author of Broke Millennial: Stop Scraping By and Get Your Financial Life Together

A First Course in Loop Quantum Gravity Springer Nature

Perhaps the most famous example of how ideas from modern physics have revolutionized mathematics is the way string theory has led to an overhaul of enumerative geometry, an area of mathematics that started in the eighteen hundreds. Century-old problems of enumerating geometric configurations have now been solved using new and deep mathematical techniques inspired by physics! The book begins with an insightful introduction to enumerative geometry. From there, the goal becomes explaining the more advanced elements of enumerative algebraic geometry. Along the way, there are some crash courses on intermediate topics which are essential tools for the student of modern mathematics, such as cohomology and other topics in geometry. The physics content assumes nothing beyond a first undergraduate course. The focus is on explaining the action principle in physics, the idea of string theory, and how these directly lead to questions in geometry. Once these topics are in place, the connection between physics and enumerative geometry is made with the introduction of topological quantum field theory and quantum cohomology. **Introduction to Superstrings** Springer Science

& Business Media

The discovery of a duality between Anti-de Sitter spaces (AdS) and Conformal Field Theories (CFT) has led to major advances in our understanding of quantum field theory and quantum gravity. String theory methods and AdS/CFT correspondence maps provide new ways to think about difficult condensed matter problems. String theory methods based on the AdS/CFT correspondence allow us to transform problems so they have weak interactions and can be solved more easily. They can also help map problems to different descriptions, for instance mapping the description of a fluid using the Navier– Stokes equations to the description of an event horizon of a black hole using Einstein's equations. This textbook covers the applications of string theory methods and the mathematics of AdS/CFT to areas of condensed matter physics. Bridging the gap between string theory and condensed matter, this is a valuable textbook for students and researchers in both fields.

A First Course in String Theory, Second Edition John Wiley & Sons

A systematic introduction to string phenomenology, outlining how string theory is connected to the real world of particle physics. **A First Course in Modular Forms** Basic Books Cosmology in Gauge Field Theory and String Theory focuses on the cosmological implications of the gauge theories of particle physics and of string theory. The book first examines the universe's series of phase transitions in which the successive gauge symmetries of the higher-temperature phase were spontaneously broken after the big bang, discussing relics of these phase transitions, more generic relics (baryons, neutrinos, axions), and supersymmetric particles (neutralinos and gravitinos). The author next studies supersymmetric theory, supergravity theory, and the constraints on the underlying field theory of the universe's inflationary era. The book concludes with a discussion of black hole

solutions of the supergravity theory that approximates string theory at low energies and the insight that string theory affords into the microscopic origin of the Bekenstein-Hawking entropy. Cosmology in Gauge Field Theory and String Theory provides a modern introduction to these important problems from a particle physicist's perspective. It is intended as an introductory textbook for a first course on the subject at a graduate level.

String Theory and the Scientific Method Springer Science & Business Media A modern introduction to quantum field theory for graduates, providing intuitive, physical explanations supported by real-world applications and homework problems.

The Theory of Complex Angular Momenta OUP Oxford String theory made understandable. Barton Zwiebach is once again faithful to his goal of making string theory accessible to undergraduates. He presents the main concepts of string theory in a concrete and physical way to develop intuition before formalism, often through simplified and illustrative examples. Complete and thorough in its coverage, this new edition now includes AdS/CFT correspondence and introduces superstrings. It is perfectly suited to introductory courses in string theory for students with a background in mathematics and physics. New sections cover strings on orbifolds, cosmic strings, moduli stabilization, and the string theory landscape. Now with almost 300 problems and exercises, with password-protected solutions for instructors at www.cambridge.org/zwiebach.