

The Exoplanet Handbook

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Physical Geography - William M. Marsh 2012-04-30

A systems-based approach to physical geography written in an easy-to-understand narrative style that is closely integrated with clear, single-concept illustrations.

Essential Astrophysics - Shantanu Basu 2021-09-27

This book takes a reader on a tour of astronomical phenomena: from the vastness of the interstellar medium, to the formation and evolution of stars and planetary systems, through to white dwarfs, neutron stars, and black holes, the final objects of the stellar graveyard. At its heart, this book is a journey through the evolutionary history of the birth, life, and death of stars, but detours are also made to other related interesting topics. This highly accessible story of the observed contents of our Galaxy includes intuitive explanations, informative diagrams, and basic equations, as needed. It is an ideal guide for undergraduates with some physics and mathematics background who are studying astronomy and astrophysics. It is also accessible to interested laypeople, thanks to its limited equations. Key features: Includes coverage of some of the latest exciting research from the field, including star formation, exoplanets, and black holes Can be utilised as a stand-alone textbook for a one-term course or as a supplementary textbook for a more comprehensive course on astronomy and astrophysics Authored by a team respected for research, education, and outreach Shantanu Basu is an astrophysicist and a professor at The University of Western Ontario, Canada. He is known for research contributions on the formation of gravitationally-collapsed objects in the universe: stars, planets, brown dwarfs, and supermassive black holes. He is one of the originators of the migrating embryo scenario of episodic accretion onto young stars. He has been recognized for his teaching excellence and his contributions to the astronomical community include organizing many conferences and training schools. Pranav Sharma is an astronomer and science historian known for his work on the history of the Indian Space Program. He has curated the Space Museum at the B. M. Birla Science Centre (Hyderabad, India). He is in-charge of the history of Indo-French scientific partnership project supported by the Embassy of France in India. He is a national-award-winning science communicator and has extensively worked on the popularization of astronomy education in India.

Gravitational Lensing - Scott Dodelson 2017-06-08

Gravitational lensing is a consequence of general relativity, where the gravitational force due to a massive object bends the paths of light originating from distant objects lying behind it. Using very little general relativity and no higher level mathematics, this text presents the basics of gravitational lensing, focusing on the equations needed to understand the phenomena. It then applies them to a diverse set of topics, including multiply imaged objects, time delays, extrasolar planets, microlensing, cluster masses, galaxy shape measurements, cosmic shear, and lensing of the cosmic microwave background. This approach allows undergraduate students and others to get quickly up to speed on the basics and the important issues. The text will be especially relevant as large surveys such as LSST and Euclid begin to dominate the astronomical landscape. Designed for a one semester course, it is accessible to anyone with two years of undergraduate physics background.

Planetary Geoscience - Harry Y. McSween, Jr 2019-07-11

The ideal textbook resource to support a one-semester capstone course in planetary processes for geoscience undergraduates.

A Handbook of Statistical Analyses using R - Torsten Hothorn 2014-05-30

Like the best-selling first two editions, A Handbook of Statistical

Analyses using R, Third Edition provides an up-to-date guide to data analysis using the R system for statistical computing. The book explains how to conduct a range of statistical analyses, from simple inference to recursive partitioning to cluster analysis. New to the Third Edition **Planetary Atmospheres** - C. Sagan 2012-12-06

Proceedings of the IAU Symposium No. 40, held in Marfa, Texas, U.S.A., October 26-31, 1969

Methods of Detecting Exoplanets - Valerio Bozza 2016-04-12

In this book, renowned scientists describe the various techniques used to detect and characterize extrasolar planets, or exoplanets, with a view to unveiling the "tricks of the trade" of planet detection to a wider community. The radial velocity method, transit method, microlensing method, and direct imaging method are all clearly explained, drawing attention to their advantages and limitations and highlighting the complementary roles that they can play in improving the characterization of exoplanets' physical and orbital properties. By probing the planetary frequency at different distances and in different conditions, these techniques are helping astrophysicists to reconstruct the scenarios of planetary formation and to give robust scientific answers to questions regarding the frequency of potentially habitable worlds. Twenty years have passed since the discovery of a Jupiter-mass companion to a main sequence star other than the Sun, heralding the birth of extrasolar planetary research; this book fully conveys the exciting progress that has been achieved during the intervening period.

