

Intermediate Electricity and Magnetism

Zain H. Yamani
Physics-KFUPM
CENT Director

zhyamani@kfupm.edu.sa

+966504608515

Session-9
18th Jumada-II, 1436

Remarks

I am happy that we are back 😊

We are missing some of my students [excused]

If you need to leave for prayer, please do.

What we studied before the break

Electrostatics

Magnetostatics

There are many examples, applications, and problems which we did *not* ‘study’! ← we should come back to much of that later.

Examples

Magnetic fields due to current carrying
solenoid (or toroid)

Examples

I like to show you a computer code I developed
to calculate the electric potential due to a
uniformly charged ring.

[[Question-11 in Homework-1](#)]

Before we move on

The meaning of Divergence and Curl

Where are we heading?

- Maxwell's equations
- Conservation (of charge, energy and momentum)
- Electromagnetic waves
- Wave guides
- Fields and potentials in electrodynamics
- Radiation.. [and more..]
- We will ultimately need to come back and study subjects that we continue to skip

Magnetostatics

- The force on a current due to the magnetic induction
- The torque on a magnetic moment due to the magnetic induction
- Magnetization and Magnetic Moment
- Faraday's law of induction