

Astrophysics Is Easy An Introduction For The Amateur Astronomer The Patrick Moore Practical Astronomy Series

An Introduction to Modern Stellar Astrophysics
AN INTRODUCTION TO
ASTROPHYSICS
The History of Astronomy: A Very Short Introduction
Galaxy
Formation and Evolution
Astrophysics: A Very Short Introduction
Practical
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An Introduction to Observational
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Starlight
The Isotropic
Universe,
An Introduction to Astronomy and Astrophysics

An Introduction to Modern Stellar Astrophysics

Fans of Chris Ferrie's ABCs of Space, Organic Chemistry for Babies, and Quantum Physics for Babies will love this introduction to astrophysics for babies and toddlers! Help your future genius become the smartest baby in the room! It only takes a small spark to ignite a child's mind. Written by an expert, Astrophysics for Babies is a colorfully simple introduction to the study of how physics and chemistry affect heavenly bodies in space. Babies (and grownups!) will learn all about our universe. With a tongue-in-cheek approach that adults will love, this installment of the Baby University board book series is the perfect way to introduce basic concepts to even the youngest scientists. After all, it's never too early to become an astrophysicist! If you're looking for geek baby books, quantum information for babies, or more Baby University board books to surprise your little one, look no further! Astrophysics for Babies offers fun early learning for your little scientist!

AN INTRODUCTION TO ASTROPHYSICS

"In An Introduction to Nuclear Astrophysics, Richard N. Boyd includes basic nomenclature and information so that students from astronomy or physics can quickly orient themselves. Subsequent chapters describe earthbound and

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spaceborne instruments operating in service to nuclear astrophysics worldwide; background topics such as nuclear and neutrino physics, scattering formalism, and thermonuclear reaction rates; and information on galactic chemical evolution, solar nucleosynthesis, s- and r-processes, and gamma-ray bursts. Each chapter includes problem sets against which students may test their knowledge before moving ahead, and Boyd has included copious references intended to guide students to further study"--Jacket.

The History of Astronomy: A Very Short Introduction

"This is a truly astonishing book, invaluable for anyone with an interest in astronomy." Physics Bulletin "Just the thing for a first year university science course." Nature "This is a beautiful book in both concept and execution." Sky & Telescope

Galaxy Formation and Evolution

Numerical Methods in Astrophysics: An Introduction outlines various fundamental numerical methods that can solve gravitational dynamics, hydrodynamics, and radiation transport equations. This resource indicates which methods are most suitable for particular problems, demonstrates what the accuracy requirements are

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in numerical simulations, and suggests ways to test for and reduce the inevitable negative effects. After an introduction to the basic equations and derivations, the book focuses on practical applications of the numerical methods. It explores hydrodynamic problems in one dimension, N-body particle dynamics, smoothed particle hydrodynamics, and stellar structure and evolution. The authors also examine advanced techniques in grid-based hydrodynamics, evaluate the methods for calculating the gravitational forces in an astrophysical system, and discuss specific problems in grid-based methods for radiation transfer. The book incorporates brief user instructions and a CD-ROM of the numerical codes, allowing readers to experiment with the codes to suit their own needs. With numerous examples and sample problems that cover a wide range of current research topics, this highly practical guide illustrates how to solve key astrophysics problems, providing a clear introduction for graduate and undergraduate students as well as researchers and professionals.

Astrophysics: A Very Short Introduction

The ideal one-semester astrophysics introduction for science undergraduates—now expanded and fully updated Winner of the American Astronomical Society's Chambliss Award, *Astrophysics in a Nutshell* has become the text of choice in astrophysics courses for science majors at top universities in North America and beyond. In this expanded and fully updated second edition, the book gets even

