Beyond Einstein The Cosmic Quest For The Theory Of The Universe

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Hyperspace - Michio Kaku 2016-04-20

Reissued in new covers, this is the run-away bestseller from one of the world's leading theoretical physicists. Are there other dimensions beyond our own? Is time travel possible? Michio Kaku takes us on a tour of the most exciting work in modern physics, including research into the 10th dimension, time warps, and multiple universes, to outline what may be the leading candidate for the Theory of Everything.

The God Equation - Michio Kaku 2022-03-29

#1 NEW YORK TIMES BESTSELLER • 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.

Beyond Einstein - Michio Kaku 1999

Death By Black Hole - Neil deGrasse Tyson 2007-01-16

A collection of essays on the cosmos, written by an American Museum of Natural History astrophysicist, includes "Holy Wars," "Ends of the World," and "Hollywood Nights."

The Theoretical Minimum - Leonard Susskind 2014-04-22

A master teacher presents the ultimate introduction to classical mechanics for people who are serious about learning physics "Beautifully clear explanations of famously 'difficult' things," -- Wall Street Journal If you ever regretted not taking physics in college -- or simply want to know how to think like a physicist -- this is the book for you. In this bestselling introduction to classical mechanics, physicist Leonard Susskind and hacker-scientist George Hrabovsky offer a first course in physics and associated math for the ardent amateur. Challenging, lucid, and concise, The Theoretical Minimum provides a tool kit for amateur scientists to learn physics at their own pace.

The Big Picture - Sean Carroll 2016-05-10

The instant New York Times bestseller about humanity's place in the universe—and how we understand it. “Vivid...impressive....Splendidly informative.”—The New York Times “Succeeds spectacularly.”—Science “A tour de force.”—Salon Already internationally acclaimed for his elegant, lucid writing on the most challenging notions in modern physics, Sean Carroll is emerging as one of the greatest humanist thinkers of his generation as he brings his extraordinary intellect to bear not only on Higgs bosons and extra dimensions but now also on our deepest personal questions: Where are we? Who are we? Are our emotions, our beliefs, and our hopes and dreams ultimately meaningless out there in the void? Do human purpose and meaning fit into a scientific worldview? In short chapters filled with intriguing historical anecdotes, personal asides, and rigorous exposition, readers learn the difference between how the world works at the quantum level, the cosmic level, and the human level—and then how each connects to the other. Carroll's presentation of the principles that have guided the scientific revolution from Darwin and Einstein to the origins of life, consciousness, and the universe is dazzlingly unique. Carroll shows how an avalanche of discoveries in the past few hundred years has changed our world and what really matters to us. Our lives are dwarfed like

never before by the immensity of space and time, but they are redeemed by our capacity to comprehend it and give it meaning. The Big Picture is an unprecedented scientific worldview, a tour de force that will sit on shelves alongside the works of Stephen Hawking, Carl Sagan, Daniel Dennett, and E. O. Wilson for years to come.

Beyond Einstein - Michio Kaku; Jennifer Thompson 2007-05-18

Einstein's Dice and Schr□dinger's Cat - Paul Halpern 2015-04-14

When the fuzzy indeterminacy of quantum mechanics overthrew the orderly world of Isaac Newton, Albert Einstein and Erwin Schrödinger were at the forefront of the revolution. Neither man was ever satisfied with the standard interpretation of quantum mechanics, however, and both rebelled against what they considered the most preposterous aspect of quantum mechanics: its randomness. Einstein famously quipped that God does not play dice with the universe, and Schrödinger constructed his famous fable of a cat that was neither alive nor dead not to explain quantum mechanics but to highlight the apparent absurdity of a theory gone wrong. But these two giants did more than just criticize: they fought back, seeking a Theory of Everything that would make the universe seem sensible again. In Einstein’s Dice and Schrödinger’s Cat, physicist Paul Halpern tells the little-known story of how Einstein and Schrödinger searched, first as collaborators and then as competitors, for a theory that transcended quantum weirdness. This story of their quest—which ultimately failed—provides readers with new insights into the history of physics and the lives and work of two scientists whose obsessions drove its progress. Today, much of modern physics remains focused on the search for a Theory of Everything. As Halpern explains, the recent discovery of the Higgs Boson makes the Standard Model—the closest thing we have to a unified theory— nearly complete. And while Einstein and Schrödinger failed in their attempt to explain everything in the cosmos through pure geometry, the development of string theory has, in its own quantum way, brought this idea back into vogue. As in so many things, even when they were wrong, Einstein and Schrödinger couldn’t help but get a great deal right.

