

Physics 113 Quantum Theory Seminar

Assignment 2 January 30, 2013

This week we continue to learn the *mathematical language of quantum mechanics*.

Part 1: Readings

Zettili: Chapter 2

Sections: 2.4.3, 2.4.6-2.4.9, 2.5, 2.6 + relevant solved problems

Boccio - Chapter 4 (Pages 277-316 Sections 4.17-4.21) ; Chapter 5(Pages 338-348 Section 5.3).

You must do the readings BEFORE attempting the problems in order to get a good grasp of the overall content of the week's material to be understood. A problem should then make you look more carefully at specific parts of the readings that are necessary for the solution of that particular problem!

Prior to discussing any problems, we will deal with any questions and/or discussion of the readings.

Part 2: Problems

1. We continue the same format as last week.
2. All problems will be discussed in seminar.
3. Random choice of presenter.
4. Quality/correctness of presentation = 50% Seminar grade.
5. If a problem is not solved by anyone, then it will be done in seminar.
6. Lots of short problems this week(much of it should be review)
7. I recommend, however, that you try as many of the other group's problems as you can.

Linear Algebra

1. Zettili 2.23 - Matrices and Projection Operators
2. Boccio 4.22.14 - Spectral decomposition

3. Boccio 4.22.16 - Expectation Values
4. Boccio 4.22.18 The World of Hard/Soft Particles
5. Boccio 4.22.19 - Things in Hilbert Space
6. Boccio 4.22.25 - Spectral Decomposition Practice

Probability Concepts

1. Boccio 5.6.2 Playing Cards
2. Boccio 5.6.3 Birthdays
3. Boccio 5.6.6 Bayes
4. Boccio 5.6.7 Psychological Tests
5. Boccio 5.6.12 Modeling Dice
6. Boccio 5.6.13 Conditional Probabilities for Dice

Part 3: LaTeX Writeups

Random choice of writer(*one linear algebra and one probability problem from other group*) at end of seminar.

Turn in by email to instructor BEFORE next seminar.

Part 4: Midterm/Final Examinations

These examinations will be comprised of selected seminar problem solutions solved by you alone and handed in at the beginning of seminar. Each exam = 25% Seminar grade.