

50 Quantum Physics Ideas You Really Need To Know 50 Ideas You Really Need To Know Series

What exactly is a credit crunch? Why do footballers earn so much more than the rest of us? Which country is likely to be the world's leading economy in 10 years' time? Daily Telegraph economics editor Edmund Conway introduces and explains the central ideas of economics in a series of fifty essays. Beginning with an exploration of the basic theories, such as Adam Smith's 'invisible hand', and concluding with the latest research into the links between wealth and happiness, he sheds light on all the essential topics needed to understand booms and busts, bulls and bears, and the way the world really works.

A guide to everything you need and want to know about quantum physics, how our universe works and our existence in it. Quantum physics is the most cutting-edge, important and fascinating area of modern science. We have all heard of Einstein's theory of relativity and Schrodinger's Cat - but do we really understand the mind-bending theories of our universe? In 50 concise chapters, Joanne Baker covers the foundation concepts of quantum physics and moves on to present clear explanations of complex theories and their advanced applications - from

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string theory to black holes, and quarks to quantum computing. With informative two-colour illustrations alongside key ideas in straightforward, bite-sized chunks, this book will teach you everything you need to know about quantum physics - and challenge the way you understand the world. The ideas explored include: Theory of relativity; Schrödinger's cat; Nuclear forces: fission and fusion; Antimatter; Superconductivity.

In this, the second volume in an important new series presenting core concepts across a range of critical areas of human knowledge, author Joanne Baker unravels the complexities of 20th-century scientific theory for a general readership. From Hubble's law to the Pauli exclusion principle, and from Schrodinger's cat to Heisenberg's uncertainty principle, she explains ideas at the cutting-edge of scientific enquiry, making them comprehensible and accessible to the layperson.

Just the mention of mathematics is enough to strike fear into the hearts of many, yet without it, the human race couldn't be where it is today. By exploring the subject through its 50 key insights--from the simple (the number one) and the subtle (the invention of zero) to the sophisticated (proving Fermat's last theorem)--this book shows how mathematics has changed the way we look at the world around us.

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NEW YORK TIMES BEST SELLER • The epic story of the greatest quest in all of science—the holy grail of physics that would explain the creation of the universe—from renowned theoretical physicist and author of *The Future of the Mind* and *The Future of Humanity* When Newton discovered the law of gravity, he unified the rules governing the heavens and the Earth. Since then, physicists have been placing new forces into ever-grander theories. But perhaps the ultimate challenge is achieving a monumental synthesis of the two remaining theories—relativity and the quantum theory. This would be the crowning achievement of science, a profound merging of all the forces of nature into one beautiful, magnificent equation to unlock the deepest mysteries in science: What happened before the Big Bang? What lies on the other side of a black hole? Are there other universes and dimensions? Is time travel possible? Why are we here? Kaku also explains the intense controversy swirling around this theory, with Nobel laureates taking opposite sides on this vital question. It is a captivating, gripping story; what's at stake is nothing less than our conception of the universe. Written with Kaku's trademark enthusiasm and clarity, this epic and engaging journey is the story of *The God Equation*.

Everything around us - trees, buildings, food, light, water, air and even ourselves - is composed of minute particles, smaller than a nanometre (a billionth of a

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metre). Quantum physics is the science of these particles and without it none of our electronic devices, from smartphones to computers and microwave ovens, would exist. But quantum physics also pushes us to the very boundaries of what we know about science, reality and the structure of the universe. The world of quantum physics is an amazing place, where quantum particles can do weird and wonderful things, acting totally unlike the objects we experience in day-to-day life. How can atoms exist in two places at once? And just how can a cat be dead and alive at the same time? Find out more with this entertaining illustrated guide to the fascinating, mysterious world of quantum physics.

What will the world look like in 2020, 2030 or even 2100? How will progress in scientific research affect human life in the areas of health and lifestyle, energy and the environment, politics and conflict, space exploration and even the ultimate questions of existence? This thoroughly researched and superbly written book offers an electrifying trip through the wonders--and terrors--awaiting us over the next hundred years.

