

welcome universe neil degrasse tyson

[#Neil DeGrasse Tyson](#) [#universe exploration](#) [#astrophysics](#) [#cosmos](#) [#science communication](#)

Embark on an incredible journey through the cosmos as we welcome the profound insights of Neil DeGrasse Tyson. Discover the wonders of the universe, from distant galaxies to the mysteries of dark matter, all made accessible and inspiring through his engaging explanations. This is your invitation to explore the science and beauty that surrounds us, guided by one of the world's most beloved astrophysicists.

All syllabi are reviewed for clarity, accuracy, and academic integrity.

Welcome, and thank you for your visit.

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Welcome to the Universe

The New York Times bestselling tour of the cosmos from three of today's leading astrophysicists Welcome to the Universe is a personal guided tour of the cosmos by three of today's leading astrophysicists. Inspired by the enormously popular introductory astronomy course that Neil deGrasse Tyson, Michael A. Strauss, and J. Richard Gott taught together at Princeton, this book covers it all—from planets, stars, and galaxies to black holes, wormholes, and time travel. 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? How did the universe begin? Why is it expanding and why is its expansion accelerating? Is our universe alone or part of an infinite multiverse? Answering these and many other questions, the authors open your eyes to the wonders of the cosmos, sharing their knowledge of how the universe works. Breathtaking in scope and stunningly illustrated throughout, Welcome to the Universe is for those who hunger for insights into our evolving universe that only world-class astrophysicists can provide.

A Brief Welcome to the Universe

"This is a condensed edition of Welcome to the Universe - essentially a pocket-sized version of the original "astrophysical tour" of the cosmos. In 8 chapters (compared to the original 24 chapters), the reader learns the essential astrophysics everyone should know -- about the size and scale of the universe; the solar system; the lives/deaths of stars; the search for life in the galaxy; our Milky Way; galaxies, the Big Bang and the expanding universe; inflation and the multiverse; and our future in the cosmos. For those who may have felt that Welcome to the Universe was a bit beyond them, this book covers all the essentials in an even more accessible and concise fashion, while imparting real physical insight into how the universe works by the book's end"--

Welcome to the Universe in 3D

Presenting a rich array of stereoscopic color images, which can be viewed in 3D using a special stereo viewer that folds easily out of the cover of the book, this book reveals your cosmic environment as you have never seen it before. Journey into the vast depths of the observable universe by visualising the most spectacular images in astronomy in stereoscopic 3D. Welcome to the Universe in 3D takes you on a grand tour of the observable universe, guiding you through the most spectacular sights in the cosmos in a breathtaking 3D. Astronomy is the story of how humankind's perception of the two-dimensional dome of the sky evolved into a far deeper comprehension of an expanding three-dimensional cosmos. This book invites you to take part in this story by exploring the universe in depth, as revealed by cutting-edge astronomical research and observations. You will journey from the Moon through the solar system, out to exoplanets, distant nebulae, and galaxy clusters, until you finally reach the cosmic

microwave background radiation (or CMB), the most distant light we can observe. The distances to these celestial wonders range from 1.3 light-seconds to 13.8 billion light-years. Along the way, the authors explain the fascinating features of what you are seeing, including how the 3D images were made using the same technique that early astronomers devised to measure distances to objects in space. The dramatic 3D images in this one-of-a-kind book will astonish you, extending your vision out to the farthest reaches of the universe. You will never look up into the night sky the same way again.

Welcome to the Universe

An essential companion to the New York Times bestseller *Welcome to the Universe* 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 non science 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. 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*. The essential companion book to the acclaimed bestseller *Welcome to the Universe* Features the problems used in the original introductory astronomy course for non science majors at Princeton University Organized according to the structure of *Welcome to the Universe*, empowering readers to explore real astrophysical problems that are conceptually introduced in each chapter Problems are designed to stimulate physical insight into the frontier of astrophysics Problems develop quantitative skills, yet use math no more advanced than high school algebra Problems are often multipart, building critical thinking and quantitative skills and developing readers' insight into what astrophysicists do Ideal for course use—either in tandem with *Welcome to the Universe* or as a supplement to courses using standard astronomy textbooks—or self-study Tested in the classroom over numerous semesters for more than a decade Prefaced with a review of relevant concepts and equations Full solutions and explanations are provided, allowing students and other readers to check their own understanding

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One Universe:

