

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

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An Introduction to Stellar Astrophysics - Francis LeBlanc 2011-08-24

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.

Astrophysics Is Easy! - Michael Inglis 2023-01-23

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. Following on the success of the first and second editions, this fully updated third edition covers the significant changes in astrophysics theories and research that have occurred in the last five years, including new material on: exomoons, exocomets and exoasteroids; Special and General Relativity; gravitational waves, their origins and detection; telescope optics; black hole astrophysics; and more. 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 book also features in-text, nonmathematical questions and end-of-chapter problems - all with their accompanying solutions - to help readers discuss and digest the material.

Astronomy and Astrophysics Abstracts - Böhme 2013-12-14

From the reviews: Astronomy and Astrophysics Abstracts has appeared in semi-annual volumes since 1969 and it has already become one of the fundamental publications in the fields of astronomy, astrophysics and neighbouring sciences. It is the most important English-language abstracting journal in the mentioned branches. ... The abstracts are classified under more than hundred subject categories, thus permitting a quick survey of the whole extended material. The AAA is a valuable and important publication for all students and scientists working in the fields of astronomy and related sciences. As such it represents a necessary ingredient of any astronomical library all over the world." Space Science Reviews #1 "Dividing

the whole field plus related subjects into 108 categories, each work is numbered and most are accompanied by brief abstracts. Fairly comprehensive cross-referencing links relevant papers to more than one category, and exhaustive author and subject indices are to be found at the back, making the catalogues easy to use. The series appears to be so complete in its coverage and always less than a year out of date that I shall certainly have to make a little more space on those shelves for future volumes." The Observatory Magazine #1

Solar Astrophysics - Peter V. Foukal 2008-09-26

This revised edition of Solar Astrophysics describes our current understanding of the sun - from its deepest interior, via the layers of the directly observable atmosphere to the solar wind, right out to its farthest extension into interstellar space. It includes a comprehensive account of the history of solar astrophysics, along with an overview of the key instruments throughout the various periods. In contrast to other books on this topic, the choice of material deals evenhandedly with the entire scope of important topics covered in solar research. The authors make the advances in our understanding of the sun accessible to students and non-specialists by way of careful use of relatively simple physical concepts. The book offers an incisive, reliable, and well-planned look at all that is fascinating and new in studies of the sun.

Radiative Processes in Astrophysics - George B. Rybicki 2008-09-26

Radiative Processes in Astrophysics: This clear, straightforward, and fundamental introduction is designed to present-from a physicist's point of view-radiation processes and their applications to astrophysical phenomena and space science. It covers such topics as radiative transfer theory, relativistic covariance and kinematics, bremsstrahlung radiation, synchrotron radiation, Compton scattering, some plasma effects, and radiative transitions in atoms. Discussion begins with first principles, physically motivating and deriving all results rather than merely presenting finished formulae. However, a reasonably good physics background (introductory quantum mechanics, intermediate electromagnetic theory, special relativity, and some statistical mechanics) is required. Much of this prerequisite material is provided by brief reviews, making the book a self-contained reference for workers in the field as well as the ideal text for senior or first-year graduate students of astronomy, astrophysics, and related physics courses. Radiative Processes in Astrophysics also contains about 75 problems, with solutions, illustrating applications of the material and methods for calculating results. This important and integral section emphasizes physical intuition by presenting important results that are used throughout the main text; it is here that most of the practical astrophysical applications become apparent.

Theoretical Astrophysics - Matthias Bartelmann 2013-09-03

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 of astronomical objects.

The History of Astronomy: A Very Short Introduction - Michael Hoskin 2003-05-08

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 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.

AN INTRODUCTION TO ASTROPHYSICS - BAIDYANATH BASU 2010-01-01

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.

Principles of Astrophysics - Charles Keeton 2014-05-10

This book gives a survey of astrophysics at the advanced undergraduate level, providing a physics-centred analysis of a broad range of astronomical systems. It originates from a two-semester course sequence at Rutgers University that is meant to appeal not only to astrophysics students but also more broadly to physics and engineering students. The organisation is driven more by physics than by astronomy; in other words, topics are first developed in physics and then applied to astronomical systems that can be investigated, rather than the other way around. The first half of the book focuses on gravity. The theme in this part of the book, as well as throughout astrophysics, is using motion to investigate mass. The goal of Chapters 2-11 is to develop a progressively richer understanding of gravity as it applies to objects ranging from planets and moons to galaxies and the universe as a whole. The second half uses other aspects of physics to address one of the big questions. While "Why are we here?" lies beyond the realm of physics, a closely related question is within our reach: "How did we get here?" The goal of Chapters 12-20 is to

understand the physics behind the remarkable story of how the Universe, Earth and life were formed. This book assumes familiarity with vector calculus and introductory physics (mechanics, electromagnetism, gas physics and atomic physics); however, all of the physics topics are reviewed as they come up (and vital aspects of vector calculus are reviewed in the Appendix).

