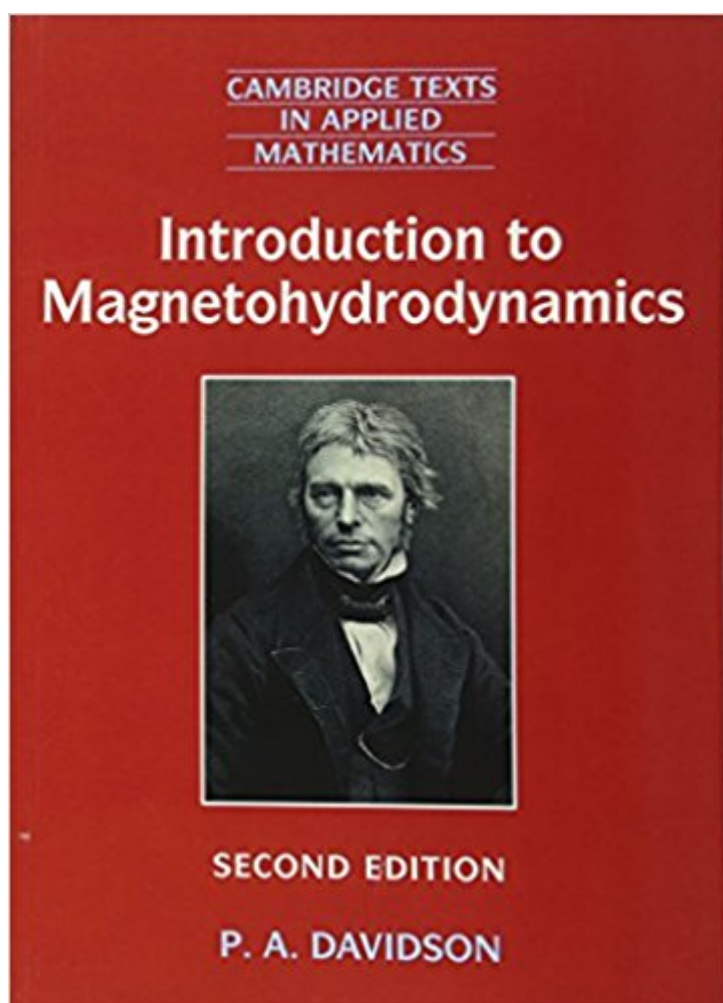


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# Introduction To Magnetohydrodynamics (Cambridge Texts In Applied Mathematics)



## Synopsis

Magnetohydrodynamics (MHD) plays a crucial role in astrophysics, planetary magnetism, engineering and controlled nuclear fusion. This comprehensive textbook emphasizes physical ideas, rather than mathematical detail, making it accessible to a broad audience. Starting from elementary chapters on fluid mechanics and electromagnetism, it takes the reader all the way through to the latest ideas in more advanced topics, including planetary dynamos, stellar magnetism, fusion plasmas and engineering applications. With the new edition, readers will benefit from additional material on MHD instabilities, planetary dynamos and applications in astrophysics, as well as a whole new chapter on fusion plasma MHD. The development of the material from first principles and its pedagogical style makes this an ideal companion for both undergraduate students and postgraduate students in physics, applied mathematics and engineering. Elementary knowledge of vector calculus is the only prerequisite.

## Book Information

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Review of previous edition: "... an excellent book, which provides a refreshing introduction and a welcome addition to the MHD literature." A. M. Soward, *Journal of Fluid Mechanics*  
Review of previous edition: "The language of this book is simple, vivid, yet fully scientific. It is a real pleasure to read ... worth recommending, not only to students, but also to everyone who is interested in MHD, particularly to theoreticians who, as a rule, know almost nothing about metallurgical applications of

MHD." Applied Mechanics Review Review of previous edition: "Like other texts in the series, the typography is easy on the eyes and the price easy on the purse. All in all, a wonderful introduction to the subject and more!" Stanley A. Berger, Physics Today Review of previous edition: "... a thorough introduction to conducting fluid mechanics ... an excellent and informative book that can be well recommended." S. W. H. Cowley, Contemporary Physics Review of previous edition: "The author writes lucidly and maintains the reader's interest in several ways: he formulates arguments provocatively, sometimes as paradoxes; he provides apt quotations; he points to exciting applications; and he enlivens his text with historical snippets ... It is written with love, and in a completely consistent style." Paul H. Roberts, SIAM Review Review of previous edition: "The book is unique in bringing together a number of diverse topics ... [It] makes for rewarding reading, and I recommend it to all students of MHD, no matter what their persuasion. It would be an excellent textbook for students with interest in the engineering applications, but also will serve as a perfect complementary text for an introductory plasma MHD course." Elena V. Belova, American Journal of Physics

A comprehensive textbook which prioritises physical ideas over mathematical detail. This new edition offers additional coverage of planetary dynamos, astrophysical applications and fusion plasma magnetohydrodynamics. An ideal companion for both undergraduates and postgraduates in physics, applied mathematics or engineering.

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