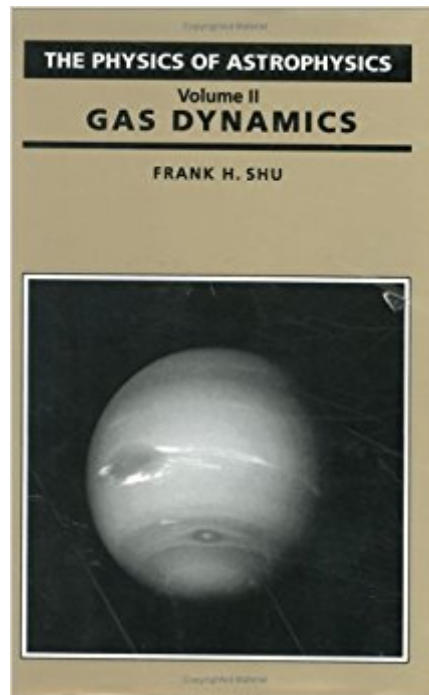




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# Gas Dynamics (The Physics Of Astrophysics)



## Synopsis

This two-volume text is for new graduates on astronomy courses who need to get to grips with the physics involved in the subject. Four problem sets, averaging three problems per set, accompany each volume. The problems expand on the material covered in the texts and represent the level of calculational skill needed to write scientific papers in contemporary astrophysics. Volume I.

"Radiation" deals with the emission, absorption, and scattering of radiation by matter, radiative transfer, statistical physics, classical electrodynamics, and atomic and molecular structure. Volume II. "Gas Dynamics", is a self-contained textbook. It can be used as the text for a one semester course on the interactions of matter and radiation and electromagnetic fields of macroscopic scale in both the strongly collisional and collisionless regimes. It covers single-fluid shocks, and fronts; magnetohydrodynamics and plasma physics, their applications to self-gravitating spherical masses, accretion disks, spiral density waves, star formation, and dynamo theory. Over 200 photos, line drawings, and tables amplify the major points of the text.

## Book Information

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## Customer Reviews

Frank Shu is a Professor of Astronomy at the University of California, Berkeley. He received his PhD from Harvard University in 1968. Shu has written a number of expository articles for the lay public, and is the author of a best-selling introductory textbook in astronomy and astrophysics, *The Physical Universe*. He is a member of the U.S. National Academy of Sciences and Academia

Sinica.

Delivery is fast. The book is packaged nicely and is as expected. Very satisfied.

I was very dissatisfied to see a rating on this book of only two little stars, so I've decided to express my opinion as well, for I believe this book deserves a much better qualification. The book gives an excellent overview in many of the most important aspects of the theory of gas dynamics as applied to astrophysics. The clarity with which the author expresses the underlying physical phenomena is amazing. You even find it "easy" the way in which fluid equations are deduced by taking the different momenta of the statistical distribution function of the fluid, or why a supersonic flow governed by a hyperbolic PDE is converted to a subsonic one governed by an elliptic PDE after passage through a shock wave in the stationary case. It's true that it doesn't go into too much detail; if it would, the book should have been at least of the size of the "Gravitation" (by Misner, Thorne and Wheeler) and it wouldn't easily fit anywhere. However, the references to excellent books on all the touched subjects have been meticulously selected and should be consulted by anyone interested in expanding the knowledge on any specific topic of the ones covered by the book. And for your curiosity, if you want to know whether Mr. Shu is a competent astrophysicist or not, just go to the Astronomical Data Service online and search for his name. You'll discover quite a big number of high quality papers on different subjects...

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