Edge of the Universe - Paul Halpern 2012-10-02

An accessible look at the mysteries that lurk at the edge of the known universe and beyond The observable universe, the part we can see with telescopes, is incredibly vast. Yet recent theories suggest that there is far more to the universe than what our instruments record—in fact, it could be infinite. Colossal flows of galaxies, large empty regions called voids, and other unexplained phenomena offer clues that our own "bubble universe" could be part of a greater realm called the multiverse. How big is the observable universe? What it is made of? What lies beyond it? Was there a time before the Big Bang? Could space have unseen dimensions? In this book, physicist and science writer Paul Halpern explains what we know—and what we hope to soon find out—about our extraordinary cosmos. Explains what we know about the Big Bang, the accelerating universe, dark energy, dark flow, and dark matter to examine some of the theories about the content of the universe and why its edge is getting farther away from us faster Explores the idea that the observable universe could be a hologram and that everything that happens within it might be written on its edge Written by physicist and popular science writer Paul Halpern, whose other books include Collider: The Search for the World's Smallest Particles, and What's Science Ever Done For Us: What the Simpsons Can Teach Us About Physics, Robots, Life, and the Universe

Albert Einstein's Vision - Barry R. Parker 2011-02-10

Acclaimed science writer Parker completes his trilogy on Einstein with this new work which introduces a wealth of new material and shows the incredibly wide-ranging influence of Einstein's many discoveries.

Beyond Einstein - Michio Kaku 1997

What is superstring theory and why is it important? Can superstrings offer the fulfilment of Einstein's lifelong dream of a Theory of Everything? Co-authored by one of the leading pioneers in superstrings, Michio Kaku, this book approaches scientific questions with the excitement of a detective story, looking at new scientific research that may make the impossible possible.

The Elegant Universe - Brian Greene 2000

Introduces the superstring theory that attempts to unite general relativity and quantum mechanics

Einstein and Religion - Max Jammer 2011-09-05

The philosophy of religion and the quest for spiritual truth preoccupied Albert Einstein--so much that it has been said "one might suspect he was a disguised theologian." Nevertheless, the literature on the life and work of Einstein, extensive as it is, does not provide an adequate account of his religious conception and sentiments. Only fragmentarily known, Einstein's ideas about religion have been often distorted both by atheists and by religious groups eager to claim him as one of their own. But what exactly was Einstein's religious credo? In this fascinating book, the distinguished physicist and philosopher Max Jammer offers an unbiased and well-documented answer to this question. The book begins with a discussion of Einstein's childhood religious education and the religious atmosphere--or its absence--among his family and friends. It then reconstructs, step by step, the intellectual development that led Einstein to the conceptions of a cosmic religion and an impersonal God, akin to "the God of Spinoza." Jammer explores Einstein's writings and lectures on religion and its role in society, and how far they have been accepted by the general public and by professional theologians like Paul Tillich or Frederick Ferré. He also analyzes the precise meaning of

Einstein's famous dictum "Science without religion is lame, religion without science is blind," and why this statement can serve as an epitome of Einstein's philosophy of religion. The last chapter deals with the controversial question of whether Einstein's scientific work, and in particular his theory of relativity, has theologically significant implications, a problem important for those who are interested in the relation between science and religion. Both thought-provoking and engaging, this book aims to introduce readers, without proselytizing, to Einstein's religion.