A new window opens onto the cosmos... Almost every day we are challenged by new information from the outermost reaches of space. Using straightforward language, *One Universe* explores the physical principles that govern the workings of our own world so that we can appreciate how they operate in the cosmos around us. Bands of color in a sunlit crystal and the spectrum of starlight in giant telescopes, the arc of a hard-hit baseball and the orbit of the moon, traffic patterns on a freeway and the spiral arms in a galaxy full of stars--they're all tied together in grand and simple ways. We can understand the vast cosmos in which we live by exploring three basic concepts: motion, matter, and energy. With

these as a starting point, *One Universe* shows how the physical principles that operate in our kitchens and backyards are actually down-to-Earth versions of cosmic processes. The book then takes us to the limits of our knowledge, asking the ultimate questions about the origins and existence of life as we know it and where the universe came from--and where it is going. Glorious photographs--many seen for the first time in these pages--and original illustrations expand and enrich our understanding. Evocative and clearly written, *One Universe* explains complex ideas in ways that every reader can grasp and enjoy. This book captures the grandeur of the heavens while making us feel at home in the cosmos. Above all, it helps us realize that galaxies, stars, planets, and we ourselves all belong to *One Universe*.

Astrophysics for Young People in a Hurry

Neil deGrasse Tyson's #1 New York Times best-selling guide to the cosmos, adapted for young readers. From the basics of physics to big questions about the nature of space and time, celebrated astrophysicist and science communicator Neil deGrasse Tyson breaks down the mysteries of the cosmos into bite-sized pieces. *Astrophysics for Young People in a Hurry* describes the fundamental rules and unknowns of our universe clearly—and with Tyson's characteristic wit, there's a lot of fun thrown in, too. This adaptation by Gregory Mone includes full-color photos, infographics, and extra explanations to make even the trickiest concepts accessible. Building on the wonder inspired by outer space, *Astrophysics for Young People in a Hurry* introduces an exciting field and the principles of scientific inquiry to young readers.

The Cosmic Web

Semi-autobiographical discussion of astronomy and astronomers, and history of astronomy and cosmology.--

Cosmic Queries

In this thought-provoking follow-up to his acclaimed *StarTalk* book, uber astrophysicist Neil deGrasse Tyson tackles the world's most important philosophical questions about the universe with wit, wisdom, and cutting-edge science. For science geeks, space and physics nerds, and all who want to understand their place in the universe, this enlightening new book from Neil deGrasse Tyson offers a unique take on the mysteries and curiosities of the cosmos, building on rich material from his beloved *StarTalk* podcast. In these illuminating pages, illustrated with dazzling photos and revealing graphics, Tyson and co-author James Trefil, a renowned physicist and science popularizer, take on the big questions that humanity has been posing for millennia--How did life begin? What is our place in the universe? Are we alone?--and provide answers based on the most current data, observations, and theories. Populated with paradigm-shifting discoveries that help explain the building blocks of astrophysics, this relatable and entertaining book will engage and inspire readers of all ages, bring sophisticated concepts within reach, and offer a window into the complexities of the cosmos.

Space Chronicles: Facing the Ultimate Frontier

"A compelling appeal, at just the right time, for continuing to look up."—Air & Space America's space program is at a turning point. After decades of global primacy, NASA has ended the space-shuttle program, cutting off its access to space. No astronauts will be launched in an American craft, from American soil, until the 2020s, and NASA may soon find itself eclipsed by other countries' space programs. With his signature wit and thought-provoking insights, Neil deGrasse Tyson—one of our foremost thinkers on all things space—illuminates the past, present, and future of space exploration and brilliantly reminds us why NASA matters now as much as ever. As Tyson reveals, exploring the space frontier can profoundly enrich many aspects of our daily lives, from education systems and the economy to national security and morale. For America to maintain its status as a global leader and a technological innovator, he explains, we must regain our enthusiasm and curiosity about what lies beyond our world. Provocative, humorous, and wonderfully readable, *Space Chronicles* represents the best of Tyson's recent commentary, including a must-read prologue on NASA and partisan politics. Reflecting on topics that range from scientific literacy to space-travel missteps, Tyson gives us an urgent, clear-eyed, and ultimately inspiring vision for the future.