Introduction to Stellar Dynamics - Luca Ciotti 2021-06-10

A thorough presentation of the fundamental concepts of stellar dynamics that bridges the gap between standard texts and advanced treatises.

Practical Astronomy - Henry Robert Mills 1994

A guide to practical astronomy for skywatchers of all ages, covering the celestial sphere, sun and sundials, star positions, star maps, planispheres, nomograms, light and basic optics, calculations, and more.

Astronomy with a Home Computer - Neale Monks 2006-03-30

Here is a one-volume guide to just about everything computer-related for amateur astronomers! Today's amateur astronomy is inextricably linked to personal computers. Computer-controlled "go-to" telescopes are inexpensive. CCD and webcam imaging make intensive use of the technology for capturing and processing images. Planetarium software provides information and an easy interface for telescopes. The Internet offers links to other astronomers, information, and software. The list goes on and on. Find out here how to choose the best planetarium program: are commercial versions really better than freeware? Learn how to optimise a go-to telescope, or connect it to a lap-top. Discover how to choose the best webcam and use it with your telescope. Create a mosaic of the Moon, or high-resolution images of the planets...

Astronomy with a Home Computer is designed for every amateur astronomer who owns a home computer, whether it is running Microsoft Windows, Mac O/S or Linux. It doesn't matter what kind of telescope you own either - a small refractor is just as useful as a big "go-to" SCT for most of the projects in this book.

The Sun - Michael Stix 2012-12-06

As in all other fields of astronomy, progress in instrumentation and observational techniques has in recent years brought a wealth of new information about the sun. This introduction presents a complete overview of solar physics, of what we know and would like to know. The increasing number of observations of solar phenomena on neighbouring stars makes this book valuable not only for students specializing in solar physics but also for researchers interested in stellar structure and the solar-stellar connection.

Our Universe - Jo Dunkley 2019-05-13

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.

An Introduction to Modern Astrophysics - Bradley W. Carroll 2017-09-07

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.

Special and General Relativity - Norman K. Glendenning 2010-04-28

Special and General Relativity are concisely developed together with essential aspects of nuclear and particle physics. Problem sets are provided for many chapters, making the book ideal for a course on the physics of white dwarf and neutron star interiors. Norman K. Glendenning is Senior Scientist Emeritus at the Nuclear Science Division, Institute for Nuclear and Particle Astrophysics, Lawrence Berkeley National Laboratory at the University of California, Berkeley. He is the author of numerous books.

Astronomy - Andrew Fraknoi 2017-12-19

Astronomy is written in clear non-technical language, with the occasional touch of humor and a wide range of clarifying illustrations. It has many analogies drawn from everyday life to help non-science majors appreciate, on their own terms, what our modern exploration of the universe is revealing. The book can be used for either a one-semester or two-semester introductory course (bear in mind, you can customize your version and include only those chapters or sections you will be teaching.) It is made available free of charge in electronic form (and low cost in printed form) to students around the world. If you have ever thrown up your hands in despair over the spiraling cost of astronomy textbooks, you owe your students a good look at this one. Coverage and Scope Astronomy was written, updated, and reviewed by a broad range of astronomers and astronomy educators in a strong community effort. It is designed to meet scope and sequence requirements of introductory astronomy courses nationwide. Chapter 1: Science and the Universe: A Brief Tour Chapter 2: Observing the Sky: The Birth of Astronomy Chapter 3: Orbits and Gravity Chapter 4: Earth, Moon, and Sky Chapter 5: Radiation and Spectra Chapter 6: Astronomical Instruments Chapter 7: Other Worlds: An Introduction to the Solar System Chapter 8: Earth as a Planet Chapter 9: Cratered Worlds Chapter 10: Earthlike Planets: Venus and Mars Chapter 11: The Giant Planets Chapter 12: Rings, Moons, and Pluto Chapter 13: Comets and Asteroids: Debris of the Solar System Chapter 14: Cosmic Samples and the Origin of the Solar System Chapter 15: The Sun: A Garden-Variety Star Chapter 16: The Sun: A Nuclear Powerhouse Chapter 17: Analyzing Starlight Chapter 18: The Stars: A Celestial Census Chapter 19: Celestial Distances Chapter 20: Between the Stars: Gas and Dust in Space Chapter 21: The Birth of Stars and the Discovery of Planets outside the Solar System Chapter 22: Stars from Adolescence to Old Age Chapter 23: The Death of Stars Chapter 24: Black Holes and Curved Spacetime Chapter 25: The Milky Way Galaxy Chapter 26: Galaxies Chapter 27: Active Galaxies, Quasars, and Supermassive Black Holes Chapter 28: The Evolution and Distribution of Galaxies Chapter 29: The Big Bang Chapter 30: Life in the Universe Appendix A: How to Study for Your Introductory Astronomy Course Appendix B: Astronomy Websites, Pictures, and Apps Appendix C: Scientific Notation Appendix D: Units Used in Science Appendix E: Some Useful Constants for Astronomy Appendix F: Physical and Orbital Data for the Planets Appendix G: Selected Moons of the Planets Appendix H: Upcoming Total Eclipses Appendix I: The Nearest Stars, Brown Dwarfs, and White Dwarfs Appendix J: The Brightest Twenty Stars Appendix K: The Chemical Elements Appendix L: The Constellations Appendix M: Star Charts and Sky Event Resources