The clearest, simplest e-guide to quantum physics ever published. Discovering quantum physics has never been easier. Combining bold graphics with easy-to-understand text, Simply Quantum Physics is an essential introduction to the subject for those who are short on time but hungry for knowledge. It's a perfect

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beginner's e-guide to a strange and fascinating world that at times seems to conflict with common sense. Covering more than 80 key ideas from the uncertainty principle to quantum tunneling, it is divided into pared-back, single- or double-page entries that explain concepts simply and visually. Assuming no previous knowledge of physics, it demystifies some of the most groundbreaking ideas in modern science and introduces the work of some of the most famous physicists of the 20th and 21st centuries, including Albert Einstein, Neils Bohr, Erwin Schrödinger, and Richard Feynman. Whether you are studying physics at school or college, or simply want a jargon-free overview of the subject, this essential guide is packed with everything you need to understand the basics quickly and easily.

50 Science Ideas You Really Need to Know is your guide to the biggest questions and deepest concepts from across the whole of science. What was the Big Bang? How did life on Earth arise? What does quantum mechanics tell us about the universe? Is true artificial intelligence possible? And does life exist on other planets? Moving from the basics of atoms and molecules, Newton's laws of physics and the building blocks of life to the cutting edge of nanotechnology, Einstein's theories of relativity and cloning, this book makes the many worlds of science accessible and illuminating. Featuring fifty concise, insightful and

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illustrated essays covering physics and astronomy, Earth and life sciences, chemistry and materials, psychology and computing, and exploring the ways they connect with each other and impact on our lives, 50 Science Ideas You Really Need to Know is the ideal introduction to the questions which fascinate us all. 'This is about gob-smacking science at the far end of reason ... Take it nice and easy and savour the experience of your mind being blown without recourse to hallucinogens' Nicholas Lezard, Guardian For most people, quantum theory is a byword for mysterious, impenetrable science. And yet for many years it was equally baffling for scientists themselves. In this magisterial book, Manjit Kumar gives a dramatic and superbly-written history of this fundamental scientific revolution, and the divisive debate at its core. Quantum theory looks at the very building blocks of our world, the particles and processes without which it could not exist. Yet for 60 years most physicists believed that quantum theory denied the very existence of reality itself. In this tour de force of science history, Manjit Kumar shows how the golden age of physics ignited the greatest intellectual debate of the twentieth century. Quantum theory is weird. In 1905, Albert Einstein suggested that light was a particle, not a wave, defying a century of experiments. Werner Heisenberg's uncertainty principle and Erwin Schrodinger's famous dead-and-alive cat are similarly strange. As Niels Bohr said, if you weren't shocked by

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quantum theory, you didn't really understand it. While "Quantum" sets the science in the context of the great upheavals of the modern age, Kumar's centrepiece is the conflict between Einstein and Bohr over the nature of reality and the soul of science. 'Bohr brainwashed a whole generation of physicists into believing that the problem had been solved', lamented the Nobel Prize-winning physicist Murray Gell-Mann. But in "Quantum", Kumar brings Einstein back to the centre of the quantum debate. "Quantum" is the essential read for anyone fascinated by this complex and thrilling story and by the band of brilliant men at its heart.

“Anyone who is not shocked by quantum theory has not understood it.” Since Niels Bohr said this many years ago, quantum mechanics has only been getting more shocking. We now realize that it's not really telling us that “weird” things happen out of sight, on the tiniest level, in the atomic world: rather, everything is quantum. But if quantum mechanics is correct, what seems obvious and right in our everyday world is built on foundations that don't seem obvious or right at all—or even possible. An exhilarating tour of the contemporary quantum landscape, *Beyond Weird* is a book about what quantum physics really means—and what it doesn't. Science writer Philip Ball offers an up-to-date, accessible account of the quest to come to grips with the most fundamental

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theory of physical reality, and to explain how its counterintuitive principles underpin the world we experience. Over the past decade it has become clear that quantum physics is less a theory about particles and waves, uncertainty and fuzziness, than a theory about information and knowledge—about what can be known, and how we can know it. Discoveries and experiments over the past few decades have called into question the meanings and limits of space and time, cause and effect, and, ultimately, of knowledge itself. The quantum world Ball shows us isn't a different world. It is our world, and if anything deserves to be called "weird," it's us.