The Making of History's Greatest Star Map - Michael Perryman 2010-03-20

From prehistoric times, mankind has looked up at the night sky, and puzzled at the changing positions of the stars. How far away they are is a question that has confounded scientists for centuries. Over the last few hundred years, many scientific careers - and considerable resources - have been devoted to measuring their positions and motions with ever increasing accuracy. And in the last two decades of the 20th century, the European Space Agency developed and launched the Hipparcos satellite, around which this account revolves, to carry out these exacting measurements from space. What has prompted these remarkable developments? Why have governments been persuaded to fund them? What are scientists learning from astronomy's equivalent of the Human Genome Project? This book traces the subject's history, explains why such enormous efforts are considered worthwhile, and interweaves these with a first-hand insight into the Hipparcos project, and how big science is conducted at an international level. The involvement of amateur astronomers, and the Hipparcos contributions to climate research, 'death stars' passing close to the Sun, and the search for extra-solar planets and even intelligent life itself, are some of the surprising facets of this unusual space mission.

Exoplanets - Michael E. Summers 2017-03-14

The past few years have seen an incredible explosion in our knowledge of the universe. Since its 2009 launch, the Kepler satellite has discovered more than two thousand exoplanets, or planets outside our solar system. More exoplanets are being discovered all the time, and even more remarkable than the sheer number of exoplanets is their variety. In **Exoplanets**, astronomer Michael Summers and physicist James Trefil explore these remarkable recent discoveries: planets revolving around pulsars, planets made of diamond, planets that are mostly water, and numerous rogue planets wandering through the emptiness of space. This captivating book reveals the latest discoveries and argues that the incredible richness and complexity we are finding necessitates a change in our questions and mental paradigms. In short, we have to change how we think about the universe and our place in it, because it is stranger

and more interesting than we could have imagined.

An Introduction to Astrobiology - David A. Rothery 2018-03-01

How did life on Earth begin? How common is it elsewhere in the Universe? Written and edited by planetary scientists and astrobiologists, this undergraduate-level textbook provides an introduction to the origin and nature of life, the habitable environments in our solar system and the techniques most successfully used for discovery and characterisation of exoplanets. This third edition has been thoroughly revised to embrace the latest developments in this field. Updated topics include the origins of water on Earth, the exploration of habitable environments on Mars, Europa and Enceladus, and the burgeoning discoveries in exoplanetary systems. Ideal for introductory courses on the subject, the textbook is also well-suited for self-study. It highlights important concepts and techniques in boxed summaries, with questions and exercises throughout the text, with full solutions provided. Online resources, hosted at www.cambridge.org/features/planets, include selected figures from the book, self-assessment questions and sample tutor assignments.

Extrasolar Planets and Astrobiology - Caleb A. Scharf 2009

"This book: Provides extensive grounding in key issues of astrophysics, chemistry, biology and geophysics; over 150 images and illustrations; exercises for each chapter, ranging from straightforward calculation problems to more far-ranging research-oriented exercises; an online component for users that includes new exercises and a continually updated blog of late-breaking scientific news items, fully cross referenced with the book; and extensive bibliographies for each chapter."--BOOK JACKET.

The Smallest Lights in the Universe - Sara Seager 2020-08-18

LOS ANGELES TIMES BOOK PRIZE WINNER • An MIT astrophysicist reinvents herself in the wake of tragedy and discovers the power of connection on this planet, even as she searches our galaxy for another Earth, in this "bewitching" (Anthony Doerr, *The New York Times Book Review*) memoir. "Sara Seager's exploration of outer and inner space makes for a stunningly original memoir."—Abraham Verghese, author of *Cutting for Stone* Sara Seager has always been in love with the stars: so many lights in the sky, so much possibility. Now a pioneering planetary scientist, she searches for exoplanets—especially that distant, elusive world that sustains life. But with the unexpected death of Seager's husband, the purpose of her own life becomes hard for her to see. Suddenly, at forty, she is a widow and the single mother of two young boys. For the first time, she feels alone in the universe. As she struggles to navigate her life after loss, Seager takes solace in the alien beauty of exoplanets and the technical challenges of exploration. At the same time, she discovers earthbound connections that feel every bit as wondrous, when strangers and loved ones alike reach out to her across the space of her grief. Among them are the Widows of Concord, a group of women offering advice on everything from home maintenance to dating, and her beloved sons, Max and Alex. Most unexpected of all, there is another kind of one-in-a-billion match, not in the stars but here at home. Probing and invigoratingly honest, *The Smallest Lights in the Universe* is its own kind of light in the dark.

Handbook of Space Astronomy and Astrophysics - Martin V.

