PHYSICS 268r Spring 2004

PHYSICS OF STRONGLY CORRELATED ELECTRON SYSTEMS

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Course Meetings: MW, 1:00 - 2:30 in Jefferson 256

Homework: One every 2-3 weeks; 1/2 of grade

Final Presentations: 1/2 of grade
Course Outline


5. First principle calculations of Tc. Superconductivity in MgB2.

6. Phonon mechanism for superconductivity in the high Tc cuprates.

7. Antiferromagnetic fluctuations and d-wave superconductivity in the cuprates.


10. Superfluid to insulator transition of ultracold atoms in optical lattices.

11. Competing phases in strongly correlated electron systems. Spin and charge density wave phases. Stripe phases in the cuprates.

12. Higher symmetries in condensed matter systems. SO(5) theory of antiferromagnetism and superconductivity.


Primary references


3. S. Doniach and E. Sondheimer, *Green’s functions for solid state physicists.*

4. A. Fetter and J.D. Walecka, *Quantum theory of many-particle systems*