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better, with a new chapter on extrasolar planets; a greatly expanded chapter on the interstellar medium; fully updated facts and figures on all subjects, from the observed properties of white dwarfs to the latest results from precision cosmology; and additional instructive problem sets. Throughout, the text features the same focused, concise style and emphasis on physics intuition that have made the book a favorite of students and teachers. Written by Dan Maoz, a leading active researcher, and designed for advanced undergraduate science majors, *Astrophysics in a Nutshell* is a brief but thorough introduction to the observational data and theoretical concepts underlying modern astronomy. Generously illustrated, it covers the essentials of modern astrophysics, emphasizing the common physical principles that govern astronomical phenomena, and the interplay between theory and observation, while also introducing subjects at the forefront of modern research, including black holes, dark matter, dark energy, and gravitational lensing. In addition to serving as a course textbook, *Astrophysics in a Nutshell* is an ideal review for a qualifying exam and a handy reference for teachers and researchers. The most concise and current astrophysics textbook for science majors—now expanded and fully updated with the latest research results

Contains a broad and well-balanced selection of traditional and current topics
Uses simple, short, and clear derivations of physical results
Trains students in the essential skills of order-of-magnitude analysis
Features a new chapter on extrasolar planets, including discovery techniques
Includes new and expanded sections and problems on the physics of shocks, supernova remnants, cosmic-ray

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acceleration, white dwarf properties, baryon acoustic oscillations, and more
Contains instructive problem sets at the end of each chapter Solutions manual
(available only to professors)

Practical Astronomy

This is a book about the physics of stars and starlight. The story of starlight is truly fascinating. Astronomers analyze and interpret the light from stars using photometry and spectroscopy, then inspirational detective work combines with the laws of physics to reveal the temperatures, masses, luminosities and outer structure of these far away points of light. The laws of physics themselves enable us to journey to the very center of a star and to understand its inner structure and source of energy! Starlight provides an in-depth study of stellar astrophysics that requires only basic high school mathematics and physics, making it accessible to all amateur astronomers. Starlight teaches amateur astronomers about the physics of stars and starlight in a friendly, easy-to-read way. The reader will take away a profoundly deeper understanding of this truly fascinating subject - and find his practical observations more rewarding and fulfilling as a result.

Introduction to Astrophysics

An Introduction to Observational Astrophysics

Working physicists, and especially astrophysicists, value a good 'back-of-the-envelope' calculation, meaning a short, elegant computation or argument that starts from general principles and leads to an interesting result. This book guides students on how to understand astrophysics using general principles and concise calculations -- endeavouring to be elegant where possible and using short computer programs where necessary. The material proceeds in approximate historical order. The book begins with the Enlightenment-era insight that the orbits of the planets is easy, but the orbit of the Moon is a real headache, and continues to deterministic chaos. This is followed by a chapter on spacetime and black holes. Four chapters reveal how microphysics, especially quantum mechanics, allow us to understand how stars work. The last two chapters are about cosmology, bringing us to 21st-century developments on the microwave background and gravitational waves.

Introduction to Astrochemistry

Astronomy, perhaps the first of the sciences, was already well developed by the time of Christ. Seventeen centuries later, after Newton showed that the movements of the planets could be explained in terms of gravitation, it became

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the paradigm for the mathematical sciences. In the nineteenth century the analysis of star-light allowed astrophysicists to determine both the chemical composition and the radial velocities of celestial bodies, while the development of photography enabled distant objects invisible to the human eye, to be studied and measured in comfort. Technical developments during and since the Second World War have greatly enlarged the scope of the science by permitting the study of radiation. This is a fascinating introduction to the history of Western astronomy, from prehistoric times to the origins of astrophysics in the mid-nineteenth century. Historical records are first found in Babylon and Egypt, and after two millennia the arithmetical astronomy of the Babylonians merged with the Greek geometrical approach to culminate in the Almagest of Ptolemy. This legacy was transmitted to the Latin West via Islam, and led to Copernicus's claim that the Earth is in motion. In justifying this Kepler converted astronomy into a branch of dynamics, leading to Newton's universal law of gravity. The book concludes with eighteenth- and nineteenth-century applications of Newton's law, and the first explorations of the universe of stars. 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.