Quantum physics explores the behavior of matter and energy at the molecular, atomic, nuclear, and even smaller levels. *Idiot's Guides: Quantum Physics* makes this very complex topic easy to understand. It skips the complicated math and dives right into all the concepts, paradoxes, thought experiments, and implications that make quantum mechanics so fascinating to armchair science buffs. Topics covered include: - Quantum vs. classical physics - A look at the smallest known particles - How the tiniest particles behave both as particles and waves - The famous double-slit experiment - Quantum wave function - The Heisenberg Uncertainty Principle - How particles can be in multiple places at once - Quantum entanglement - The Schrodinger's cat thought experiment -

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Competing interpretations of quantum physics - The Copenhagen interpretation and need for an observer - The role of consciousness in quantum theory - The Many Worlds interpretation and parallel universes - Building a quantum computer - Quantum gravity and the search for a theory of everything

“Rovelli is a genius and an amazing communicator... This is the place where science comes to life.” ?Neil Gaiman “One of the warmest, most elegant and most lucid interpreters to the laity of the dazzling enigmas of his discipline...[a] momentous book” ?John Banville, The Wall Street Journal A startling new look at quantum theory, from the New York Times bestselling author of Seven Brief Lessons on Physics and The Order of Time. One of the world's most renowned theoretical physicists, Carlo Rovelli has entranced millions of readers with his singular perspective on the cosmos. In Helgoland, he examines the enduring enigma of quantum theory. The quantum world Rovelli describes is as beautiful as it is unnerving. Helgoland is a treeless island in the North Sea where the twenty-three-year-old Werner Heisenberg made the crucial breakthrough for the creation of quantum mechanics, setting off a century of scientific revolution. Full of alarming ideas (ghost waves, distant objects that seem to be magically connected, cats that appear both dead and alive), quantum physics has led to countless discoveries and technological advancements. Today our understanding

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of the world is based on this theory, yet it is still profoundly mysterious. As scientists and philosophers continue to fiercely debate the meaning of the theory, Rovelli argues that its most unsettling contradictions can be explained by seeing the world as fundamentally made of relationships rather than substances. We and everything around us exist only in our interactions with one another. This bold idea suggests new directions for thinking about the structure of reality and even the nature of consciousness. Rovelli makes learning about quantum mechanics an almost psychedelic experience. Shifting our perspective once again, he takes us on a riveting journey through the universe so we can better comprehend our place in it.

Have you ever lain awake at night worried about how we can be sure of the reality of the external world? Perhaps we are in fact disembodied brains, floating in vats at the whim of some deranged puppetmaster. If so, you are not alone--and what's more, you are in exalted company--for this question and other ones like it have been the stuff of philosophical rumination from Plato to Popper. In a series of accessible and engagingly written essays, *50 Philosophy Ideas You Really Need to Know* introduces and explains the problems of knowledge, consciousness, identity, ethics, belief, justice, and aesthetics that have engaged the attention of thinkers from the era of the ancient Greeks to the present day.

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Ideas of Quantum Chemistry, Volume One: From Quantum Physics to Chemistry shows how quantum mechanics is applied to molecular sciences to provide a theoretical foundation. Organized into digestible sections and written in an accessible style, it answers questions, highlighting the most important conclusions and essential mathematical formulae. Beginning with an introduction to the magic of quantum mechanics, the book goes on to review such key topics as the Schrödinger Equation, exact solutions, and fundamental approximate methods. The crucial concept of molecular shape is then discussed, followed by the motion of nuclei and the orbital model of electronic structure. This updated volume covers the latest developments in the field and can be used either on its own as a detailed introduction to quantum chemistry or in combination with Volume Two to give a complete overview of the field. Provides fully updated coverage on an extensive range of both foundational and complex topics Uses an innovative structure to emphasize relationships between topics and help readers tailor their own path through the book Includes new sections on Time-Energy Uncertainty and Virial Theorem
Original publication and copyright date: 2009.

From dwarf planets to dark energy; and from the Big Bang to the death of stars, this book is the perfect introduction to the cutting-edge science that is shaping

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our understanding of our place in the Universe and that could lead to the next great discovery--the detection of life beyond Earth.

First-ever comprehensive introduction to the major new subject of quantum computing and quantum information.

