Physics 6320

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Books for reference

For this course there are four books worthy of special mention:

R.T. Deck, *Development of Quantum Theory from Physical Principles,* ISBN 9781439260647
J.J. Sakurai, *Modern Quantum Mechanics*, Revised ed. (Pearson 1994) ISBN 9780201539295
R. Shankar, *Principles of Quantum Mechanics*, 2nd ed. (Springer 1994) ISBN 9780306447907
N. Zettili, *Quantum Mechanics*, 2nd ed. (Wiley 2009) ISBN 9780470026793

The choice among these books goes something like this. The advantage of the recommended text by **Zettili** is the large number of worked-out examples and problems for the reader. Zettili was the textbook used here for several years recently, and before that Sakurai was used, so you might be able to buy or borrow one of them from a fellow grad student. (I believe that student opinion favored Zettili over Sakurai.) 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 book by **Deck** (emeritus professor here at UT) is brand new, and now available from amazon.com. As indicated by its title, it is about the development of quantum theory, rather than its applications. If you already know something about the mathematical formulation of quantum theory, and want to learn how this follows from physical principles, using the minimum number of postulates, you might try this book. Finally note that **Deck** and **Shankar** are the only ones of these four that provide a relativistic formulation including the Dirac equation.

Again, note that you could use an entirely different book, or in principle 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)
- 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)