Astrophysics for Physicists

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An Introduction to Modern Astrophysics is a comprehensive, well-organized and engaging text covering every major area of modern astrophysics, from the solar system and stellar astronomy to galactic and extragalactic astrophysics, and cosmology. Designed to provide students with a working knowledge of modern astrophysics, this textbook is suitable for astronomy and physics majors who have had a first-year introductory physics course with calculus. Featuring a brief summary of the main scientific discoveries that have led to our current understanding of the universe; worked examples to facilitate the understanding of the concepts presented in the book; end-of-chapter problems to practice the skills acquired; and computational exercises to numerically model astronomical systems, the second edition of An Introduction to Modern Astrophysics is the go-to textbook for learning the core astrophysics curriculum as well as the many advances in the field.

Introductory Astronomy and Astrophysics

This exciting text opens the entire field of modern astrophysics to the reader by using only the basic tools of physics. Designed for the junior- level astrophysics course, each topic is approached in the context of the major unresolved questions in astrophysics. The core chapters have been designed for a course in stellar structure and evolution, while the extended chapters provide additional coverage

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of the solar system, galactic structure, dynamics, evolution, and cosmology

Astrophysics for Young People in a Hurry

A substantial update of this award-winning and highly regarded cosmology textbook, for advanced undergraduates in physics and astronomy.

Numerical Methods in Astrophysics

A coherent introduction for researchers in astronomy, particle physics, and cosmology on the formation and evolution of galaxies.

Introduction to Cosmology

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

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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.

Archaeoastronomy

Designed for teaching astrophysics to physics students at advanced undergraduate or beginning graduate level, this textbook also provides an overview of astrophysics for astrophysics graduate students, before they delve into more specialized volumes. Assuming background knowledge at the level of a physics major, the textbook develops astrophysics from the basics without requiring any previous study in astronomy or astrophysics. Physical concepts, mathematical derivations and observational data are combined in a balanced way to provide a unified treatment. Topics such as general relativity and plasma physics, which are not usually covered in physics courses but used extensively in astrophysics, are developed from first principles. While the emphasis is on developing the fundamentals thoroughly, recent important discoveries are highlighted at every stage.

An Introduction to Radio Astronomy

This important book describes the basic principles of astrochemistry—an interdisciplinary field combining astronomy, physics, and chemistry—with particular emphasis on its physical and chemical background. Chemical processes in diffuse clouds, dense quiescent molecular clouds, star-forming regions, and protoplanetary disks are discussed. A brief introduction to molecular spectroscopy and observational techniques is also presented. These contents provide astronomers with a comprehensive understanding of how interstellar matter is evolved and brought into stars and planets, which is ultimately related to the origin of the solar system. The subject matter will also be understandable and useful for physical chemists who are interested in exotic chemical processes occurring in extreme physical conditions. The book is a valuable resource for all researchers beginning at the graduate level.

Extragalactic Astronomy and Cosmology

This practical manual provides essential material for the extensive world-wide community of non-professional astronomers. Every page of the book is alive with the infectious enthusiasm of the author whose expertise, knowledge and teaching experience provides easy access to the fascination and enjoyment of sky-watching.

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Provides essential material for the extensive world-wide community of non-professional astronomers The author's enthusiasm is reflected in every page, and his expertise, knowledge and teaching experience provides easy access to the fascination and enjoyment of sky-watching Includes chapters on the celestial sphere, the sun and sundials, star positions, star maps, planispheres and nomograms, and light and basic optics

An Introduction to the Science of Cosmology

This volume contains working papers on astronomy and astrophysics prepared by 15 non-National Research Council panels in areas ranging from radio astronomy to the status of the profession.

An Introduction to Nuclear Astrophysics

An introduction to modern ideas on cosmology and on the physical basis of the general theory of relativity. The title reflects the author's contention that the remarkable degree of isotropy, rather than the expansions, can be regarded as the central observational feature of the universe. The various theories and ideas in "big bang" cosmology are discussed, providing an insight into current problems. The book is written at an intermediate level, beyond that of the many elementary

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books on cosmology, as an introduction to the more advanced works and research literature.