The untold story of the heretical thinkers who dared to question the nature of our quantum universe Every physicist agrees quantum mechanics is among humanity's finest scientific achievements. But ask what it means, and the result will be a brawl. For a century, most physicists have followed Niels Bohr's Copenhagen interpretation and dismissed questions about the reality underlying quantum physics as meaningless. A mishmash of solipsism and poor reasoning, Copenhagen endured, as Bohr's students vigorously protected his legacy, and the physics community favored practical experiments over philosophical arguments. As a result, questioning the status quo long meant professional ruin. And yet, from the 1920s to today, physicists like John Bell, David Bohm, and Hugh Everett persisted in seeking the true meaning of quantum mechanics. What Is Real? is the gripping story of this battle of ideas and the courageous scientists who dared to stand up for truth.

Combining twenty-six original essays written by an impressive line-up of distinguished physicists and philosophers of physics, this anthology reflects some

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of the latest thoughts by leading experts on the influence of Bell's theorem on quantum physics. Essays progress from John Bell's character and background, through studies of his main work, and on to more speculative ideas, addressing the controversies surrounding the theorem, and investigating the theorem's meaning and its deep implications for the nature of physical reality. Combined, they present a powerful comment on the undeniable significance of Bell's theorem for the development of ideas in quantum physics over the past 50 years. Questions surrounding the assumptions and significance of Bell's work still inspire discussion in the field of quantum physics. Adding to this with a theoretical and philosophical perspective, this balanced anthology is an indispensable volume for students and researchers interested in the philosophy of physics and the foundations of quantum mechanics.

The bestselling 30-Second... series takes a revolutionary approach to learning about those subjects you feel you should really understand. Each title selects a popular topic and dissects it into the 50 most significant ideas at its heart. Each idea, no matter how complex, is explained in 300 words and one picture, all digestible in 30 seconds. 30-Second Quantum Theory tackles a mindbendingly mysterious area of physics, introducing the 50 most significant quantum quandaries and ideas. In a world where the quantum physics of electronics is an

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everyday essential and new quantum developments make headline news, you will visit Parallel Worlds, ride Wave Theory, and learn just enough to talk with certainty about Uncertainty Theory and to untangle the mysteries of quantum entanglement.

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 $E = mc^2$, 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

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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.

Paul Dirac was among the great scientific geniuses of the modern age. One of the discoverers of quantum mechanics, the most revolutionary theory of the past century, his contributions had a unique insight, eloquence, clarity, and mathematical power. His prediction of antimatter was one of the greatest triumphs in the history of physics. One of Einstein's most admired colleagues, Dirac was in 1933 the youngest theoretician ever to win the Nobel Prize in physics. Dirac's personality is legendary. He was an extraordinarily reserved loner, relentlessly literal-minded and appeared to have no empathy with most people. Yet he was a family man and was intensely loyal to his friends. His tastes in the arts ranged from Beethoven to Cher, from Rembrandt to Mickey Mouse. Based on previously undiscovered archives, *The Strangest Man* reveals the many facets of Dirac's brilliantly original mind. A compelling human story, *The Strangest Man* also depicts a spectacularly exciting era in scientific history.

Ages 0 to 3 years *Quantum Physics for Babies* by Chris Ferrie is a colourfully simple introduction to the principle that gives quantum physics its name. Baby will find out that energy is "quantized" and the weird world of atoms never comes to a

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standstill. It is never too early to become a quantum physicist! This is the first in a series of books designed to stimulate your baby and introduce them to the world of science. Also coming in May are: ? Newtonian Physics for Babies ? General Relativity for Babies ? Rocket Science for Babies

In *The Quantum Universe*, Brian Cox and Jeff Forshaw approach the world of quantum mechanics in the same way they did in *Why Does $E=mc^2$?* and make fundamental scientific principles accessible—and fascinating—to everyone. The subatomic realm has a reputation for weirdness, spawning any number of profound misunderstandings, journeys into Eastern mysticism, and woolly pronouncements on the interconnectedness of all things. Cox and Forshaw's contention? There is no need for quantum mechanics to be viewed this way. There is a lot of mileage in the "weirdness" of the quantum world, and it often leads to confusion and, frankly, bad science. *The Quantum Universe* cuts through the Wu Li and asks what observations of the natural world made it necessary, how it was constructed, and why we are confident that, for all its apparent strangeness, it is a good theory. The quantum mechanics of *The Quantum Universe* provide a concrete model of nature that is comparable in its essence to Newton's laws of motion, Maxwell's theory of electricity and magnetism, and Einstein's theory of relativity.