Fantastic Numbers and Where to Find Them - Antonio Padilla 2022-07-26

A fun, dazzling exploration of the strange numbers that illuminate the ultimate nature of reality. For particularly brilliant theoretical physicists like James Clerk Maxwell, Paul Dirac, or Albert Einstein, the search for mathematical truths led to strange new understandings of the ultimate nature of reality. But what are these truths? What are the mysterious numbers that explain the universe? In Fantastic Numbers and Where to Find Them, the leading theoretical physicist and YouTube star Antonio Padilla takes us on an irreverent cosmic tour of nine of the most extraordinary numbers in physics, offering a startling picture of how the universe works. These strange numbers include Graham’s number, which is so large that if you thought about it in the wrong way, your head would collapse into a singularity; TREE(3), whose finite nature can never be definitively proved, because to do so would take so much time that the universe would experience a Poincaré Recurrence—resetting to precisely the state it currently holds, down to the arrangement of individual atoms; and 10^{-120}, measuring the desperately unlikely balance of energy needed to allow the universe to exist for more than just a moment, to extend beyond the size of a single atom—in other words, the mystery of our unexpected universe. Leading us down the rabbit hole to a deeper understanding of reality, Padilla explains how these unusual numbers are the key to understanding such mind-boggling phenomena as black holes, relativity, and the problem of the cosmological constant—that the two best and most rigorously tested ways of understanding the universe contradict one another. Fantastic Numbers and Where to Find Them is a combination of popular and cutting-edge science—and a lively, entertaining, and even funny exploration of the most fundamental truths about the universe.

Physical Foundations of Cosmology - Viatcheslav Mukhanov 2005-11-10

Inflationary cosmology has been developed over the last twenty years to remedy serious shortcomings in the standard hot big bang model of the universe. This textbook, first published in 2005, explains the basis of modern cosmology and shows where the theoretical results come from. The book is divided into two parts; the first deals with the homogeneous and isotropic model of the Universe, the second part discusses how inhomogeneities can explain its structure. Established material such as the inflation and quantum cosmological perturbation are presented in great detail, however the reader is brought to the frontiers of current cosmological research by the discussion of more speculative ideas. An ideal textbook for both advanced students of physics and astrophysics, all of the necessary background material is included in every chapter and no prior knowledge of general relativity and quantum field theory is assumed.

Our Mathematical Universe - Max Tegmark 2015-02-03

Max Tegmark leads us on an astonishing journey through past, present and future, and through the physics, astronomy and mathematics that are the foundation of his work, most particularly his hypothesis that our physical reality is a mathematical structure and his theory of the ultimate multiverse. In a dazzling combination of both popular and groundbreaking science, he not only helps us grasp his often mind-boggling theories, but he also shares with us some of the often surprising triumphs and disappointments that have shaped his life as a scientist. Fascinating from first to last—this is a book that has already prompted the attention and admiration of some of the most prominent scientists and mathematicians.

Endless Universe - Paul J. Steinhardt 2007-05-29

Two world-renowned scientists present an audacious new vision of the cosmos that “steals the thunder from the Big Bang theory.” —Wall Street Journal The Big Bang theory—widely regarded as the leading explanation for the origin of the universe—posits that space and time sprang into being about 14 billion years ago in a hot, expanding fireball of nearly infinite density. Over the last three decades the theory has been repeatedly revised to address such issues as how galaxies and stars first formed and why the expansion of the universe is speeding up today. Furthermore, an explanation has yet to be found for what caused the Big Bang in the first place. In Endless Universe, Paul J. Steinhardt and Neil Turok, both distinguished theoretical physicists, present a bold new cosmology. Steinhardt and Turok “contend that what we think of as the moment of creation was simply part of an infinite cycle of titanic collisions between our universe and a parallel world” (Discover). They recount the remarkable developments in astronomy, particle physics, and superstring theory that form the basis for their groundbreaking “Cyclic Universe” theory. According to this theory, the Big Bang was not the beginning of time but the bridge to a past filled with endlessly repeating cycles of evolution, each accompanied by the creation of new matter and the formation of new galaxies, stars, and planets. Endless Universe provides answers to longstanding problems with the Big Bang model, while offering a provocative new view of both the past and the future of the cosmos. It is a “theory that could solve the cosmic mystery” (USA Today).

Einstein's Cosmos: How Albert Einstein's Vision Transformed Our Understanding of Space and Time (Great Discoveries) - Michio Kaku 2005-05-17

A physicist demonstrates how Albert Einstein used simple, picture-based imagery to convey his theories about relativity and subsequently changed the way people thought about the world.