[Astrophysics Is Easy!](#) - Michael Inglis 2014-12-04

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.

Starlight Keith Robinson 2009-10-03

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.

Extragalactic Astronomy and Cosmology - Peter Schneider 2014-10-08

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.

[Essential Astrophysics](#) - Kenneth R. Lang 2013-05-24

Essential Astrophysics is a book to learn or teach from, as well as a fundamental reference volume for anyone interested in astronomy and astrophysics. It presents astrophysics from basic principles without requiring any previous study of astronomy or astrophysics. It serves as a comprehensive introductory text, which takes the student through the field of astrophysics in lecture-sized chapters of basic physical principles applied to the cosmos. This one-semester overview will be enjoyed by undergraduate students with an interest in the physical sciences, such as astronomy, chemistry, engineering or physics, as well as by any curious student interested in learning about our celestial science. The mathematics required for understanding the text is on the level of simple algebra, for that is all that is needed to describe the fundamental principles. The text is of sufficient breadth and depth to prepare the interested student for more advanced specialised courses in the future. Astronomical examples are provided throughout the text, to reinforce the basic concepts and physics, and to demonstrate the use of the relevant formulae. In this way, the student learns to apply the fundamental equations and principles to cosmic objects and situations. Astronomical and physical constants and units as well as the most fundamental equations can be found in the appendix. *Essential Astrophysics* goes beyond the typical textbook by including references to the seminal papers in the field, with further reference to recent applications, results, or specialised literature.

Essential Radio Astronomy - James J. Condon 2016-04-05

The ideal text for a one-semester course in radio astronomy *Essential Radio Astronomy* is the only textbook on the subject specifically designed for a one-semester introductory course for advanced undergraduates or graduate students in astronomy and astrophysics. It starts from first principles in order to fill gaps in students' backgrounds, make teaching easier for professors who are not expert radio astronomers, and provide a useful reference to the essential equations used by practitioners. This unique textbook reflects the fact that students of multiwavelength astronomy typically can afford to spend only one semester studying the observational techniques particular to each wavelength band. *Essential Radio Astronomy* presents only the most crucial concepts—succinctly and accessibly. It covers the general principles behind radio telescopes, receivers, and digital backends without getting bogged down in engineering details. Emphasizing the physical processes in radio sources, the book's approach is shaped by the view that radio astrophysics owes more to thermodynamics than electromagnetism. Proven in the classroom and generously illustrated throughout, *Essential Radio Astronomy* is an invaluable resource for students and researchers alike. The only textbook specifically designed for a one-semester course in radio astronomy Starts from first principles Makes teaching easier for astronomy professors who are not expert radio astronomers Emphasizes the physical processes in radio sources Covers the principles behind radio telescopes and receivers Provides the essential equations and fundamental constants used by practitioners Supplementary website includes lecture notes, problem sets, exams, and links to interactive demonstrations An online illustration package is available to professors

Introductory Astronomy and Astrophysics - Michael Zeilik 1992

[Astrophysics for Young People in a Hurry](#) - Neil deGrasse Tyson 2019-02-05

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.