The Sky Is Not the Limit

From the author of *Astrophysics for People in a Hurry* and the host of *Cosmos: A Spacetime Odyssey*, a memoir about growing up and a young man's budding scientific curiosity. This is the absorbing story of Neil deGrasse Tyson's lifelong fascination with the night sky, a restless wonder that began some thirty years ago on the roof of his Bronx apartment building and eventually led him to become the director of the Hayden Planetarium. A unique chronicle of a young man who at one time was both nerd and jock, Tyson's memoir could well inspire other similarly curious youngsters to pursue their dreams. Like many athletic kids he played baseball, won medals in track and swimming, and was captain of his high school wrestling team. But at the same time he was setting up a telescope on winter nights, taking an advanced astronomy course at the Hayden Planetarium, and spending a summer vacation at an astronomy camp in the Mojave Desert. Eventually, his scientific curiosity prevailed, and he went on to graduate in physics from Harvard and to earn a Ph.D. in astrophysics from Columbia. There followed postdoctoral research at Princeton. In 1996, he became the director of the Hayden Planetarium, where some twenty-five years earlier he had been awed by the spectacular vista in the sky theater. Tyson pays tribute to the key teachers and mentors who recognized his precocious interests and abilities, and helped him succeed. He intersperses personal reminiscences with thoughts on scientific literacy, careful science vs. media hype, the possibility that a meteor could someday hit the Earth, dealing with society's racial stereotypes, what science can and cannot say about the existence of God, and many other interesting insights about science, society, and the nature of the universe. Now available in paperback with a new preface and other additions, this engaging memoir will enlighten and inspire an appreciation of astronomy and the wonders of our universe.

Letters from an Astrophysicist

INSTANT NEW YORK TIMES BESTSELLER! Join the galactic conversation on the biggest issues in the universe, from the 'most popular scientist in the world' 'Don't fear change. Don't fear failure. The only thing to fear is loss of ambition. But if you've got plenty of that, then you have nothing to fear at all' – Neil deGrasse Tyson. Neil deGrasse Tyson is arguably the most influential, acclaimed scientist on the planet. As director of the Hayden Planetarium, and host of *Cosmos* and *StarTalk*, he has dedicated his life to exploring and explaining the mysteries of the universe. Every year, he receives thousands of letters – from students to prisoners, scientists to priests. Some seek advice, others yearn for inspiration; some are full of despair, others burst with wonder. But they are all searching for understanding, meaning and truth. His replies are by turns wise, funny, and mind-blowing. In this, his most personal book by far, he covers everything from God to the history of science, from aliens to death. He bares his soul – his passions, his doubts, his hopes. The big theme is everywhere in these pages: what is our place in the universe? The result is an awe-inspiring read and an intimate portal into an incredible mind, which reveals the power of the universe to start conversations and inspire curiosity in all of us.

Mathematics and Art

This is a cultural history of mathematics and art, from antiquity to the present. Mathematicians and artists have long been on a quest to understand the physical world they see before them and the abstract objects they know by thought alone. Taking readers on a tour of the practice of mathematics and the philosophical ideas that drive the discipline, Lynn Gamwell points out the important ways mathematical concepts have been expressed by artists. Sumptuous illustrations of artworks and cogent math diagrams are featured in Gamwell's comprehensive exploration. Gamwell begins by describing mathematics from antiquity to the Enlightenment, including Greek, Islamic, and Asian mathematics. Then focusing on modern culture, Gamwell traces mathematicians' search for the foundations of their science, such as David Hilbert's conception of mathematics as an arrangement of meaning-free signs, as well as artists' search for the essence of their craft, such as Aleksandr Rodchenko's monochrome paintings. She shows that self-reflection is inherent to the practice of both modern mathematics and art, and that this introspection points to a deep resonance between the two fields: Kurt Gödel posed questions about the nature of mathematics in the language of mathematics and Jasper Johns asked "What is art?" in the vocabulary of art. Throughout, Gamwell describes the personalities and cultural environments of a multitude of mathematicians and artists, from Gottlob Frege and Benoît Mandelbrot to Max Bill and Xu Bing. *Mathematics and Art* demonstrates how mathematical ideas are embodied in the visual arts and will enlighten all who are interested in the complex intellectual pursuits, personalities, and cultural settings that connect these vast disciplines.

Star Talk

This beautifully illustrated companion to celebrated scientist Neil deGrasse Tyson's popular podcast and National Geographic Channel TV show is an eye-opening journey for anyone curious about the complexities of our universe. For decades, beloved astrophysicist Neil deGrasse Tyson has interpreted science with a combination of brainpower and charm that resonates with fans everywhere. In 2009, he founded StarTalk, the wildly popular podcast that became an Emmy-nominated talk show on the National Geographic Channel. Tyson's pioneering, provocative book will take the greatest hits from the airwaves to the page in one smart, richly illustrated compendium. Featuring vivid photography, thought-provoking trivia, enlightening facts, and fun quotes from science and entertainment luminaries like Bill Nye and Dan Aykroyd, StarTalk reimagines science's most challenging topics--from how the brain works to the physics of comic book superheroes--in a relatable, humorous way that will delight fans and new readers alike.

