Syllabus for Physics 217: phase transitions and RG

Fall 2017, Physics Department, UCSD

INSTRUCTOR: Congjun Wu (5430 MH)   Email: wucj@physics.ucsd.edu
Time/Place: 11:00a-12:20p MW, MHA 5301.
Office hour: Monday: 1:00 pm - 2:00pm

Books:


Grade:
We will decide the policy during the first class. Basically it will depend on your homework, and the final project. Homework 50%, and final project 50%.

Homework Assignments:
Homework will be assigned every one or two weeks.
Class Schedule

1. Chapter 1. Ising model and phase transitions
2. Chapter 2. Mean-field theory and critical exponents
3. Chapter 3. Real-space renormalization group
4. Chapter 4. Momentum-space renormalization group, $\epsilon$ expansion
5. Chapter 5. Lower critical dimensions, non-linear $\sigma$ model
6. Chapter 6. KT transition, Coulomb gases
7. Chapter 7. RG for fermion systems: Fermi liquid, superconductivity, etc.