The Amateur Astronomer

This second edition has been updated and substantially expanded. Starting with the description of our home galaxy, the Milky Way, this cogently written textbook introduces the reader to the astronomy of galaxies, their structure, active galactic nuclei, evolution and large scale distribution in the Universe. After an extensive and thorough introduction to modern observational and theoretical cosmology, the focus turns to the formation of structures and astronomical objects in the early Universe. The basics of classical astronomy and stellar astrophysics needed for extragalactic astronomy are provided in the appendix. While this book has grown out of introductory university courses on astronomy and astrophysics and includes a set of problems and solutions, it will not only benefit undergraduate students and lecturers; thanks to the comprehensive coverage of the field, even graduate students and researchers specializing in related fields will appreciate it as a valuable reference work.

The Astronomers' Magic Envelope

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An Introduction to Stellar Astrophysics aspires to provide the reader with an intermediate knowledge on stars whilst focusing mostly on the explanation of the functioning of stars by using basic physical concepts and observational results. The book is divided into seven chapters, featuring both core and optional content: Basic concepts Stellar Formation Radiative Transfer in Stars Stellar Atmospheres Stellar Interiors Nucleosynthesis and Stellar Evolution and Chemically Peculiar Stars and Diffusion. Student-friendly features include: Detailed examples to help the reader better grasp the most important concepts A list of exercises is given at the end of each chapter and answers to a selection of these are presented. Brief recalls of the most important physical concepts needed to properly understand stars. A summary for each chapter Optional and advanced sections are included which may be skipped without interfering with the flow of the core content. This book is designed to cover the most important aspects of stellar astrophysics inside a one semester (or half-year) course and as such is relevant for advanced undergraduate students following a first course on stellar astrophysics, in physics or astronomy programs. It will also serve as a basic reference for a full-year course as well as for researchers working in related fields.

Stardust from Meteorites

A concrete, mid-level treatment, this readable and authoritative translation from the French provides an excellent guide to observational astrophysics. Methods of

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research and observation receive as much attention as results. Topics include stellar photometry and spectroscopy, classification and properties of normal stars, construction of Hertzsprung- Russell diagrams, Yerkes two-dimensional classification, and much more. Reprint of Introduction à l'astrophysique: les étoiles, Max Leclerc et Cie, 1961.

Theoretical Astrophysics

Astrophysics is often - with some justification - regarded as incomprehensible without at least degree-level mathematics. Consequently, many amateur astronomers skip the math, and miss out on the fascinating fundamentals of the subject. In *Astrophysics Is Easy!* Mike Inglis takes a quantitative approach to astrophysics that cuts through the incomprehensible mathematics, and explains the basics of astrophysics in accessible terms. The reader can view objects under discussion with commercial amateur equipment.

Astrophysics Is Easy!

High-energy astrophysics covers cosmic phenomena that occur under the most extreme physical conditions. It explores the most violent events in the Universe: the explosion of stars, matter falling into black holes, and gamma-ray bursts - the

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most luminous explosions since the Big Bang. Driven by a wealth of observations, there has been a large leap forward in our understanding of these phenomena. Exploring modern topics of high-energy astrophysics, such as supernovae, neutron stars, compact binary systems, gamma-ray bursts, and active galactic nuclei, this 2007 textbook is ideal for undergraduate students in high-energy astrophysics. It is a self-contained, relevant overview of this exciting field of research. Assuming a familiarity with basic physics, it introduces all other concepts, such as gas dynamics or radiation processes, in an instructive way. An extended appendix gives an overview of some of the most important high-energy astrophysics instruments, and each chapter ends with exercises.

Working Papers

To suit deep-sky astronomers at all levels, this guide can be used to improve observing skills while offering detailed descriptions of each class of object. Includes extensive lists of deep-sky targets and which months provide the best visibility. Also guides the user with broad-ranging background material.