Starry Messenger

NEW YORK TIMES BESTSELLER Bringing his cosmic perspective to civilization on Earth, Neil deGrasse Tyson shines new light on the crucial fault lines of our time—war, politics, religion, truth, beauty, gender, and race—in a way that stimulates a deeper sense of unity for us all. In a time when our political and cultural views feel more polarized than ever, Tyson provides a much-needed antidote to so much of what divides us, while making a passionate case for the twin chariots of enlightenment—a cosmic perspective and the rationality of science. After thinking deeply about how science sees the world and about Earth as a planet, the human brain has the capacity to reset and recalibrates life's priorities, shaping the actions we might take in response. No outlook on culture, society, or civilization remains untouched. With crystalline prose, *Starry Messenger* walks us through the scientific palette that sees and paints the world differently. From insights on resolving global conflict to reminders of how precious it is to be alive, Tyson reveals, with warmth and eloquence, an array of brilliant and beautiful truths that apply to us all, informed and enlightened by knowledge of our place in the universe.

Accessory to War: The Unspoken Alliance Between Astrophysics and the Military

"Extraordinary... A feast of history, an expert tour through thousands of years of war and conquest." —Jennifer Carson, *New York Times Book Review* In this far-reaching foray into the millennia-long relationship between science and military power, acclaimed astrophysicist Neil deGrasse Tyson and co-author Avis Lang examine how the methods and tools of astrophysics have been enlisted in the service of war. Spanning early celestial navigation to satellite-enabled warfare, *Accessory to War* is a richly researched and provocative examination of the intersection of science, technology, industry, and power that will introduce Tyson's millions of fans to yet another dimension of how the universe has shaped our lives and our world.

Origins: Fourteen Billion Years of Cosmic Evolution

"Who can ask for better cosmic tour guides?" —Michio Kaku Our true origins are not only human, or even terrestrial, but in fact cosmic. Drawing on recent scientific breakthroughs and cross-pollination among geology, biology, astrophysics, and cosmology, *Origins* illuminates the soul-stirring leaps in our understanding of the cosmos. This revised and updated edition features such startling discoveries as the now more than 5,000 detected exoplanets that promise to reveal exciting possibilities for life in the cosmos, and data from a new generation of ground-based and spaceborne observatories that have fundamentally changed what we know about the expanding universe?and maybe even the laws of physics themselves. From the first image of a galaxy's birth to tantalizing evidence of water not only on Mars but also on the asteroid Ceres, as well as on moons of Jupiter and Saturn, coauthors Neil deGrasse Tyson and Donald Goldsmith conduct an exhilarating tour of the cosmos with clarity and exuberance.

Death by Black Hole: And Other Cosmic Quandaries

"[Tyson] tackles a great range of subjects...with great humor, humility, and—most important—humanity." —*Entertainment Weekly* Loyal readers of the monthly "Universe" essays in *Natural History* magazine have long recognized Neil deGrasse Tyson's talent for guiding them through the mysteries of the cosmos with clarity and enthusiasm. Bringing together more than forty of Tyson's favorite essays, *Death by Black Hole* explores a myriad of cosmic topics, from what it would be like to be inside a black hole to the movie industry's feeble efforts to get its night skies right. One of America's best-known

astrophysicists, Tyson is a natural teacher who simplifies the complexities of astrophysics while sharing his infectious fascination for our universe.

Look Up with Me

A 2020 Outstanding Science Trade Book for Students K-12! With an introduction from Neil DeGrasse Tyson about the importance of kid-like curiosity, this lyrical picture book biography on the beloved astrophysicist and host of *Cosmos* is the perfect gift for young astronomers and fans of all ages. Neil deGrasse Tyson was born curious. And the secrets of a billion galaxies lay there--waiting for him to explore its cosmic mysteries. He just had to look up. Up beyond the city lights, up at the shining stars, up through the Milky Way, and past the veil of the night sky. Follow young Neil's journey as he discovers the wonders of space, the thrill of science, and the joy in sharing the beauty of our amazing universe. Read his favorite mind-blowing facts and learn what mysteries are left to solve. From *On a Beam of Light* author Jennifer Berne and debut paper illustrator Lorraine Nam comes the inspiring true tale of Neil's life and how he became a world-famous astrophysicist. The future of discovery lays with you. Look up with Neil and begin your own journey into the cosmos.

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Explore the Cosmos like Neil deGrasse Tyson

This introduction to space science for children uses the story of Neil deGrasse Tyson's life and career to frame the journey. Catch the thrill of the cosmos and space science through the life of Neil deGrasse Tyson—the popular astrophysicist, science communicator, and host of FOX-TV's *Cosmos: A Space-time Odyssey*. In language neither too simple nor overly technical, author CAP Saucier interweaves up-to-date information about the universe and the science of astrophysics with a biographical portrait of the famous astrophysicist. Quotes from Tyson appear throughout each chapter, personalizing the science. Illustrated with striking images from the Hubble Space Telescope, the story of one man's successful life in space science may inspire kids to follow a similar path. As Tyson makes clear, there is still much to do for future space scientists: diverting asteroids, unraveling the mystery of dark matter, finding life elsewhere in the universe, and more!

