

Physics 220-2011
Theory of Many Body Physics
Mondays- Wednesdays 5pm to 6:45 pm Room ISB 231
Fall 2011
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- 1) This course is given every two years, and has the goal of making students familiar with Many Body Theoretical Physics (MBT), a core topic in Condensed matter physics.
- 2) This year we will follow the new book by P Coleman called Introduction to Many Body Physics. The book is available on the course website for your convenience. Prof Coleman has given his permission for the students of this course to download this book and use it for the course- he expects to publish it next year and will undoubtedly be glad if we decide to buy it when it comes out.
- 3) The classic book by Abrikosov Gorkov and Dzyaloshinski, reverentially called AGD by many generations of your predecessors, is the backup book. It should be available in the Bookshop.
- 4) The chapters we plan to cover in this book are as follows.
 - a) Chapters 2- 7 (introductory and hence we will go fast)
 - b) Chapters 9 Finite Temperature theory: taking the $T=0$ limit gives the more difficult ground state problem (Chapter 8 in the book- we will skip it)
 - c) Chapter 10: This is important for the experimental students. Please pay attention to the various probes and what they measure. In fact we will study Chapter 10, right after Chapter 5 so that we remain motivated, and then go on to chapter 6.
- 5) If time permits we will study Chapters 11 and 14.
- 6) I will put out a more detailed plan for the course on a weekly basis in the second week of class with examination details etc.
- 7) The first lecture is on September 26th, it will be given by Dr H Owusu in my place, since I will be traveling back to Santa Cruz on that day from a conference in Europe.
- 8) On the day of the first lecture, please bring to class a page of what you expect to learn from this course, especially in light of our plan above- if possible we will incorporate a few such topics.
- 9) I plan to assign homework that you can go over and we can solve the ones that you need help with in class. There will be no submissions of Homeworks.
- 10) I plan to have about 4 exams of 1 1/2 hour each, and to do away with mid terms and final exams. The dates of the exams will be announced later, each exam will target a few specific chapters in the Coleman book.
- 11) The access to the website is as follows:
http://physics.ucsc.edu/~sriram/Courses_All/Physics-220-2011/
You will need a user name and password that are as follows:
username: mbt
passwd: agd