Zombeck 2006-11-09

Fully updated and including data from space-based observations, this Third Edition is a comprehensive compilation of the facts and figures relevant to astronomy and astrophysics. As well as a vast number of tables, graphs, diagrams and formulae it also includes a comprehensive index and bibliography, allowing readers to easily find the information they require. The book contains information covering a diverse range of topics in addition to astronomy and astrophysics, including atomic physics, nuclear physics, relativity, plasma physics, electromagnetism, mathematics, probability and statistics, and geophysics. This handbook contains the most frequently used information in modern astrophysics, and will be an essential reference for graduate students, researchers and professionals working in astronomy and the space sciences. A website with links to extensive supplementary information and databases can be found at www.cambridge.org/9780521782425.

Handbook of Exoplanets - Hans J. Deeg 2018

Handbook of Exoplanets - Hans J. Deeg 2018-01-29

This state-of-the-art reference work includes over 15 sections dealing with all aspects of exoplanets and exobiology research, including historic aspects, the Solar System as a template, objects at the planet-to-star transition, exoplanet detection and characterization with related instrumentation, technology and software tools, planet and planet-system statistics with recent and planned surveys, their atmosphere and

formation and evolution processes, habitability and exobiology implications, and outlooks for future exploration and science development, including visionary contributions. Each section has 10-20 contributions written by the top experts in their subject, including both senior researchers as well as young, smart researchers who represent the future of the discipline. All in all, this handbook comprehensively tackles one of the most challenging and dynamic fields of modern astronomy and astrophysics.

The Exoplanet Handbook - Michael Perryman 2018-08-30

A complete and in-depth review of exoplanet research, covering the discovery methods, physics and theoretical background.

Fundamental Planetary Science - Jack J. Lissauer 2019-07-04

A quantitative introduction to the Solar System and planetary systems science for advanced undergraduate students, this engaging textbook explains the wide variety of physical, chemical and geological processes that govern the motions and properties of planets. The authors provide an overview of our current knowledge and discuss some of the unanswered questions at the forefront of research in planetary science and astrobiology today. This updated edition contains the latest data, new references and planetary images and an extensively rewritten chapter on current research on exoplanets. The text concludes with an introduction to the fundamental properties of living organisms and the relationship that life has to its host planet. With more than 200 exercises to help students learn how to apply the concepts covered, this textbook is ideal for a one-semester or two-quarter course for undergraduate students.

An Introduction to Mechanics - Daniel Kleppner 2014

This second edition is ideal for classical mechanics courses for first- and second-year undergraduates with foundation skills in mathematics.

The Exoplanet Handbook - Michael Perryman 2018-08-31

With the discovery of planets beyond our solar system 25 years ago, exoplanet research has expanded dramatically, with new state-of-the-art ground-based and space-based missions dedicated to their discovery and characterisation. With more than 3,500 exoplanets now known, the complexity of the discovery techniques, observations and physical characterisation have grown exponentially. This Handbook ties all these avenues of research together across a broad range of exoplanet science. Planet formation, exoplanet interiors and atmospheres, and habitability are discussed, providing in-depth coverage of our knowledge to date. Comprehensively updated from the first edition, it includes instrumental and observational developments, in-depth treatment of the new Kepler mission results and hot Jupiter atmospheric studies, and major updates on models of exoplanet formation. With extensive references to the research literature and appendices covering all individual exoplanet discoveries, it is a valuable reference to this exciting field for both incoming and established researchers.

Introduction to Astronomical Photometry - Edwin Budding 2007-04-26

Review of astronomical photometry for graduate students, researchers and advanced amateurs in practical and observational astronomy.

The Trans-Neptunian Solar System - Dina K. Prialnik 2019-11-28

The Trans-Neptunian Solar System is a timely reference highlighting the state-of-the-art in current knowledge on the outer solar system. It not only explores the individual objects being discovered there, but also their relationships with other Solar System objects and their roles in the formation and evolution of the Solar System and other planets.

Integrating important findings from recent missions, such as New Horizons and Rosetta, the book covers the physical properties of the bodies in the Trans-Neptunian Region, including Pluto and other large members of the Kuiper Belt, as well as dynamical indicators for Planet 9 and related objects and future prospects. Offering a complete look at exploration and findings in the Kuiper Belt and the rest of the outer solar system beyond Neptune, this book is an important resource to bring planetary scientists, space scientists and astrophysicists up-to-date on the latest research and current understandings. Provides the most up-to-date information on the exploration of the Trans-Neptunian Solar System and what it means for the future of outer solar system research. Contains clear sections that provide comprehensive coverage on the most important facets of the outer Solar System. Includes four-color images and data from important missions, including New Horizons and Rosetta. Concludes with suggestions and insights on the future of research on Trans-Neptunian objects.