Cosmic Horizons

Leading scientists offer a collection of essays that furnish illuminating explanations of recent discoveries in modern astrophysics--from the Big Bang to black holes--the possibility of life on other worlds, and the emerging technologies that make such research possible, accompanied by incisive profiles of such key figures as Carl Sagan and Georges Lemaetre. Original.

Alien Oceans

Inside the epic quest to find life on the water-rich moons at the outer reaches of the solar system Where is the best place to find life beyond Earth? We often look to Mars as the most promising site in our solar system, but recent scientific missions have revealed that some of the most habitable real estate may actually lie farther away. Beneath the frozen crusts of several of the small, ice-covered moons of Jupiter and Saturn lurk vast oceans that may have existed for as long as Earth, and together may contain more than fifty times its total volume of liquid water. Could there be organisms living in their depths? Alien

Oceans reveals the science behind the thrilling quest to find out. Kevin Peter Hand is one of today's leading NASA scientists, and his pioneering research has taken him on expeditions around the world. In this captivating account of scientific discovery, he brings together insights from planetary science, biology, and the adventures of scientists like himself to explain how we know that oceans exist within moons of the outer solar system, like Europa, Titan, and Enceladus. He shows how the exploration of Earth's oceans is informing our understanding of the potential habitability of these icy moons, and draws lessons from what we have learned about the origins of life on our own planet to consider how life could arise on these distant worlds. Alien Oceans describes what lies ahead in our search for life in our solar system and beyond, setting the stage for the transformative discoveries that may await us.

Tough Love

Recalling pivotal moments from her dynamic career on the front lines of American diplomacy and foreign policy, Susan E. Rice—National Security Advisor to President Barack Obama and US Ambassador to the United Nations—reveals her surprising story with unflinching candor in this New York Times bestseller. Mother, wife, scholar, diplomat, and fierce champion of American interests and values, Susan Rice powerfully connects the personal and the professional. Taught early, with tough love, how to compete and excel as an African American woman in settings where people of color are few, Susan now shares the wisdom she learned along the way. Laying bare the family struggles that shaped her early life in Washington, DC, she also examines the ancestral legacies that influenced her. Rice's elders—immigrants on one side and descendants of slaves on the other—had high expectations that each generation would rise. And rise they did, but not without paying it forward—in uniform and in the pulpit, as educators, community leaders, and public servants. Susan too rose rapidly. She served throughout the Clinton administration, becoming one of the nation's youngest assistant secretaries of state and, later, one of President Obama's most trusted advisors. Rice provides an insider's account of some of the most complex issues confronting the United States over three decades, ranging from "Black Hawk Down" in Somalia to the genocide in Rwanda and the East Africa embassy bombings in the late 1990s, and from conflicts in Libya and Syria to the Ebola epidemic, a secret channel to Iran, and the opening to Cuba during the Obama years. With unmatched insight and characteristic bluntness, she reveals previously untold stories behind recent national security challenges, including confrontations with Russia and China, the war against ISIS, the struggle to contain the fallout from Edward Snowden's NSA leaks, the U.S. response to Russian interference in the 2016 election, and the surreal transition to the Trump administration. Although you might think you know Susan Rice—whose name became synonymous with Benghazi following her Sunday news show appearances after the deadly 2012 terrorist attacks in Libya—now, through these pages, you truly will know her for the first time. Often mischaracterized by both political opponents and champions, Rice emerges as neither a villain nor a victim, but a strong, resilient, compassionate leader. Intimate, sometimes humorous, but always candid, Tough Love makes an urgent appeal to the American public to bridge our dangerous domestic divides in order to preserve our democracy and sustain our global leadership.

