

## Electromagnetism (II)

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- Faraday's law of induction, Motional and transformer electromotive force
  - Self inductance, Mutual inductance, Magnetic energy, Magnetic circuits
  - Slowly varying currents, Generalization of Ampere's law
  - Maxwell's equations, Displacement current, Electromagnetic energy
  - Poynting vector, Electromagnetic energy, Linear momentum and angular momentum of electromagnetic fields
  - Conservation laws in electromagnetics, Monochromatic electromagnetic waves in nonconducting media
  - Monochromatic electromagnetic waves in conducting media, Boundary conditions for time varying electromagnetic fields
  - Retarded scalar and vector potentials, Lorenz gauge
  - Polarization of electromagnetic waves
  - Reflection and transmission at the boundary of two nonconducting and conducting media for normal and oblique incidence, Fresnel's formulas
  - Reflection and transmission by a thin film, Interference
  - Electromagnetic radiation originated from oscillating electric and magnetic dipoles
  - Electromagnetic radiation from a half-wave antenna
  - Propagation of electromagnetic waves between parallel conducting plates
  - Electromagnetic waveguides
  - Relativistic electrodynamics
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