Introduction to General Relativity

Radio astronomy is an active and rapidly expanding field due to advances in

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computing techniques, with several important new instruments on the horizon. This text provides a thorough introduction to radio astronomy and its contribution to our understanding of the universe, bridging the gap between basic introductions and research-level treatments. It begins by covering the fundamentals physics of radio techniques, before moving on to single-dish telescopes and aperture synthesis arrays. Fully updated and extensively rewritten, the fourth edition places greater emphasis on techniques, with detailed discussion of interferometry in particular, and comprehensive coverage of digital techniques in the appendices. The science sections are fully revised, with new author Peter N. Wilkinson bringing added expertise to the sections on pulsars, quasars and active galaxies. Spanning the entirety of radio astronomy, this is an engaging introduction for students and researchers approaching radio astronomy for the first time.

Introduction to High-Energy Astrophysics

This 2000 Edition of Sir Patrick Moore's classic book has been completely revised in the light of changes in technology. Not only do these changes include commercially available astronomical telescopes and software, but also what we know and understand about the universe. There are many new photographs and illustrations. Packs a great deal of valuable information into appendices which make up almost half the book. These are hugely comprehensive and provide hints and tips, as well as data (year 2000 onwards) for pretty well every aspect of

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amateur astronomy. This is probably the only book in which all this information is collected in one place.

Astrophysics in a Nutshell

Jo Dunkley combines her expertise as an astrophysicist with her talents as a writer and teacher to present an elegant introduction to the structure, history, and enduring mysteries of the universe. Among the cutting-edge phenomena discussed are the accelerating expansion of the universe and the possibility that our universe is only one of many.

Astrophysics for Babies

This extensively illustrated book presents the astrophysics of galaxies since their beginnings in the early Universe. It has been thoroughly revised to take into account the most recent observational data, and recent discoveries such as dark energy. There are new sections on galaxy clusters, gamma ray bursts and supermassive black holes. The authors explore the basic properties of stars and the Milky Way before working out towards nearby galaxies and the distant Universe. They discuss the structures of galaxies and how galaxies have developed, and relate this to the evolution of the Universe. The book also

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examines ways of observing galaxies across the whole electromagnetic spectrum, and explores dark matter and its gravitational pull on matter and light. This book is self-contained and includes several homework problems with hints. It is ideal for advanced undergraduate students in astronomy and astrophysics.

An Introduction to Astrophysical Hydrodynamics

This invaluable book, now in its second edition, covers a wide range of topics appropriate for both undergraduate and postgraduate courses in astrophysics. The book conveys a deep and coherent understanding of the stellar phenomena, and basic astrophysics of stars, galaxies, clusters of galaxies and other heavenly bodies of interest. Since the first appearance of the book in 1997, significant progress has been made in different branches of Astronomy and Astrophysics. The second edition takes into account the developments of the subject which have taken place in the last decade. It discusses the latest introduction of L and T dwarfs in the Hertzsprung-Russel diagram (or H-R diagram). Other developments discussed pertain to standard solar model, solar neutrino puzzle, cosmic microwave background radiation, Drake equation, dwarf galaxies, ultra compact dwarf galaxies, compact groups and cluster of galaxies. Problems at the end of each chapter motivate the students to go deeper into the topics. Suggested readings at the end of each chapter have been complemented.

The Physical Universe

Astrophysics is the physics of the stars, and more widely the physics of the Universe. It enables us to understand the structure and evolution of planetary systems, stars, galaxies, interstellar gas, and the cosmos as a whole. In this Very Short Introduction, the leading astrophysicist James Binney shows how the field of astrophysics has expanded rapidly in the past century, with vast quantities of data gathered by telescopes exploiting all parts of the electromagnetic spectrum, combined with the rapid advance of computing power, which has allowed increasingly effective mathematical modelling. He illustrates how the application of fundamental principles of physics - the consideration of energy and mass, and momentum - and the two pillars of relativity and quantum mechanics, has provided insights into phenomena ranging from rapidly spinning millisecond pulsars to the collision of giant spiral galaxies. This is a clear, rigorous introduction to astrophysics for those keen to cut their teeth on a conceptual treatment involving some mathematics. 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

An Introduction to Modern Astrophysics

Astrophysics is Easy!