The Extravagant Universe

The Extravagant Universe tells the story of a remarkable adventure of scientific discovery. One of the world's leading astronomers, Robert Kirshner, takes readers inside a lively research team on the quest that led them to an extraordinary cosmological discovery: the expansion of the universe is accelerating under the influence of a dark energy that makes space itself expand. In addition to sharing the story of this exciting discovery, Kirshner also brings the science up-to-date in a new epilogue. He explains how the idea of an accelerating universe--once a daring interpretation of sketchy data--is now the standard assumption in cosmology today. This measurement of dark energy--a quality of space itself that causes cosmic acceleration--points to a gaping hole in our understanding of fundamental physics. In 1917, Einstein proposed the "cosmological constant" to explain a static universe. When observations proved that the universe was expanding, he cast this early form of dark energy aside. But recent observations described first-hand in this book show that the cosmological constant--or something just like it--dominates the universe's mass and energy budget and determines its fate and shape. Warned by Einstein's blunder, and contradicted by the initial results of a competing research team, Kirshner and his colleagues were reluctant to accept their own result. But, convinced by evidence built on their hard-earned understanding of exploding stars, they announced their conclusion that the universe is accelerating in February 1998. Other lines of inquiry and parallel supernova research now support a new synthesis of a cosmos dominated by dark energy but also containing several forms of dark matter.

We live in an extravagant universe with a surprising number of essential ingredients: the real universe we measure is not the simplest one we could imagine.

At the Edge of Time

At the edge of time -- A world of time and space -- A world without a beginning? -- Glimpses of the big bang -- The universe and the accelerator -- The origins of everything -- Hearts of darkness -- A beacon in the dark? -- Radically rethinking dark matter -- A flash in time -- Endless worlds most beautiful -- Touching the edge of time.

Why Evolution is True

For all the discussion in the media about creationism and 'Intelligent Design', virtually nothing has been said about the evidence in question - the evidence for evolution by natural selection. Yet, as this succinct and important book shows, that evidence is vast, varied, and magnificent, and drawn from many disparate fields of science. The very latest research is uncovering a stream of evidence revealing evolution in action - from the actual observation of a species splitting into two, to new fossil discoveries, to the deciphering of the evidence stored in our genome. Why Evolution is True weaves together the many threads of modern work in genetics, palaeontology, geology, molecular biology, anatomy, and development to demonstrate the 'indelible stamp' of the processes first proposed by Darwin. It is a crisp, lucid, and accessible statement that will leave no one with an open mind in any doubt about the truth of evolution.

Time Travel in Einstein's Universe

A Princeton astrophysicist explores whether journeying to the past or future is scientifically possible in this "intriguing" volume (Neil deGrasse Tyson). It was H. G. Wells who coined the term "time machine"—but the concept of time travel, both forward and backward, has always provoked fascination and yearning. It has mostly been dismissed as an impossibility in the world of physics; yet theories posited by Einstein, and advanced by scientists including Stephen Hawking and Kip Thorne, suggest that the phenomenon could actually occur. Building on these ideas, J. Richard Gott, a professor who has written on the subject for Scientific American, Time, and other publications, describes how travel to the future is not only possible but has already happened—and contemplates whether travel to the past is also conceivable. This look at the surprising facts behind the science fiction of time travel "deserves the attention of anyone wanting wider intellectual horizons" (Booklist). "Impressively clear language. Practical tips for chrononauts on their options for travel and the contingencies to prepare for make everything sound bizarrely plausible. Gott clearly enjoys his subject and his excitement and humor are contagious; this book is a delight to read." —Publishers Weekly

The Pluto Files: The Rise and Fall of America's Favorite Planet

The New York Times bestseller: "You gotta read this. It is the most exciting book about Pluto you will ever read in your life." —Jon Stewart When the Rose Center for Earth and Space at the American Museum of Natural History reclassified Pluto as an icy comet, the New York Times proclaimed on page one, "Pluto Not a Planet? Only in New York." Immediately, the public, professionals, and press were choosing sides over Pluto's planethood. Pluto is entrenched in our cultural and emotional view of the cosmos, and Neil deGrasse Tyson, award-winning author and director of the Rose Center, is on a quest to discover why. He stood at the heart of the controversy over Pluto's demotion, and consequently Plutophiles have freely shared their opinions with him, including endless hate mail from third-graders. With his inimitable wit, Tyson delivers a minihistory of planets, describes the oversized characters of the people who study them, and recounts how America's favorite planet was ousted from the cosmic hub.

A Brief Welcome to the Universe

A pocket-style edition based on the New York Times bestseller A Brief Welcome to the Universe offers a breathtaking tour of the cosmos, from planets, stars, and galaxies to black holes and time loops. Bestselling authors and acclaimed astrophysicists Neil deGrasse Tyson, Michael A. Strauss, and J. Richard Gott take readers on an unforgettable journey of exploration to reveal how our universe actually works. Propelling you from our home solar system to the outermost frontiers of space, this book builds your cosmic insight and perspective through a marvelously entertaining narrative. How do stars live

and die? What are the prospects of intelligent life elsewhere in the universe? How did the universe begin? Why is it expanding and accelerating? Is our universe alone or part of an infinite multiverse? Exploring these and many other questions, this pocket-friendly book is your passport into the wonders of our evolving cosmos.

