



# Modern Physics, Second Edition: for Scientists and Engineers

By John Morrison

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The second edition of *Modern Physics for Scientists and Engineers* is intended for a first course in modern physics. Beginning with a brief and focused account of the historical events leading to the formulation of modern quantum theory, later chapters delve into the underlying physics. Streamlined content, chapters on semiconductors, Dirac equation and quantum field theory, as well as a robust pedagogy and ancillary package, including an accompanying website with computer applets, assist students in learning the essential material. The applets provide a realistic description of the energy levels and wave functions of electrons in atoms and crystals. The Hartree-Fock and ABINIT applets are valuable tools for studying the properties of atoms and semiconductors.

- Develops modern quantum mechanical ideas systematically and uses these ideas consistently throughout the book
- Carefully considers fundamental subjects such as transition probabilities, crystal structure, reciprocal lattices, and Bloch theorem which are fundamental to any treatment of lasers and semiconductor devices
- Clarifies each important concept through the use of a simple example and often an illustration
- Features expanded exercises and problems at the end of each chapter
- Offers multiple appendices to provide quick-reference for students

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## **Editorial Review**

### About the Author

John Morrison received a BS degree in Physics from University of Santa

Clara in California. During his undergraduate years, he majored in English,

Philosophy, and Physics and served as the editor of the campus literary magazine,

the Owl. Enrolling at Johns Hopkins University in Baltimore, Maryland,

he received a PhD degree in theoretical Physics and moved on to postdoctoral

research at Argonne National Laboratory where he was a member of the Heavy

Atom Group.

He then went to Sweden where he received a grant from the Swedish Research

Council to build up a research group in theoretical atomic physics at

Chalmers Technical University in Goteborg, Sweden. Working together with

Ingvar Lindgren, he taught a graduate level-course in theoretical atomic physics

for a number of years. Their teaching lead to the publication of the monograph,

Atomic Many-Body Theory, which first appeared as Volume 13 of the Springer

Series on Chemical Physics. The second edition of this book has become a

Springer classic.

Returning to the United States, John Morrison obtained a position in the

Department of Physics and Astronomy at University of Louisville where he has

taught courses in elementary physics, astronomy, modern physics, and quantum

mechanics. In recent years, he has traveled extensively in Latin America and

the Middle East maintaining contacts with scientists and mathematicians at the

Hebrew University in Jerusalem and the Technion University in Haifa. During

the Fall semester of 2009, he taught a course on computational physics at Birzeit

University near Ramallah on the West Bank, and he has recruited Palestinian

students for the graduate program in physics at University of Louisville. He speaks English, Swedish, and Spanish, and he is currently studying Arabic and Hebrew.

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