Principles of Planetary Climate - Raymond T. Pierrehumbert 2010-12-02

This book introduces the reader to all the basic physical building blocks of climate needed to understand the present and past climate of Earth, the climates of Solar System planets, and the climates of extrasolar

planets. These building blocks include thermodynamics, infrared radiative transfer, scattering, surface heat transfer and various processes governing the evolution of atmospheric composition. Nearly four hundred problems are supplied to help consolidate the reader's understanding, and to lead the reader towards original research on planetary climate. This textbook is invaluable for advanced undergraduate or beginning graduate students in atmospheric science, Earth and planetary science, astrobiology, and physics. It also provides a superb reference text for researchers in these subjects, and is very suitable for academic researchers trained in physics or chemistry who wish to rapidly gain enough background to participate in the excitement of the new research opportunities opening in planetary climate.

Exoplanets - Seymour Simon 2018-03-27

Award-winning science writer Seymour Simon explores the farthest reaches of space in the brand-new *Exoplanets!* This nonfiction picture book is an excellent choice to share during homeschooling, in particular for children ages 6 to 8. It's a fun way to learn to read and as a supplement for activity books for children. There are thousands of exoplanets scattered throughout the Milky Way galaxy, and scientists are on a constant quest to find one just like Earth. In *Exoplanets*, Simon examines the planets outside of our solar system and uncovers what makes them habitable, our efforts to discover new life, and more. With clear, simple text and stunning full-color photographs, readers will explore the farthest reaches of space and explore the answer to the question: do aliens exist? This book includes an author's note, a glossary, an index, and supports the Common Core State Standards.

Life Beyond Earth - Athena Coustenis 2013-09-12

An engaging account of our quest for habitable environments, recounting fascinating recent discoveries and providing insight into future space missions.

Foundations of Astrophysics - Barbara Ryden 2020-08-27

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

Protoplanetary Dust - Dániel Apai 2010-01-21

The first comprehensive overview of planet formation for students and researchers in astronomy, cosmochemistry, laboratory astrophysics and planetary sciences.

Solar System - Thomas Hockey 2021-08-20

Combining the latest astronomical results with a historical perspective, *Solar System: Between Fire and Ice* takes you on a fabulous tour of our intriguing Solar System. Not content with a conventional discourse restricted to the major and minor bodies, astronomers Hockey, Bartlett, and Boice venture beyond the limits of our system to look at exoplanets and to consider future trends in space exploration and tourism. They discuss not only what scientists know about planets, asteroids, and comets but how the discoveries were made. With extensive teaching experience, their accessible prose clearly explains essential physical concepts. Lavishly illustrated as well as carefully researched, *Solar System: Between Fire and Ice* delights the eyes as well as feeding the mind. Detailed appendices provide additional technical data and resources for your own on-line voyage of discovery. Whether you are an educated layperson, student, teacher, amateur astronomer, or merely curious, you will come away having learned the most up-to-date knowledge and enjoyed the process. The authors bring a unique perspective to this subject, combining their years of experience in research, teaching, and history of planetary science. Prof. Thomas Hockey is a professor of astronomy, specializing in planetary science and the history of science. Dr. Jennifer Bartlett is an astronomer with a forte in dynamical motions of asteroids with liberal arts teaching experience. Dr. Daniel Boice is an active research astronomer in planetary science, especially comets, with considerable teaching experience. "In the 1980s and 90s the Viking and Voyager missions provided droves of exciting information, generating a new level of public interest. Textbooks were rewritten and scientists worked to understand the data during mission poor period that followed. In recent times, however, we have entered a new era. There has been a multinational effort to expand our knowledge of the Solar System. Data from these missions has been freely shared and has again raised the level of public interest. Within this era of renewed interest, it is appropriate, as is done in this book, to provide the public with an effort to present an integrated view of our Solar System and questions that the discovery of extrasolar planets have raised with regard to the Solar System as a whole." Professor Reta Beebe, recipient of NASA's Exceptional Public Service Medal "I understand this book to be aimed at a general audience, but I can also see its use as a text in astronomy classes, especially in a community school or situations where

students typically resist reading the textbook. The writing is light and entertaining, and will engage students, yet it thoroughly covers all the basic concepts of a typical Astro 101 class." - Dr. Katy Garmany, winner of the American Astronomical Society's Annie J. Cannon Award.