Astrophysics Is Easy!

Astrophysics is often –with some justification – regarded as incomprehensible without the use of higher mathematics. Consequently, many amateur astronomers miss out on some of the most fascinating aspects of the subject. *Astrophysics Is Easy!* cuts through the difficult mathematics and explains the basics of astrophysics in accessible terms. Using nothing more than plain arithmetic and simple examples, the workings of the universe are outlined in a straightforward yet detailed and easy-to-grasp manner. The original edition of the book was written over eight years ago, and in that time, advances in observational astronomy have led to new and significant changes to the theories of astrophysics. The new theories will be reflected in both the new and expanded chapters. A unique aspect of this book is that, for each topic under discussion, an observing list is included so that observers can actually see for themselves the concepts presented –stars of the spectral sequence, nebulae, galaxies, even black holes. The observing list has been revised and brought up-to-date in the Second Edition.

Black Hole Blues and Other Songs from Outer Space

The full inside story of the detection of gravitational waves at LIGO, one of the most ambitious feats in scientific history *Selected as a Book of the Year 2016 in the Sunday Times* 'This is empirical poetry. A fascinating tale of human curiosity beautifully told, and with black holes and lasers too' Robin Ince In 1916 Albert Einstein predicted the existence of gravitational waves: miniscule ripples in the very fabric of spacetime generated by unfathomably powerful events. If such vibrations could somehow be recorded, we could observe our universe for the first time through sound: the hissing of the Big Bang, the low tones of merging galaxies, the drumbeat of two black holes collapsing into one... In 2016 a team of hundreds of scientists at work on a billion-dollar experiment made history when they announced the first ever detection of a gravitational wave, confirming Einstein's prediction a century ago. Based on complete access to LIGO (Laser Interferometer Gravitational-Wave Observatory) and the scientists who created it, *Black Hole Blues* offers a first-hand account of this astonishing achievement: an intimate story of cutting-edge science at its most awe-inspiring and ambitious.

Cosmos

Charts the human love affair with the heavens in art and astronomy, based on sound science, insightful art, and cultural history. Olson and Pasachoff also recount the story about the quest to discover the mysteries of the universe. Embellished with new information, interpretations, and anecdotes, the authors weave a rich tapestry about the interconnections in the cosmos and the efforts to understand them. They showcase the superstars of the firmament and universe in illustrations featuring paintings, sculpture, drawings, watercolours, prints, as well as plates from books, celestial diagrams, and astronomical photography. --Adapted from publisher description.

Why Balloons Rise and Apples Fall

We all know the world works in mysterious ways! But have you ever itched to know why? Why don't heavier things fall faster? Why do we have more energy when we're sitting upstairs? Is time travel really possible? And what happened to Schrodinger's poor cat? *Why Balloons Rise and Apples Fall* is an accessible look at the fascinating, awe-inspiring and sometimes downright weird world of physics. It covers all the basics we learnt at school from: what is physics; motion and forces; work and energy; matter and heat; and, electricity and magnetism. It even covers the more thought-provoking and complex questions of relativity, quantum physics and astrophysics, as well as all the exciting philosophical questions that arise out of these subjects.

Difference Equations, Second Edition

In recent years, the study of difference equations has acquired a new significance, due in large part to their use in the formulation and analysis of discrete-time systems, the numerical integration of differential equations by finite-difference schemes, and the study of deterministic chaos. The second edition of *Difference Equations: Theory and Applications* provides a thorough listing of all major

theorems along with proofs. The text treats the case of first-order difference equations in detail, using both analytical and geometrical methods. Both ordinary and partial difference equations are considered, along with a variety of special nonlinear forms for which exact solutions can be determined. Numerous worked examples and problems allow readers to fully understand the material in the text. They also give possible generalization of the theorems and application models. The text's expanded coverage of application helps readers appreciate the benefits of using difference equations in the modeling and analysis of "realistic" problems from a broad range of fields. The second edition presents, analyzes, and discusses a large number of applications from the mathematical, biological, physical, and social sciences. Discussions on perturbation methods and difference equation models of differential equation models of differential equations represent contributions by the author to the research literature. Reference to original literature show how the elementary models of the book can be extended to more realistic situations. Difference Equations, Second Edition gives readers a background in discrete mathematics that many workers in science-oriented industries need as part of their general scientific knowledge. With its minimal mathematical background requirements of general algebra and calculus, this unique volume will be used extensively by students and professional in science and technology, in areas such as applied mathematics, control theory, population science, economics, and electronic circuits, especially discrete signal processing.

