

Physics 6330/7330

Spring 2011

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Books for reference

There is no required textbook for this course. There are many books which would be helpful; some are listed below. To be specific I can recommend three in particular.

R. Shankar, *Principles of Quantum Mechanics*, 2nd ed. (Springer 1994) ISBN 9780306447907

J.J. Sakurai, *Modern Quantum Mechanics*, Revised ed. (Pearson 1994) ISBN 9780201539295

N. Zettili, *Quantum Mechanics*, 2nd ed. (Wiley 2008) ISBN 9780470026793

You certainly don't need all three. And I don't plan to follow any one book in particular. I plan to use handouts and/or posted notes for the principal topics.

The choice among these three books goes something like this. If you want something that's self-contained, that explains things pretty much in detail, so you could in principle learn the subject on your own, sort of conversational, then you might try **Shankar**. The advantage of **Sakurai** is almost the opposite: it is concise, modern, and widely used. If you have had a good undergraduate course so that you are comfortable with the basic concepts, methods and terminology, then Sakurai might be a good choice. The advantage of **Zettili** is the large number of worked-out examples and problems for the reader; there were originally some errors in the examples, but most of those have been corrected in the second edition. My lectures will probably follow Zettili in some cases, more than the other two. Finally note that **Shankar** is the only one of these three that treats the Dirac equation or gives much of an introduction to quantum field theory. *However you could use an entirely different book, or none at all.*

Other books which might be useful and which I might refer to on occasion include:

- Ballentine, *Quantum Mechanics* (Prentice Hall, 1990)
- Eisberg and Resnick, *Quantum Physics* (2nd ed., Wiley, 1985)
- Dirac, *Quantum Mechanics* (4th ed. rev., Oxford Univ. Press, 1967)
- Fermi, *Notes on Quantum Mechanics* (2nd ed., Univ. of Chicago Press, 1995)
- Gasiorowicz, *Quantum Physics* (3rd ed., Wiley, 2003)
- Goswami, *Quantum Mechanics* (W. C. Brown, 1992)
- Griffiths, *Introduction to Quantum Mechanics* (Prentice-Hall, 1995)
- Liboff, *Introductory Quantum Mechanics* (3rd ed., Addison Wesley, 1998)
- Mahan, *Quantum Mechanics in a Nutshell* (Princeton, 2009)
- Merzbacher, *Quantum Mechanics* (2nd ed., Wiley, 1970)
- Schiff, *Quantum Mechanics* (3rd ed., McGraw-Hill, 1968)
- Woodgate, *Elementary Atomic Structure* (2nd ed., Oxford, 1983)