[Foundations of Astrophysics](#) - Barbara Ryden 2020-08-27

"This book provides a contemporary and complete introduction to astrophysics for astronomy and physics majors."--

Introduction to Astrophysics - Jean Dufay 2012-10-17

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

[Introduction to Stellar Astrophysics: Volume 3](#) - Erika Böhm-Vitense 1989

This book is the final one in a series of three texts which together provide a modern, complete and authoritative account of our present knowledge of the stars. It discusses the internal structure and the evolution of stars, and is completely self-contained. There is an emphasis on the basic physics governing stellar structure and the basic ideas on which our understanding of stellar structure is based. The book also provides a comprehensive discussion of stellar evolution. Careful comparison is made between theory and observation, and the author has thus provided a lucid and balanced introductory text for the student. As for volumes 1 and 2, volume 3 is self-contained and can be used as an independent textbook. The author has not only taught but has also published many original papers in this subject. Her clear and readable style should make this text a first choice for undergraduate and beginning graduate students taking courses in astronomy and particularly in stellar astrophysics.

Astrophysics in a Nutshell - Dan Maoz 2016-02-23

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 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 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)

An Introduction to Modern Stellar Astrophysics - Dale A. Ostlie 2007

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

[Stars: A Very Short Introduction](#) - Andrew King 2012-07-26

Every atom of our bodies has been part of a star. Our very own star, the Sun, is crucial to the development and sustainability of life on Earth. This Very Short Introduction presents a modern, authoritative examination of how stars live, producing all the chemical elements beyond helium, and how they die, sometimes spectacularly, to end as remnants such as black holes. Andrew King shows how understanding the stars is key to understanding the galaxies they inhabit, and thus the history of our entire Universe, as well as the existence of planets like our own. King presents a fascinating exploration of the science of stars, from the mechanisms that allow stars to form and the processes that allow them to shine, as well as the results of their inevitable death. 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.

The New Cosmos - David J. Eicher 2015-12-03

A fascinating and spectacular exploration of the cosmos that provides readers with a definitive view of the latest discoveries.

[Astronomical Sketching: A Step-by-Step Introduction](#) - Richard Handy 2007-10-08

This book presents the amateur with fine examples of astronomical sketches and step-by-step tutorials in each medium, including pencil, pen and ink, chalks and pastels, painting and computer graphics programs. This unique book can teach almost anyone to create beautiful sketches of celestial objects by following simple, illustrated, step-by-step instructions. Readers can select a chapter related to their preferred class of object, and rapidly learn techniques in several media. Each chapter contains useful information regarding equipment, techniques for preserving and archiving sketches, and suggestions for accurate record keeping.

Astrophysics is Easy! - Mike Inglis 2007-07-14

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.

[Introduction to Astronomy and Cosmology](#) - Ian Morison 2013-03-18

Introduction to Astronomy & Cosmology is a modern undergraduate textbook, combining both the theory behind astronomy with the very latest developments. Written for science students, this book takes a carefully developed scientific approach to this dynamic subject. Every major concept is accompanied by a worked example with end of chapter problems to improve understanding Includes coverage of the very latest developments such as double pulsars and the dark galaxy. Beautifully illustrated in full colour throughout Supplementary web site with many additional full colour images, content, and latest developments.

An Introduction to Modern Astrophysics - Bradley W. Carroll 2007

This edition has been revised to reflect dramatic changes and advancements in astrophysics that have occurred over the past decade. It includes the latest results from relevant fields of astrophysics and advances in our theoretical understanding of astrophysical phenomena.

Telescopes and Techniques - C. R. Kitchin 2012-10-21

"*Telescopes and Techniques*" has proved itself in its first edition, having become probably one of the most widely used astronomy texts, both for numerate amateur astronomers and for astronomy and astrophysics undergraduates. The first and second editions of the book were widely used as set texts for introductory practical astronomy courses in many universities. This book guides the reader through the mathematics, physics and practical techniques needed to use telescopes (from small amateur models to the larger