"The standard work in the fundamental principles of quantum mechanics, indispensable both to the advanced student and to the mature research worker, who will always find it a fresh source of knowledge and stimulation." --Nature "This is the classic text on quantum mechanics. No graduate student of quantum theory should leave it unread"--W.C Schieve, University of Texas

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Arising from a series of laboratory class experiments developed by the authors, this book provides an overview of fundamental experiments that can be used to practically demonstrate the underlying principles of quantum physics and quantum information science. Designed with multiple readerships in mind, it will be essential for the professor who would like to recreate a similar suite of experiments for their students as well as students of physics, who would like to learn how such experiments are conducted. Computer scientists, photonics engineers and electrical engineers who would like to foray into quantum technologies would also find this narrative useful to learn about the terminology, key postulates of quantum physics, the collapse of states on measurement and how quantum computers could be implemented. Key Features Accompanied by downloadable code and data from real experiments for readers to manipulate, plot and compute expectation values, errors and density matrices. Includes worked examples demonstrating basic calculations on computing probabilities from projective measurements, effect of unitary operators on states, computing density matrices, and expectation values, fidelities and purities. Features end-of-chapter problems Incorporates overviews and learning objectives for each chapter Essential reading for students of quantum physics and modern optics

A hopeful and controversial view of the universe and ourselves based on the principles of quantum physics, offering a way of making our lives and the world better, with a foreword by Deepak Chopra In *Infinite Potential*, physical chemist Lothar Schäfer presents a stunning view of the universe as interconnected, nonmaterial, composed of a field of infinite potential, and conscious. With his own research as well as that of some of the most distinguished scientists of our time, Schäfer moves us from a reality of Darwinian competition to cooperation, a

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meaningless universe to a meaningful one, and a disconnected, isolated existence to an interconnected one. In so doing, he shows us that our potential is infinite and calls us to live in accordance with the order of the universe, creating a society based on the cosmic principle of connection, emphasizing cooperation and community.

“The man who makes physics sexy . . . the scientist they’re calling the next Stephen Hawking.” —The Times Magazine From the New York Times—bestselling author of *Seven Brief Lessons on Physics*, *The Order of Time*, and *Helgoland*, a closer look at the mind-bending nature of the universe. What are the elementary ingredients of the world? Do time and space exist? And what exactly is reality? Theoretical physicist Carlo Rovelli has spent his life exploring these questions. He tells us how our understanding of reality has changed over the centuries and how physicists think about the structure of the universe today. In elegant and accessible prose, Rovelli takes us on a wondrous journey from Democritus to Albert Einstein, from Michael Faraday to gravitational waves, and from classical physics to his own work in quantum gravity. As he shows us how the idea of reality has evolved over time, Rovelli offers deeper explanations of the theories he introduced so concisely in *Seven Brief Lessons on Physics*. This book culminates in a lucid overview of quantum gravity, the field of research that explores the quantum nature of space and time, seeking to unify quantum mechanics and general relativity. Rovelli invites us to imagine a marvelous world where space breaks up into tiny grains, time disappears at the smallest scales, and black holes are waiting to explode—a vast universe still largely undiscovered.

In this cleverly conceived book, physicist Robert Gilmore makes accessible some complex concepts in quantum mechanics by sending Alice to Quantumland—a whole new Wonderland,

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smaller than an atom, where each attraction demonstrates a different aspect of quantum theory. Alice unusual encounters, enhanced by illustrations by Gilmore himself, make the Uncertainty Principle, wave functions, the Pauli Principle, and other elusive concepts easier to grasp.