We Could Not Fail - Richard Paul 2015-05-01

The Space Age began just as the struggle for civil rights forced Americans to confront the long and bitter legacy of slavery, discrimination, and violence against African Americans. Presidents John F. Kennedy and Lyndon Johnson utilized the space program as an agent for social change, using federal equal employment opportunity laws to open workplaces at NASA and NASA contractors to African Americans while creating thousands of research and technology jobs in the Deep South to ameliorate poverty. We Could Not Fail tells the inspiring, largely unknown story of how shooting for the stars helped to overcome segregation on earth. Richard Paul and Steven Moss profile ten pioneer African American space workers whose stories illustrate the role NASA and the space program played in promoting civil rights. They recount how these technicians, mathematicians, engineers, and an astronaut candidate surmounted barriers to move, in some cases literally, from the cotton fields to the launching pad. The authors vividly describe what it was like to be the sole African American in a NASA work group and how these brave and determined men also helped to transform Southern society by integrating colleges, patenting new inventions, holding elective office, and reviving and governing defunct towns. Adding new names to the roster of civil rights heroes and a new chapter to the story of space exploration, We Could Not Fail demonstrates how African Americans broke the color barrier by competing successfully at the highest level of American intellectual and technological achievement.

Big Bang - Simon Singh 2005-11-01

A half century ago, a shocking Washington Post headline claimed that the world began in five cataclysmic minutes rather than having existed for all time; a skeptical scientist dubbed the maverick theory the Big Bang. In this amazingly comprehensible history of the universe, Simon Singh decodes the mystery behind the Big Bang theory, lading us through the development of one of the most extraordinary, important, and awe-inspiring theories in science.

Elementary Cosmology - James J Kolata 2015-12-01

Cosmology is the study of the origin, size, and evolution of the entire universe. Every culture has developed a cosmology, whether it be based on religious, philosophical, or scientific principles. In this book, the evolution of the scientific understanding of the Universe in Western tradition is traced from the early Greek philosophers to the most modern 21st century view. After a brief introduction to the concept of the scientific method, the first part of the book describes the way in which detailed observations of the Universe, first with the naked eye and later with increasingly complex modern instruments, ultimately led to the development of the "Big Bang" theory. The second part of the book traces the evolution of the Big Bang including the very recent observation that the expansion of the Universe is itself accelerating with time.

Until the End of Time - Brian Greene 2020-02-18

NEW YORK TIMES BESTSELLER • A captivating exploration of deep time and humanity's search for purpose, from the world-renowned physicist and best-selling author of The Elegant Universe. "Few humans share Greene’s mastery of both the latest cosmological science and English prose." —The New York Times Until the End of Time is Brian Greene's breathtaking new exploration of the cosmos and our quest to find meaning in the face of this vast expanse. Greene takes us on a journey from the big bang to the end of time, exploring how lasting structures formed, how life and mind emerged, and how we grapple with our existence through narrative, myth, religion, creative expression, science, the quest for truth, and a deep longing for the eternal. From particles to planets, consciousness to creativity, matter to meaning—Brian Greene allows us all to grasp and appreciate our fleeting but utterly exquisite moment in the cosmos.

Cosmic Catastrophes - J. Craig Wheeler 2007-01-04

From supernovae and gamma-ray bursts to the accelerating Universe, this is an exploration of the intellectual threads that lead to some of the most exciting ideas in modern astrophysics and cosmology. This fully updated second edition incorporates new material on binary stars, black holes, gamma-ray bursts, worm-holes, quantum gravity and string theory. It covers the origins of stars and their evolution, the mechanisms responsible for supernovae, and their progeny, neutron stars and black holes. It examines the theoretical ideas behind black holes and their manifestation in observational astronomy and presents neutron stars in all their variety known today. This book also covers the physics of the twentieth century, discussing quantum theory and Einstein's gravity, how these two theories collide, and the prospects for their reconciliation in the twenty-first century. This will be essential reading for undergraduate students in astronomy and astrophysics, and an excellent, accessible introduction for a wider audience.

The Cosmic Web - N. Katherine Hayles 2018-03-15

From the central concept of the field—which depicts the world as a mutually interactive whole, with each part connected to every other part by an underlying field— have come models as diverse as quantum mathematics and Saussure’s theory of language. In The Cosmic Web, N. Katherine Hayles seeks to establish the scope of the field concept and to assess its importance for contemporary thought. She then explores the literary strategies that are attributable directly or indirectly to the new paradigm; among the texts at which she looks closely are Robert Pirsig’s Zen and the Art of Motorcycle Maintenance, Nabokov’s Ada, D. H. Lawrence’s early novels and essays, Borges’s fiction, and Thomas Pynchon’s Gravity’s Rainbow.

