



# Astrophysics for Physicists

*By Arnab Rai Choudhuri*

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

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## **Editorial Review**

### **Review**

"At last! An astrophysics textbook for physics majors that does not shy away from fluids, plasmas, and general relativity. With transparent physical reasoning and beautifully clear writing throughout, this book should become the standard for advanced undergraduate courses, and recommended reading for beginning graduate students. An outstanding complement to Choudhuri's previous masterwork, *The Physics of Fluids and Plasmas*."

Professor Mitchell C. Begelman, University of Colorado, and author of *Gravity's Fatal Attraction: Black Holes in the Universe*

"An outstanding textbook. Choudhuri provides a lucid treatment of key physical principles underlying various branches of modern astrophysics. This book should be required reading for any serious student or practitioner of physics. Indeed, many insightful discussions in the book would be useful even to professional astrophysicists."

Professor Ramesh Narayan, Harvard University

"This book is distinguished by a winning combination of breadth and depth. It provides an exposition of the main topics of modern astrophysics, including subjects that have not been traditionally covered in textbooks of this kind (such as stellar dynamics, plasma astrophysics, physical cosmology and general relativity). Each of the main topics is presented in sufficient detail - emphasizing the basic physics and including relevant exercises - for the reader to gain a basic understanding and likely also an appetite for further study (for which ample references and guidance are given). A similar approach was adopted in Choudhuri's previous textbook - *The Physics of Fluids and Plasmas* - which has been very popular with my students."

Professor Arie H. König, University of Chicago

"In my opinion this is an excellent book that could be used in a core course to physicists ... I feel that the topics covered will make an exciting course, since the book is set at the right level, with emphasis on basic derivations, physical explanations, and experimental data."

Professor Rajat Bhaduri, Physics in Canada

"... a valuable acquisition for academic libraries and all serious physics students. The exposition is lucid, and the book explores the fundamental material in sufficient detail, making it useful as a self-contained work that will provide undergraduates with a good understanding of the central topics in astrophysics. Highly recommended."

Choice

"... a very thoughtfully prepared textbook that appears to come very close to its ambitious goal of covering the 'whole of astrophysics' for physicists."

Peter W. Milonni, *Contemporary Physics*

"As one would anticipate from the author's background in solar magnetohydrodynamics, *Astrophysics for Physicists* contains good passages on fluids, plasmas, magnetic fields, and general relativity, and it provides strong mathematically based discussions of many of the important areas of astrophysics. It stresses theory, but also discusses several experimental and observational topics ... To Choudhuri's credit, the book is overall fairly up to date in most areas ... [It] represents a useful learning framework and theoretical reference tool for the newcomer and a quick reference for those working in related areas. Overall I rate it as a solid up-to-date

text."

Professor George Smoot, Nobel laureate, Physics Today

#### About the Author

Arnab Rai Choudhuri is a Professor of Physics at the Indian Institute of Science. One of the world's leading scientists in the field of solar magnetohydrodynamics, he is author of *The Physics of Fluids and Plasmas* (Cambridge University Press, 1998).

### **Users Review**

#### **From reader reviews:**

##### **Lois Yale:**

Often the book *Astrophysics for Physicists* has a lot of knowledge on it. So when you read this book you can get a lot of help. The book was written by the very famous author. The writer makes some research prior to write this book. This book very easy to read you can obtain the point easily after perusing this book.

##### **Michael Mazzariello:**

In this particular era which is the greater man or woman or who has ability to do something more are more valuable than other. Do you want to become among it? It is just simple way to have that. What you have to do is just spending your time not much but quite enough to get a look at some books. One of many books in the top record in your reading list is definitely *Astrophysics for Physicists*. This book that is certainly qualified as *The Hungry Incline* can get you closer in becoming precious person. By looking way up and review this publication you can get many advantages.

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