This book is an introduction to astrophysical hydrodynamics for both astronomy and physics students. It provides a comprehensive and unified view of the general problems associated with fluids in a cosmic context, with a discussion of fluid dynamics and plasma physics. It is the only book on hydrodynamics that addresses the astrophysical context. Researchers and students will find this work to be an exceptional reference. Contents include chapters on irrotational and rotational flows, turbulence, magnetohydrodynamics, and instabilities.

Galaxies in the Universe

The observational component of astronomy is an exciting and vital part of any astrophysics degree. With the advent of low-cost astronomical cameras and remote and robotic operation, more students than ever have the opportunity to observe and perform observatory research. This updated and fully corrected textbook provides a comprehensive overview of practical observing techniques for undergraduate astrophysics courses. The chapters introduce students to the basics

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of the field before delving into telescope types, the nature and operation of the astronomical camera, imaging techniques and reduction, photometry and spectrography, and solar and radio observations. The second edition covers the latest research on calibrating the telescope-camera-observatory system. It contains revised information on all available astronomy equipment, including filters, webcams, sensors, and telescope designs. Also included is an entirely new chapter on exoplanet transit measurements. The textbooks practical approach will guide readers from basic first-year techniques to those required for a final-year project.

An Introduction to Stellar Astrophysics

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

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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.

Our Universe

Astronomy is the field of science devoted to the study of astronomical objects, such as stars, galaxies, and nebulae. Astronomers have gathered a wealth of knowledge about the universe through hundreds of years of painstaking observations. These observations are interpreted by the use of physical and chemical laws familiar to mankind. These interpretations supply information about

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the nature of these astronomical objects, allowing for the deduction of their surface and interior conditions. The science associated with these interpretations is called astrophysics. An Introduction to Astronomy and Astrophysics offers a comprehensive introduction to astronomy and astrophysics, complete with illustrative examples and illuminating homework problems. Requiring a familiarity with basic physics and mathematics, this undergraduate-level textbook: Addresses key physics concepts relevant to stellar observations, including radiation, electromagnetic spectrum, photometry, continuous and discrete spectrum, and spectral lines Describes instruments used for astronomical observations as well as how the radiation received is characterized and interpreted to determine the properties of stars Examines the structure of stars, the basic equations which explain stars in equilibrium, and the fusion reactions occurring in stellar cores Discusses the evolution of stars, the solar system, the dynamics of galaxies, and the fundamentals of modern cosmology Explores the universe at high redshifts, where it is dominated by objects such as active galaxies Solutions manual and figure slides available with qualifying course adoption An Introduction to Astronomy and Astrophysics teaches students how to interpret the night sky, providing them with a critical understanding of the stars and other heavenly bodies.

Field Guide to the Deep Sky Objects

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Student-friendly, well illustrated textbook for advanced undergraduate and beginning graduate students in physics and mathematics.

Starlight

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 Isotropic Universe,

- The first book specifically dedicated to the 20-year-old study of presolar stellar grains - Contains basic background material together with the most recent

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discoveries - Presents a simple but comprehensive description of the latest stellar evolution and nucleosynthesis theories - Quotes most of the relevant bibliography related to stellar grains and hence can be used as a source of reference

An Introduction to Astronomy and Astrophysics

Beginning from first principles and adopting a modular structure, this book develops the fundamental physical methods needed to describe and understand a wide range of seemingly very diverse astrophysical phenomena and processes. For example, the discussion of radiation processes including their spectra is based on Larmor's equation and extended by the photon picture and the internal dynamics of radiating quantum systems, leading to the shapes of spectral lines and the ideas of radiation transport. Hydrodynamics begins with the concept of phase-space distribution functions and Boltzmann's equation and develops ideal, viscous and magneto-hydrodynamics all from the vanishing divergence of an energy-momentum tensor, opening a natural extension towards relativistic hydrodynamics. Linear stability analysis is introduced and used as a common and versatile tool throughout the book. Aimed at students at graduate level, lecturers teaching courses in theoretical astrophysics or advanced topics in modern astronomy, this book with its abundant examples and exercises also serves as a reference and an entry point for more advanced researchers wanting to update their knowledge of the physical processes that govern the behavior and evolution

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of astronomical objects.

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