Fantastic Numbers and Where to Find Them - Antonio Padilla 2022-07-26

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The Future of Humanity - Michio Kaku 2018-02-20

NEW YORK TIMES BESTSELLER • The national bestselling author of The God Equation traverses the frontiers of astrophysics, artificial intelligence, and technology to offer a stunning vision of man's future in space, from settling Mars to traveling to distant galaxies. “Amazing … Kaku is in smooth perfect control of it the entire time.” —The Christian Science Monitor We are entering a new Golden Age of space exploration. With irrepressible enthusiasm and a deep understanding of the cutting-edge research in space travel, world-renowned physicist and futurist Dr. Michio Kaku presents a compelling vision of how humanity may develop a sustainable civilization in outer space. He reveals the developments in robotics, nanotechnology, and biotechnology that may allow us to terraform and build habitable cities on Mars and beyond. He then journeys out of our solar system and discusses how new technologies such as nanoships, laser sails, and fusion rockets may actually make interstellar travel a possibility. We travel beyond our galaxy, and even beyond our universe, as Kaku investigates some of the hottest topics in science today, including warp drive, wormholes, hyperspace, parallel universes, and the multiverse. Ultimately, he shows us how humans may someday achieve a form of immortality and be able to leave our bodies entirely, laser porting to new havens in space.

Physics of the Impossible - Michio Kaku 2008-03-11

Teleportation, time machines, force fields, and interstellar space ships—the stuff of science fiction or potentially attainable future technologies? Inspired by the fantastic worlds of Star Trek, Star Wars, and Back to the Future, renowned theoretical physicist and bestselling author Michio Kaku takes an informed, serious, and often surprising look at what our current understanding of the universe's physical laws may permit in the near and distant future.Entertaining, informative, and imaginative, Physics of the Impossible probes the very limits of human ingenuity and scientific possibility.

Modern Cosmology - Scott Dodelson 2003-03-13

An advanced text for senior undergraduates, graduate students and physical scientists in fields outside cosmology. This is a self-contained book focusing on the linear theory of the evolution of density perturbations in the universe, and the anisotropiesin the cosmic microwave background.

The Grand Design - Stephen Hawking 2010-09-07

#1 NEW YORK TIMES BESTSELLER When and how did the universe begin? Why are we here? What is the nature of reality? Is the apparent “grand design” of our universe evidence of a benevolent creator who set things in motion—or does science offer another explanation? In this startling and lavishly illustrated book, Stephen Hawking and Leonard Mlodinow present the most recent scientific thinking about these and other abiding mysteries of the universe, in nontechnical language marked by brilliance and simplicity. According to quantum theory, the cosmos does not have just a single existence or history. The authors explain that we ourselves are the product of quantum fluctuations in the early universe, and show how quantum theory predicts the “multiverse”—the idea that ours is just one of many universes that appeared spontaneously out of nothing, each with different laws of nature. They conclude with a riveting assessment of M-theory, an explanation of the laws governing our universe that is currently the only viable candidate for a “theory of everything”: the unified theory that Einstein was looking for, which, if confirmed, would represent the ultimate triumph of human reason.

The Copernicus Complex - Caleb Scharf 2014-09-09

Longlisted for the 2015 PEN/E.O. Wilson Literary Science Writing Award Short-listed for Physics World's Book of the Year The Sunday Times (UK) Best Science Book of 2014 A Publishers Weekly Top 10 Science Book of Fall 2014 An NBC News Top Science and Tech Book of 2014 A Politics & Prose 2014 Staff Pick In the sixteenth century, Nicolaus Copernicus dared to go against the establishment by proposing that Earth rotates around the Sun. Having demoted Earth from its unique position in the cosmos to one of mediocrity, Copernicus set in motion a revolution in scientific thought. This perspective has influenced our thinking for centuries. However, recent evidence challenges the Copernican Principle, hinting that we do in fact live in a special place, at a special time, as the product of a chain of unlikely events. But can we be significant if the Sun is still just one of a billion trillion stars in the observable universe? And what if our universe is just one of a multitude of others-a single slice of an infinity of parallel realities? In The Copernicus Complex, the renowned astrophysicist Caleb Scharf takes us on a scientific adventure, from tiny microbes within the Earth to distant exoplanets, probability theory, and beyond, arguing that there is a solution to this contradiction, a third way of viewing our place in the cosmos, if we weigh the evidence properly. As Scharf explains, we do occupy an unusual time in a 14-billion-year-old universe, in a somewhat unusual type of solar system surrounded by an ocean of unimaginable planetary diversity: hot Jupiters with orbits of less than a day, planet-size rocks spinning around dead stars, and a wealth of alien super-Earths. Yet life here is built from the most common chemistry in the universe, and we are a snapshot taken from billions of years of biological evolution. Bringing us to the cutting edge of scientific discovery, Scharf shows how the answers to fundamental questions of existence will come from embracing the peculiarity of our circumstance without denying the Copernican vision. With characteristic verve, Scharf uses the latest scientific findings to reconsider where we stand in the balance between cosmic significance and mediocrity, order and chaos.

