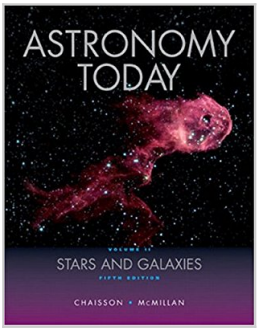

Astronomy Today, Volume 2: Stars and Galaxies (5th Edition)

By Eric Chaisson, Steve McMillan

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For one- or two-semester introductory courses in astronomy. Chaisson/McMillan is a trusted text that offers the most complete and innovative learning package available for introductory astronomy. The goal of the Fifth Edition is to focus on the process of discovery and to better convey how science is done. Particular attention was given to clearly and concisely presenting scientific terms to the non-science student. Volume 2 includes Chapters 1-5 plus 16-28.

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Astronomy Today, Volume 2: Stars and Galaxies (5th Edition) By Eric Chaisson, Steve McMillan Bibliography

- Sales Rank: #2677101 in Books
- Published on: 2004-07-28
- Original language: English
- Number of items: 1
- Dimensions: 10.82" h x .81" w x 8.48" l,
- Binding: Paperback
- 592 pages

Editorial Review

From the Back Cover

Astronomy Today 4/e (ISBN 0-13-091542-4) is the more comprehensive text by this: proven team of authors. This twenty-eight chapter text begins with the foundations of the history of science and physics as they relate to astronomy (Part One), then proceeds with an "Earth-out" organization for coverage of the solar system (Part Two), stars and stellar evolution (Part Three), and galaxies and cosmology (Part Four). New with the fourth edition, the book is now available in two paperback splits:

Astronomy Today 4/e: The Solar System (ISBN 0-13-093560-3) covers Part One on foundations (Chapters 1-$); Part Two on the solar system (Chapters 6-15); the Sun chapter (Chapter 16); and the final chapter on life in the universe (Chapter 28).

Astronomy Today 4/e: Stars and Galaxies (ISBN 0-13-093571-9) includes Part One on foundations (Chapters 1-S); Part Three on stars and stellar evolution (Chapters 16-22); and Part Four on galaxies and cosmology (Chapters 23-28).

Astronomy: A Beginner's Guide to the Universe 4/e (ISBN 0-13-100727-0) is the authors' briefer text. It covers the same scope of material in the same order as *Astronomy Today 4/e*, but with less detail and in fewer chapters (eighteen instead of twenty-eight) and fewer pages.

About the Author

Eric Chaisson. Eric holds a doctorate in astrophysics from Harvard University, where he spent ten years on the Faculty of Arts and Sciences. For five years, Eric was a Senior Scientist and Director of Educational Programs at the Space Telescope Science Institute and Adjunct Professor of Physics at Johns Hopkins University. He then joined Tufts University, where he is now Professor of Physics, Professor of Education, and Director of the Wright Center for Innovative Science Education. He has written nine books on astronomy, which have received such literary awards as the Phi Beta Kappa Prize, two American Institute of Physics Awards, and Harvard's Smith-Weld Prize for Literary Merit. He has published more than 100 scientific papers in professional journals, and has also received Harvard's Bok Prize for original contributions to astrophysics.

Steve McMillan. Steve holds a bachelor's and master's degree in Mathematics from Cambridge University and a doctorate in Astronomy from Harvard University. He held post-doctoral positions at the University of Illinois and Northwestern University, where he continued his research in theoretical astrophysics, star clusters, and numerical modeling. Steve is currently Distinguished Professor of Physics at Drexel University and a frequent visiting researcher at Princeton's Institute for Advanced Study and the University of Tokyo. He has published more than 50 scientific papers in professional journals.

Astronomy is a science that thrives on new discoveries. Fueled by new technologies and novel theoretical insights, the study of the cosmos continues to change our understanding of the universe. We are pleased to

have the opportunity to present in this book a representative sample of the known facts, evolving ideas, and frontier discoveries in astronomy today.

Astronomy Today has been written for students who have taken no previous college science courses and who will likely not major in physics or astronomy. It is intended for use in a one- or two-semester, non-technical astronomy course. We present a broad view of astronomy, straightforwardly descriptive and without complex mathematics. The absence of sophisticated mathematics, however, in no way prevents discussion of important concepts. Rather, we rely on qualitative reasoning as well as analogies with objects and phenomena familiar to the student to explain the complexities of the subject without oversimplification. We have tried to communicate the excitement we feel about astronomy and to awaken students to the marvelous universe around us.