? Are you fascinated by quantum physics and want to unlock its mysteries and complexities, but are somehow intimidated by the formulas and mathematics? ? Are you wishing you could share the insights and discoveries of brilliant theoretical physicists and scientists? Are you looking for a book that can reveal quantum physics in a simple, uncomplicated and clear way that you can immediately understand? If so, this book is for you. It's in an easy and fun-to-read format of 50 of the most common questions about the ever-expanding quantum world of subatomic particles and the forces that govern them. You will quickly learn about: The origin of the universe, the cosmic microwave background, and the three laws of thermodynamics. Black holes, neutron stars, dark matter, and dark energy. Fermions, including protons, neutrons, and electrons, and how they form atoms. Quarks that affect the electrical charges of atoms, as well as alpha decay, beta decay, and their roles in radiation and particle transformations. Radioactive half-life, nuclear fission in atoms, and the nuclear fusion that powers the stars. Bosons and the four forces that control the universe: strong, weak, electromagnetic, and gravity. The uncertainty principle and the wave/particle law of complementarity, supersymmetry, superposition, and the exclusion principle. Superstring theory, with its 11 dimensions of ultimately fundamental vibrating strings. The Standard Model and Grand Unified Theory, and Einstein's theories of special and general relativity. Entanglement of distant particles and its role in quantum computing. How electron microscopes and PET scans work.

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The meaning of quantum electrodynamics and quantum chromodynamics. If these and many other aspects of quantum physics are what you are hoping to learn without having to deal with complexities, this is the one book that you can count on to bring you up to speed, quickly and easily, on all that is going on in quantum physics.

This advanced undergraduate-level text presents the quantum theory in terms of qualitative and imaginative concepts, followed by specific applications worked out in mathematical detail.

Quantum Theory is the most revolutionary discovery in physics since Newton.

This book gives a lucid, exciting, and accessible account of the surprising and counterintuitive ideas that shape our understanding of the sub-atomic world. It does not disguise the problems of interpretation that still remain unsettled 75 years after the initial discoveries. The main text makes no use of equations, but there is a Mathematical Appendix for those desiring stronger fare. Uncertainty, probabilistic physics, complementarity, the problematic character of measurement, and decoherence are among the many topics discussed. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

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A study of one of the fundamental concept of quantum physics examines the strange correlation between two separated particles, entitled "entanglement" by physicist John Bell, drawing on the work of leading physicists to explain the phenomenon.

Lucid, accessible introduction to the influential theory of energy and matter features careful explanations of Dirac's anti-particles, Bohr's model of the atom, and much more. Numerous drawings. 1966 edition.

An extraordinary and challenging synthesis of ideas uniting Quantum Theory, and the theories of Computation, Knowledge and Evolution, Deutsch's extraordinary book explores the deep connections between these strands which reveal the fabric of reality in which human actions and ideas play essential roles. Fritjof Capra, scientist, educator, activist, and accomplished author, presents the evolution of his thought over five decades in *Patterns of Connection*. First introduced in the late 1950s to the work of Werner Heisenberg, a founder of quantum mechanics, Capra quickly intuited the connections between the discoveries of quantum physics and the traditions of Eastern philosophy—resulting in his first book, the bestselling *The Tao of Physics*. This synthesis, representative of the change from the mechanistic worldview of Descartes and Newton to a systemic, ecological one, went on to inform Capra's thinking about

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the life sciences, ecology, and environmental policy. Today Fritjof Capra remains a major figure at the crossroads of physics, spirituality, environmentalism, and systems theory. Organized thematically and chronologically, the essays in *Patterns of Connection* document the revolutionary and far-reaching intellectual journey of one of the major public thinkers of the last half-century.

Quantum theory is so shocking that Einstein could not bring himself to accept it. It is so important that it provides the fundamental underpinning of all modern sciences. Without it, we'd have no nuclear power or nuclear weapons, no TV, no computers, no science of molecular biology, no understanding of DNA, no genetic engineering. *In Search of Schrodinger's Cat* tells the complete story of quantum mechanics, a truth stranger than any fiction. John Gribbin takes us step by step into an ever more bizarre and fascinating place, requiring only that we approach it with an open mind. He introduces the scientists who developed quantum theory. He investigates the atom, radiation, time travel, the birth of the universe, superconductors and life itself. And in a world full of its own delights, mysteries and surprises, he searches for Schrodinger's Cat - a search for quantum reality - as he brings every reader to a clear understanding of the most important area of scientific study today - quantum physics. *In Search of Schrodinger's Cat* is a fascinating and delightful introduction to the strange world

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of the quantum - an essential element in understanding today's world. 50 Big Ideas You Really Need to Know is a concise, accessible and popular guide to the central tenets of Western thought. Every important principle of philosophy, religion, politics, economics, the arts and the sciences is profiled in a series of short illustrated essays, complemented by an informative array of timelines and box features.

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