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Physics 721
[Classical] Electrodynamics

COURSE OUTLINE

1. Maxwell's equations.
2. Conservation laws.
3. Special theory of relativity: Lorentz invariance, kinematics, dynamics.
4. Multipole expansion.
5. Sets of orthonormal functions, expansions of Green's function.
6. Boundary value problems.
7. Macroscopic media.
8. Plane Waves.
9. Scattering and diffraction of waves.
10. Radiation by moving charges.
11. Magnetohydrodynamics.
12. Special topics.

Required Text

J.D. Jackson *Classical Electrodynamics*.

Recommended Texts

R.P. Feynman, R.B. Leighton, M. Sands *Feynman Lectures on Physics, Volume 2*

M. Schwartz *Principles of Electrodynamics*

E.T. Taylor & J.A. Wheeler *Spacetime Physics*

L.D. Landau & E.M. Lifshitz *Classical Theory of Fields*

L.D. Landau & E.M. Lifshitz *A shorter Course of Theoretical Physics Volume 1: Mechanics and Electrodynamics*.

Prerequisites

A thorough familiarity with material taught in Physics 322 will be required.