Many of you—teachers and students alike—have given us helpful feedback and constructive criticism on earlier editions. From these, we have learned to communicate better both the fundamentals and the excitement of astronomy. Many improvements inspired by your comments have been incorporated into this new edition.

Focus of the Fifth Edition

From the first edition, we have tried to meet the challenge of writing a book that is both accurate and approachable. To the student, astronomy sometimes seems like a long list of unfamiliar terms to be memorized and repeated. You will indeed be introduced to many new terms and concepts in this course, but we hope you will also learn and remember how science is done, how the universe works, and how things are connected. In the fifth edition, we have taken particular care to try to show how astronomers know what they know, and to highlight both the scientific principles underlying their work and the process used in discovery.

New and Revised Material

Astronomy is a rapidly evolving field, and the three years since the publication of the fourth edition of *Astronomy Today* have seen many new discoveries covering the entire spectrum of astronomical research. Almost every chapter in the fifth edition has been substantially updated with new information. Several chapters have also seen significant internal reorganization in order to streamline the overall presentation, strengthen our focus on the process of science, and reflect new understanding and emphases in contemporary astronomy. Among the many changes are:

- Expanded coverage throughout of the scientific method and how astronomers "know what they know."
- New part-opening essays to establish historical context for each section of the text.
- Updated material in Chapter 5 on adaptive optics, Keck, Subaru, Gemini, and the VLT; additional material on infrared and optical interferometry; new coverage of the *Chandra* and *Spitzer* missions.
- An introduction to solar-system formation in Chapter 6, to better frame the discussion of planetary properties that follows.
- New material in Chapter 7 on the Ozone Hole and Global Warming.
- Expanded coverage in Chapters 6 and 10 of the most recent missions to Mars.
- Updates in Chapter 10 on Martian oppositions, gullies, oceans, and ice.
- Final update on the *Galileo/GEM* mission in Chapter 11.
- Coverage of *Stardust*, new Kuiper belt objects, and Pluto's status as a planet in Chapter 14.
- Updated discussion of solar system formation in Chapter 15; expanded coverage of competing theories, planet migration, planetesimal ejection, plutinos, and the angular momentum problem.
- New sections in Chapter 15 on extrasolar planets, with updated material on the latest observations and their implications for the condensation theory of solar system formation.

- Reorganization of presentation in Chapter 16, and an update on neutrino oscillations.
- New information on star names and revised coverage of key concepts in Chapter 17.
- Consistent and up-to-date stellar properties in Examples throughout Part 3.
- Updated information in Chapter 19 on brown dwarfs; new material on competitive accretion and collisions in star formation.
- New coverage in Chapter 20 of the end-states of stellar and binary evolution; more examples of familiar stars in specific evolutionary stages.
- Updated coverage of pulsars and gamma-ray bursts in Chapter 22.
- Reorganized and expanded material in Chapter 22 on Special and General Relativity and their historical development.
- Latest results in Chapter 23 on Sgr A* and the Galaxy's central black hole.
- Reorganization of Chapters 24 and 25, updating all coverage, emphasizing the connection between normal and a active galaxies, and expanding the discussion of black holes in galactic nuclei.
- Updated discussion in Chapter 24 of the measurement of Hubble's constant.
- Expanded and substantially revised coverage in Chapter 25 of galaxy collisions, hierarchical merging and galaxy evolution; revised discussion of active galaxy evolution.
- Consistent distances and times in Chapters 24-27, assuming a flat universe with dark matter and dark energy as determined by the WMAP satellite; incorporation of results from recent sky surveys.
- Extensive revision of Chapters 26 and 27 to include the most recent observations of cosmic acceleration and discussion of "dark energy."
- Revised discussions of the cosmological constant and the age of the universe; results from the CBI and 97AMP experiments suggesting a flat universe.
- Updated coverage of Europa, Mars, interstellar organic molecules, extrasolar planets, and SETI in Chapter 28.
- Expanded Glossary which now includes many additional terms used in the text, but not identified explicitly as keywords.
- New detailed Seasonal Star Charts, courtesy of *Astronomy* Magazine.

