General Information

Instructor

Prof. Massimo Porrati, office: 959, phone: (212) 998-7733, 
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Time and Location

TR 12.30-1.45 PM, room 940

Reception Time

W 4-5 PM room 959

Recitation

T 3.30-4.45 PM room 940

Grading

attendance/class participation: 5%, homework: 35%, midterm: 20%, final: 40%

Midterm

March 23 12.30-1.45 PM

Final

TBA

Recommended Textbooks

- [JDJ] J. D. Jackson Classical Electrodynamics

Description

Graduate level electromagnetism with abridged electrodynamics of continuous media. Notations and units mostly as in LL2, LLP8.
Course Outline

1. LL2 Ch 1 Special Relativity
2. LL2 Ch 2 Relativistic Mechanics
3. LL2 Ch 3 Charge in EM field – potential and field
4. LL2 Ch 3 Charge in EM field – examples of motion
5. LL2 Ch 3 Charge in EM field – transformation and invariants of the field
6. LL2 Ch 4 Maxwell Equations – first pair, action
7. LL2 Ch 4 Maxwell Equations – current, second pair
8. LL2 Ch 4 Maxwell Equations – stress-energy tensor
9. LL2 Ch 5 Electrostatic field, electric dipole
10. LL2 Ch 5 Multipoles
11. LL2 Ch 5 Magnetostatic field, magnetic dipole
12. LL2 Ch 6 EM waves – wave equations
13. LL2 Ch 6 EM waves – polarization
14. LL2 Ch 6 EM waves – eigenmodes
15. LL2 Ch 7 Geometrical optics
16. LL2 Ch 7 Diffraction
17. LL2 Ch 8 Lienard-Wiechert potentials
18. LL2 Ch 9 Radiation – dipole
19. LL2 Ch 9 Radiation – quadrupole, magnetic dipole
20. LL2 Ch 9 Radiation – damping
21. LL2 Ch 9 Radiation – scattering
22. LLP8 Ch 1 Electrostatics of conductors
23. LLP8 Ch 2, JDJ Ch4 Dielectrics
24. LLP8 Ch 3 Steady current
25. LLP8 Ch 4, JDJ Ch5 Magnetostatics
26. LLP8 Ch 6 Superconductivity
27. LLP8 Ch 9, JDJ Ch6 EM waves in dispersionless media
28. LLP8 Ch9, JDJ Ch7 Dispersion of EM waves