Exoplanets - Sara Seager 2010

For the first time in human history, we know for certain the existence of planets around other stars. Now the fastest-growing field in space science, the time is right for this fundamental source book on the topic which will lay the foundation for its continued growth. *Exoplanets* serves as both an introduction for the non-specialist and a foundation for the techniques and equations used in exoplanet observation by those dedicated to the field.

An Introduction to the Solar System - David A. Rothery 2018-01-11

Updated third edition introduces undergraduates to the Solar System's bodies, the processes upon and within them, and their origins and evolution.

Transiting Exoplanets - Carole A. Haswell 2010-07-29

The methods used in the detection and characterisation of exoplanets are presented in this unique textbook for advanced undergraduates.

An Astrobiology Strategy for the Search for Life in the Universe -

National Academies of Sciences, Engineering, and Medicine 2019-04-20

Astrobiology is the study of the origin, evolution, distribution, and future of life in the universe. It is an inherently interdisciplinary field that encompasses astronomy, biology, geology, heliophysics, and planetary science, including complementary laboratory activities and field studies conducted in a wide range of terrestrial environments. Combining inherent scientific interest and public appeal, the search for life in the solar system and beyond provides a scientific rationale for many current and future activities carried out by the National Aeronautics and Science Administration (NASA) and other national and international agencies and organizations. Requested by NASA, this study offers a science strategy for astrobiology that outlines key scientific questions, identifies the most promising research in the field, and indicates the extent to which the mission priorities in existing decadal surveys address the search for life's origin, evolution, distribution, and future in the universe. This report makes recommendations for advancing the research, obtaining the measurements, and realizing NASA's goal to search for signs of life in the universe.

How Do You Find an Exoplanet? - John Asher Johnson 2015-12-29

An authoritative primer on the cutting-edge science of planet hunting. Alien worlds have long been a staple of science fiction. But today, thanks to modern astronomical instrumentation and the achievements of many enterprising observational astronomers, the existence of planets outside our solar system—also known as exoplanets—has moved into the realm of science fact. With planet hunters finding ever smaller, more Earth-like worlds, our understanding of the cosmos is forever changed, yet the question of how astronomers make these discoveries often goes unanswered. *How Do You Find an Exoplanet?* is an authoritative primer on the four key techniques that today's planet hunters use to detect the feeble signals of planets orbiting distant stars. John Johnson provides you with an insider's perspective on this exciting cutting-edge science, showing how astronomers detect the wobble of stars caused by the gravitational tug of an orbiting planet, the slight diminution of light caused by a planet eclipsing its star, and the bending of space-time by stars and their planets, and how astronomers even directly take pictures of planets next to their bright central stars. Accessible to anyone with a basic foundation in college-level physics, *How Do You Find an Exoplanet?* sheds new light on the prospect of finding life outside our solar system, how surprising new observations suggest that we may not fully understand how planets form, and much more.

The Monthly Sky Guide - Ian Ridpath 2012-12-10

The ninth edition of Ian Ridpath and Wil Tirion's famous guide to the night sky is updated with planet positions and forthcoming eclipses to the end of the year 2017. It contains twelve chapters describing the main sights visible in each month of the year, providing an easy-to-use companion for anyone wanting to identify prominent stars, constellations, star clusters, nebulae and galaxies; to watch out for meteor showers ('shooting stars'); or to follow the movements of the four brightest planets, Venus, Mars, Jupiter and Saturn. Most of the sights described are visible to the naked eye and all are within reach of binoculars or a small telescope. This revised and updated edition includes sections on observing the Moon and the planets, with a comprehensive Moon map. *The Monthly Sky Guide* offers a clear and simple introduction to the skies of the northern hemisphere for beginners of all ages.

Exoplanet Science Strategy - National Academies of Sciences, Engineering, and Medicine 2019-01-17

The past decade has delivered remarkable discoveries in the study of exoplanets. Hand-in-hand with these advances, a theoretical understanding of the myriad of processes that dictate the formation and evolution of planets has matured, spurred on by the avalanche of unexpected discoveries. Appreciation of the factors that make a planet hospitable to life has grown in sophistication, as has understanding of the context for biosignatures, the remotely detectable aspects of a planet's atmosphere or surface that reveal the presence of life. Exoplanet Science Strategy highlights strategic priorities for large, coordinated efforts that will support the scientific goals of the broad exoplanet science community. This report outlines a strategic plan that will answer lingering questions through a combination of large, ambitious community-supported efforts and support for diverse, creative, community-driven investigator research.