How Did the First Stars and Galaxies Form?

A concise introduction to cosmology and how light first emerged in the universe Though astrophysicists have developed a theoretical framework for understanding how the first stars and galaxies formed, only now are we able to begin testing those theories with actual observations of the very distant, early universe. We are entering a new and exciting era of discovery that will advance the frontiers of knowledge, and this book couldn't be more timely. It covers all the basic concepts in cosmology, drawing on insights from an astronomer who has pioneered much of this research over the past two decades. Abraham Loeb starts from first principles, tracing the theoretical foundations of cosmology and carefully explaining the physics behind them. Topics include the gravitational growth of perturbations in an expanding universe, the abundance and properties of dark matter halos and galaxies, reionization, the observational methods used to detect the earliest galaxies and probe the diffuse gas between them—and much more. Cosmology seeks to solve the fundamental mystery of our cosmic origins. This book offers a succinct and accessible primer at a time when breathtaking technological advances promise a wealth of new observational data on the first stars and galaxies. Provides a concise introduction to cosmology Covers all the basic concepts Gives an overview of the gravitational growth of perturbations in an expanding universe Explains the process of reionization Describes the observational methods used to detect the earliest galaxies

Death by Black Hole: And Other Cosmic Quandaries

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."

52 Times Britain was a Bellend

'Scurrilous, scandalous and frequently disgusting. I absolutely loved it' James O'Brien Twitter hero James Felton brings you the painfully funny history of Britain you were never taught at school, fully illustrated and chronicling 52 of the most ludicrous, weird and downright 'baddie' things we Brits* have done to the world since time immemorial - before conveniently forgetting all about them, of course. Including: - Starting wars with China when they didn't buy enough of our class A drugs - Inventing a law so we didn't have to return objects we'd blatantly stolen from other countries - Casually creating muzzles for women - Almost going to war over a crime committed by a pig - And a brand new chapter just for the paperback! 52 TIMES BRITAIN WAS A BELLEND will complete your knowledge of this sceptred isle in ways you never expected. So if you've ever wondered how we put the 'Great' in 'Great Britain', wonder no more . . . *And when we say British, for the most part we unfortunately just mean the English. JAMES FELTON'S "SUNBURN" ('AN ASTONISHING PIECE OF WORK' James O'Brien; 'FUNNY, SCATHING AND WITTY' IAN DUNT) IS OUT NOW

An Introduction to the Science of Cosmology

A thorough introduction to modern ideas on cosmology and on the physical basis of the general theory of relativity, An Introduction to the Science of Cosmology explores various theories and ideas

in big bang cosmology, providing insight into current problems. Assuming no previous knowledge of astronomy or cosmology, this book takes you beyond introductory texts to the point where you are able to read and appreciate the scientific literature, which is broadly referenced in the book. The authors present the standard big bang theory of the universe and provide an introduction to current inflationary cosmology, emphasizing the underlying physics without excessive technical detail. The book treats cosmological models without reliance on prior knowledge of general relativity, the necessary physics being introduced in the text as required. It also covers recent observational evidence pointing to an accelerating expansion of the universe. The first several chapters provide an introduction to the topics discussed later in the book. The next few chapters introduce relativistic cosmology and the classic observational tests. One chapter gives the main results of the hot big bang theory. Next, the book presents the inflationary model and discusses the problem of the origin of structure and the correspondingly more detailed tests of relativistic models. Finally, the book considers some general issues raised by expansion and isotropy. A reference section completes the work by listing essential formulae, symbols, and physical constants. Beyond the level of many elementary books on cosmology, *An Introduction to the Science of Cosmology* encompasses numerous recent developments and ideas in the area. It provides more detailed coverage than many other titles available, and the inclusion of problems at the end of each chapter aids in self study and makes the book suitable for taught courses.

Waking Up

For the millions of Americans who want spirituality without religion, Sam Harris's latest New York Times bestseller is a guide to meditation as a rational practice informed by neuroscience and psychology. From Sam Harris, neuroscientist and author of numerous New York Times bestselling books, *Waking Up* is for the twenty percent of Americans who follow no religion but who suspect that important truths can be found in the experiences of such figures as Jesus, the Buddha, Lao Tzu, Rumi, and the other saints and sages of history. Throughout this book, Harris argues that there is more to understanding reality than science and secular culture generally allow, and that how we pay attention to the present moment largely determines the quality of our lives. *Waking Up* is part memoir and part exploration of the scientific underpinnings of spirituality. No other book marries contemplative wisdom and modern science in this way, and no author other than Sam Harris—a scientist, philosopher, and famous skeptic—could write it.