Presenting a compelling and bold view of our true status, The Copernicus Complex proposes a way forward in the ultimate quest: determining life's abundance, not just across this universe but across all realities.

The Day We Found the Universe - Marcia Bartusiak 2009-04-07

The riveting and mesmerizing story behind a watershed period in human history, the discovery of the startling size and true nature of our universe. On New Years Day in 1925, a young Edwin Hubble released his finding that our Universe was far bigger, eventually measured as a thousand trillion times larger than previously believed. Hubble’s proclamation sent shock waves through the scientific community. Six years later, in a series of meetings at Mount Wilson Observatory, Hubble and others convinced Albert Einstein that the Universe was not static but in fact expanding. Here Marcia Bartusiak reveals the key players, battles of will, clever insights, incredible technology, ground-breaking research, and wrong turns made by the early investigators of the heavens as they raced to uncover what many consider one of most significant discoveries in scientific history.

The Best American Science and Nature Writing 2020 - Michio Kaku 2020-11-03

A collection of the best science and nature writing published in North America in 2019, guest edited by New York Times best-selling author and ground-breaking physicist Dr. Michio Kaku. "Scientists and science writers have a monumental task: making science exciting and relevant to the average person, so that they care," writes renowned American physicist Michio Kaku. "If we fail in this endeavor, then we must face dire consequences." From the startlingly human abilities of AI, to the devastating accounts of California's forest fires, to the impending traffic jam on the moon, the selections in this year's Best American Science and Nature Writing explore the latest mysteries and marvels occurring in our labs and in nature. These gripping narratives masterfully translate the work of today's brightest scientists, offering a clearer view of our world and making us care. THE BEST AMERICAN SCIENCE AND NATURE WRITING 2020 INCLUDES RIVKA GALCHEN - ADAM GOPNIK - FERRIS JABR - JOSHUA SOKOL - MELINDA WENNER MOYER - SIDDHARTHA MUKHERJEE - NATALIE WOLCHOVER and others

Superstrings - P. C. W. Davies 1992-07-31

Superstring theory is one of the most exciting and actively pursued branches of physics today. The far-reaching claims made for this theory would, if correct, provide the much sought-after Theory of Everything, the unification of physics. It would enable the fundamental building blocks of matter to be identified and amalgamated in a common description, with a unified theory of all the forces of nature. This book explains the theory for laymen, in an introduction to the subject which originated in the BBC Radio programme, Desperately Seeking Superstrings. A clear, concise, non-mathematical explanation of the theory and its profound implications is followed by transcripts of interviews with all the most important physicists involved in its development. Superstrings makes a fascinating topic at the forefront of modern scientific research accessible to physicists, philosophers and general readers alike.

Your Place in the Universe - Paul M. Sutter 2018-11-15

An astrophysicist presents an in-depth yet accessible tour of the universe for lay readers, while conveying the excitement of astronomy. How is a galaxy billions of lightyears away connected to us? Is our home nothing more than a tiny speck of blue in an ocean of night? In this exciting tour of a universe far larger than we can imagine, cosmologist Paul M. Sutter emphasizes how amazing it is that we are part of such a huge, complex, and mysterious place. Through metaphors and uncomplicated language, Sutter breathes life into the science of astrophysics, unveiling how particles, forces, and fields interplay to create the greatest of cosmic dramas. Touched with the author's characteristic breezy, conversational style--which has made him a breakout hit on venues such as The Weather Channel, the Science Channel, and his own popular Ask a Spaceman! podcast--he conveys the fun and wonder of delving deeply into the physical processes of the natural universe. He weaves together the past and future histories of our universe with grounded descriptions of essential modern-day physics as well as speculations based on the latest research in cosmology. Topics include our place in the Milky Way galaxy; the cosmic web--a vast web-like pattern in which galaxies are arranged; the origins of our universe in the big bang; the mysteries of dark matter and dark energy; how science has dramatically changed our relationship to the cosmos; conjectures about the future of reality as we know it; and more. For anyone who has ever stared at the starry night sky and wondered how we humans on Earth fit into the big picture, this book is an essential roadmap.