instruments installed in many colleges) and to observe objects in the sky. Mathematics to around Advanced Placement standard (US) or A level (UK) is assumed, although High School Diploma (US) or GCSE-level (UK) mathematics plus some basic trigonometry will suffice most of the time. Most of the physics and engineering involved is described fully and requires no prior knowledge or experience. This is a 'how to' book that provides the knowledge and background required to understand how and why telescopes work. Equipped with the techniques discussed in this book, the observer will be able to operate with confidence his or her telescope and to optimize its performance for a particular purpose. In principle the observer could calculate his or her own predictions of planetary positions (ephemerides), but more realistically the observer will be able to understand the published data lists properly instead of just treating them as 'recipes.' When the observer has obtained measurements, he/she will be able to analyze them in a scientific manner and to understand the significance and meaning of the results. "Telescopes and Techniques, 3rd Edition" fills a niche at the start of an undergraduate astronomer's university studies, as shown by it having been widely adopted as a set textbook. This third edition is now needed to update its material with the many new observing developments and study areas that have come into prominence since it was published. The book concentrates on the knowledge needed to understand how small(ish) optical telescopes function, their main designs and how to set them up, plus introducing the reader to the many ways in which objects in the sky change their positions and how they may be observed. Both visual and electronic imaging techniques are covered, together with an introduction to how data (measurements) should be processed and analyzed. A simple introduction to radio telescopes is also included. Brief coverage of the most advanced topics of photometry and spectroscopy are included, but mainly to enable the reader to see some of the developments possible from the basic observing techniques covered in the main parts of the book.

Astrophysics Simplified - Madhur Sorout 2019-07-24

Written by a 15-year-old high schooler, *Astrophysics Simplified: A Simple Guide to the Universe* is inspired by books like *A Brief History of Time* and *Astrophysics for People in a Hurry*. This is a popular science (science for a general audience) book. It mainly focuses on the major developments in science by Aristotle and Ptolemy to physicists like Stephen Hawking and Richard Muller. The various concepts of physics, like relativity and quantum physics, are explained in this book along with various topics in astrophysics and cosmology. There is limited mathematics in this book, but some major equations are included. I have done so because one cannot grasp the true 'beauty' in physics without seeing the mathematical or abstract parts alongside practical laws. Physics is to mathematics what Tony Stark (Iron Man) is to J.A.R.V.I.S. or F.R.I.D.A.Y. The groundwork of computations, statistics, simulations etc. is done by F.R.I.D.A.Y. But, the real work of fighting the villains is done by Iron Man.

Galaxy Formation and Evolution - Houjun Mo 2010-05-20

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

Introduction to Astronomy and Astrophysics - Arnold Hanslmeier 2022-05-12

This textbook provides the basic theoretical and practical knowledge of astronomy and astrophysics. It provides an overview from classical astronomy and observational methods to solar physics and astrophysics of stars and galaxies. It concludes with chapters on cosmology, astrobiology, and mathematical and numerical methods. Numerous color illustrations, examples of calculations, and exercises with solutions make this work a useful companion to undergraduate astronomy lectures. The book is suitable for students of physics and astronomy at teacher training level or in the Bachelor's degree - but also people interested in natural sciences with appropriate basic knowledge of mathematics and physics will find here an appealing introduction to the subject. This fourth edition has been updated and revised with respect to the latest developments in astronomy. The chapter on mathematical methods has been redesigned and the software used is now exclusively Python. From the contents: Spherical astronomy - History of astronomy - Celestial mechanics - Astronomical instruments - Physics of the bodies of the solar system - The Sun - State variables of the stars - Stellar atmospheres - Stellar structure - Stellar evolution - Interstellar matter - The Galaxy - Extragalactic systems - Cosmology - Astrobiology - Mathematical methods. This book is a translation of the original German 4th edition *Einführung in Astronomie und Astrophysik* by Arnold Hanslmeier, published by Springer-Verlag GmbH Germany, part of Springer Nature in 2020. The translation was done with the help of artificial intelligence (machine translation by the service DeepL.com). A subsequent human revision was done primarily in terms of content, so that the book will read stylistically differently from a conventional translation. Springer Nature works continuously to further the development of tools for the production of books and on the related technologies to support the authors.

Particles and Astrophysics - Maurizio Spurio 2014-10-06

This book is an introduction to "multi-messenger" astrophysics. It covers the many different aspects connecting particle physics with astrophysics and cosmology and introduces astrophysics using numerous experimental findings recently obtained through the study of high-energy particles. Taking a systematic approach, it comprehensively presents experimental aspects from the most advanced laboratories and detectors, as well as the theoretical background. The book is aimed at graduate students and post-graduate researchers with a basic understanding of particle and nuclear physics. It will also be of interest to particle physicists working in accelerator/collider physics who are keen to understand the mechanisms of the largest accelerators in the Universe. The book draws on the extensive lecturing experience of Professor Maurizio Spurio from the University of Bologna.