

Intermediate Electricity and Magnetism

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Last Lecture(s) in bullets..

Completed Griffiths' Ch-8: Conservation Laws

- Conservation of Charge
- Conservation of Energy
- Conservation of Momentum
- Conservation of Angular momentum
- Poynting vector, and its physical meaning, and related equations.
- Maxwell Stress Tensor, and its physical meaning(s).
- Hidden Momentum!!

**Main reference for now: Griffith's
Introduction to Electrodynamics (3rd ed.)**

Chapter 9

Today:

- Start delving into electromagnetic waves
- Mathematically one-dimension waves and wave equation.
- Sinusoids with complex notation!
- Reflection and transmission
- Polarization
- E&M (monochromatic) waves in three dimensions, in vacuum
- Energy and momentum in waves
- E&M waves in three dimensions, in dielectrics
- Snell's law
- Fresnel's equations

Closing Remarks

- Next meeting on Thursday at 4.30 p.m., in sha'a Allah. Then Sunday and then Thursday.
- Remember to send me your (~five) lessons (not a whole summary; just a few lessons)
- Let me know if you like to join the Reading Group
- Let me know if you can help translate a book on E&M