Proving Einstein Right - S. James Gates, 2019-09-24

A thrilling adventure story chronicling the perilous journey of the scientists who set out to prove the theory of relativity--the results of which catapulted Albert Einstein to fame and forever changed our understanding of the universe. In 1911, a relatively unknown physicist named Albert Einstein published his preliminary theory of gravity. But it hadn't been tested. To do that, he needed a photograph of starlight as it passed the sun during a total solar eclipse. So began a nearly decade-long quest by seven determined astronomers from observatories in four countries, who traveled the world during five eclipses to capture the elusive sight. Over the years, they faced thunderstorms, the ravages of a world war, lost equipment, and local superstitions. Finally, in May of 1919, British expeditions to northern Brazil and the island of Príncipe managed to photograph the stars, confirming Einstein's theory. At its heart, this is a story of frustration, faith, and ultimate victory--and of the scientists whose efforts helped build the framework for the big bang theory, catapulted

Einstein to international fame, and shook the foundation of physics.

Visions - Michio Kaku 1999-03-04

This volume collects the research of today's scientists to explore the possibilities of the science of tomorrow. Among the issues covered are how decoding DNA will allow us to alter and reshape our genetic heritage, and how quantum physicists will harness the energy of the Universe.

Parallel Worlds - Michio Kaku 2006-02-14

In this thrilling journey into the mysteries of our cosmos, bestselling author Michio Kaku takes us on a dizzying ride to explore black holes and time machines, multidimensional space and, most tantalizing of all, the possibility that parallel universes may lay alongside our own. Kaku skillfully guides us through the latest innovations in string theory and its latest iteration, M-theory, which posits that our universe may be just one in an endless multiverse, a singular bubble floating in a sea of infinite bubble universes. If M-theory is proven correct, we may perhaps finally find answer to the question, "What happened before the big bang?" This is an exciting and unforgettable introduction into the new cutting-edge theories of physics and cosmology from one of the pre-eminent voices in the field.

The Future of the Mind - Michio Kaku 2015-02-17

Michio Kaku, the New York Times bestselling author of Physics of the Impossible and Physics of the Future tackles the most fascinating and complex object in the known universe: the human brain. The Future of the Mind brings a topic that once belonged solely to the province of science fiction into a startling new reality. This scientific tour de force unveils the astonishing research being done in top laboratories around the world—all based on the latest advancements in neuroscience and physics—including recent experiments in telepathy, mind control, avatars, telekinesis, and recording memories and dreams. The Future of the Mind is an extraordinary, mind-boggling exploration of the frontiers of neuroscience. Dr. Kaku looks toward the day when we may achieve the ability to upload the human brain to a computer, neuron for neuron; project thoughts and emotions around the world on a brain-net; take a "smart pill" to enhance cognition; send our consciousness across the universe; and push the very limits of immortality.

The Universe and Dr. Einstein - Lincoln Barnett 2005-01-01

Acclaimed by Einstein himself, this is among the clearest, most readable expositions of relativity theory. It explains the problems Einstein faced, the experiments that led to his theories, and what his findings reveal about the forces that govern the universe. 1957 edition.

The Inflationary Universe - Alan Guth 1998-03-18

This is the compelling, first-hand account of Alan Guth's paradigm-breaking discovery of the origins of the universe—and of his dramatic rise from young researcher to physics superstar. Guth's startling theory—widely regarded as one of the most important contributions to science during the twentieth century—states that the big bang was set into motion by a period of hyper-rapid "inflation," lasting only a billion-trillion-billionth of a second. The Inflationary Universe is the passionate story of one leading scientist's effort to look behind the cosmic veil and explain how the universe began.