Exoplanet Atmospheres - Sara Seager 2010-08-22

Describes the basic physical processes, including radiative transfer, molecular absorption, and chemical processes, common to all planetary atmospheres as well as the transit, eclipse, and thermal phase variation observations that are unique to exoplanets.

Handbook of Astrobiology - Vera M. Kolb 2018-12-07

Choice Recommended Title, August 2019 Read an exclusive interview with Professor Vera Kolb here. Astrobiology is the study of the origin, evolution, distribution, and future of life on Earth. This exciting and significant field of research also investigates the potential existence and search for extra-terrestrial life in the Solar System and beyond. This is the first handbook in this burgeoning and interdisciplinary field. Edited by Vera Kolb, a highly respected astrobiologist, this comprehensive resource captures the history and current state of the field. Rich in information and easy to use, it assumes basic knowledge and provides answers to questions from practitioners and specialists in the field, as well as providing key references for further study. Features: Fills an important gap in the market, providing a comprehensive overview of the field Edited by an authority in the subject, with chapters written by experts in the many diverse areas that comprise astrobiology Contains in-depth and broad coverage of an exciting field that will only grow in importance in the decades ahead

Envisioning Exoplanets - Michael Carroll 2020-10-13

Come along for the captivating hunt for planets like our own Envisioning Exoplanets traces the journey of astronomers and researchers on their quest to explore the universe for a planet like Earth. Exoplanets--worlds beyond our solar system--were once dismissed as science fiction. But now, with more than 4,000 confirmed exoplanets, countless possibilities exist for what remains to be uncovered in the universe. This book follows the exhilarating progression of exoplanet research from its earliest stages operating on the fringes of scientific research to the newest developments of renowned agencies around the world searching for planets capable of hosting life. Featuring provocative questions about the

universe and more than 200 remarkable illustrations from Michael Carroll, Ron Miller, and other key members of the International Association of Astronomical Artists, Envisioning Exoplanets is an intergalactic visual voyage.

The Science Writers' Handbook - Writers of SciLance 2013-04-30

Popular science writing has exploded in the past decade, both in print and online. Who better to guide writers striving to succeed in the profession than a group of award-winning independent journalists with a combined total of 225 years of experience? From Thomas Hayden's chapter on the perfect pitch to Emma Maris's advice on book proposals to Mark Schrope's essential information on contracts, the members of SciLance give writers of all experience levels the practical information they need to succeed, as either a staffer or a freelancer. Going beyond craft, The Science Writer's Handbook also tackles issues such as creating productive office space, balancing work and family, and finding lasting career satisfaction. It is the ultimate guide for anyone looking to prosper as a science writer in the new era of publishing.

Astronomy: A Physical Perspective - Marc L. Kutner 2003-07-31

This fully revised and updated text is a comprehensive introduction to astronomical objects and phenomena. By applying some basic physical principles to a variety of situations, students will learn how to relate everyday physics to the astronomical world. Starting with the simplest objects, the text contains explanations of how and why astronomical phenomena occur, and how astronomers collect and interpret information about stars, galaxies and the solar system. The text looks at the properties of stars, star formation and evolution; neutron stars and black holes; the nature of galaxies; and the structure of the universe. It examines the past, present and future states of the universe; and final chapters use the concepts that have been developed to study the solar system, its formation; the possibility of finding other planetary systems; and the search for extraterrestrial life. This comprehensive text contains useful equations, chapter summaries, worked examples and end-of-chapter problem sets.

Fundamentals of Astrophysics - Stan Owocki 2021-06-03

This concise textbook, designed specifically for a one-semester course in astrophysics, introduces astrophysical concepts to undergraduate science and engineering students with a background in college-level, calculus-based physics. The text is organized into five parts covering: stellar properties; stellar structure and evolution; the interstellar medium and star/planet formation; the Milky Way and other galaxies; and cosmology. Structured around short easily digestible chapters, instructors have flexibility to adjust their course's emphasis as it suits them. Exposition drawn from the author's decade of teaching his course guides students toward a basic but quantitative understanding, with 'quick questions' to spur practice in basic computations, together with more challenging multi-part exercises at the end of each chapter. Advanced concepts like the quantum nature of energy and radiation are developed as needed. The text's approach and level bridge the wide gap between introductory astronomy texts for non-science majors and advanced undergraduate texts for astrophysics majors.