Compound Art. It is rare that a single image, be it a photograph or an artist's conception, can capture all aspects of a complex subject. Wherever possible, multiple-part figures are used in an attempt to convey the greatest amount of information in the most vivid way:

- Visible images are often presented along with their counterparts captured at other wavelengths.
- Interpretive line drawings are often superimposed on or juxtaposed with real astronomical photographs, helping students to really "see" what the photographs reveal.
- Breakouts—often multiple ones—are used to zoom in from widefield shots to closeups so that detailed images can be understood in their larger context.

The Illustration Program

Visualization plays an important role in both the teaching and the practice of astronomy, and we continue to place strong emphasis on this aspect of our book. We have tried to combine aesthetic beauty with scientific accuracy in the artist's conceptions that adorn the text, and we have sought to present the best and latest imagery of a wide range of cosmic objects. Each illustration has been carefully crafted to enhance student learning; each is pedagogically sound and tied tightly to the nearby discussion of important scientific facts and ideas.

Full Spectrum Coverage and Spectrum Icons. Astronomers exploit the full range of the electromagnetic spectrum to gather information about the cosmos. Throughout this book, images taken at radio, infrared, ultraviolet, X-ray, or gamma-ray wavelengths are used to supplement visible-light images. As it is sometimes

difficult (even for a professional) to tell at a glance which images are visible-light photographs and which are false-color images created with other wavelengths, each photo in the text is provided with an icon that identifies the wavelength of electromagnetic radiation used to capture the image and reinforces the connection between wavelength and radiation properties.

Explanatory Captions. Students often review a chapter by "looking at the pictures." For this reason, the captions in this book are often a bit longer and more detailed than those in other texts.

H-R Diagrams and Acetate Overlays. All of the book's H-R diagrams are drawn in a uniform format, using real data. In addition, a unique set of transparent acetate overlays dramatically demonstrates to students how the H-R diagram helps us to organize our information about the stars and track their evolutionary histories.

Other Pedagogical Features

As with many other parts of our text, instructors have helped guide us toward what is most helpful for effective student learning. With their assistance, we have revised both our in-chapter and end-of-chapter pedagogical apparatus to increase its utility to students.

Learning Goals. Studies indicate that beginning students have trouble prioritizing textual material. For this reason, a few (typically 5 or 6) well-defined Learning Goals are provided at the start of each chapter. These help students structure their reading of the chapter and then test their mastery of key facts and concepts. The Goals are numbered and cross-referenced to key sections in the body of each chapter. This in-text highlighting of the most important aspects of the chapter also helps students review. The Goals are organized and phrased in such a way as to make them objectively testable, affording students a means of gauging their own progress.

Concept Links. In astronomy, as in many scientific disciplines, almost every topic seems to have some bearing on almost every other. In particular, the connection between the astronomical material and the physical principles set forth early in the text is crucial. Practically everything in Chapters 6-28 of this text rests on the foundation laid in the first fiv...

Users Review

From reader reviews:

William Grimm:

Reading a e-book can be one of a lot of activity that everyone in the world likes. Do you like reading book consequently. There are a lot of reasons why people love it. First reading a publication will give you a lot of new facts. When you read a guide you will get new information mainly because book is one of numerous ways to share the information or their idea. Second, looking at a book will make you more imaginative. When you examining a book especially fictional works book the author will bring you to imagine the story how the characters do it anything. Third, it is possible to share your knowledge to other folks. When you read this Astronomy Today, Volume 2: Stars and Galaxies (5th Edition), you may tells your family, friends and also soon about yours publication. Your knowledge can inspire the others, make them reading a guide.

Bernard Walker:

People live in this new morning of lifestyle always try to and must have the free time or they will get lot of

stress from both way of life and work. So , whenever we ask do people have extra time, we will say absolutely without a doubt. People is human not just a robot. Then we consult again, what kind of activity are you experiencing when the spare time coming to a person of course your answer will probably unlimited right. Then do you try this one, reading books. It can be your alternative inside spending your spare time, the particular book you have read will be Astronomy Today, Volume 2: Stars and Galaxies (5th Edition).

Myrtle McDonald:

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