Name-ONWUDIWE-OTOAKHIA precious

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Department-computer science

Course-PHY 102

5a Biot-savart law is an equation that describes the magnetic field created by a current-carrying wire, and allows you to calculate its strength at various points.

5b For a long straight wire where I is the current, r is the shortest distance to the wire and the constant o=4\*10^-7 T.M/A is the permeability of free space (Uo is one of the basic constants in nature, related to the speed of light)since the wire is very long, the magnitude of the field depends only on distance from the wire r, not on position along the wire. This is one simplest cases to calculate the magnetic field strength from a current.

4a Magnetic flux is defined as the number of magnetic field lines passing through a given closed surface.

2a The electric field is a region around a charge in which it exerts electrostatic force on another charges while electric field intensity is the strength of electric field at any point in surface.

2b

3a 1 volume charge density; p=q/v where q is the charge and l is the length over which it is distributed. The SI unit is cm^-1.

2 surface charge density; o=q/a where q is the charge and A is the area of the surface. The SI unit is cm^-2.

3 linear charge density;^=q/l, where q is the charge and lis the length over which it is distributed. The SI unit is cm^-1.

3b The electrical potential difference is defined as the amount of work done to carrying a unit charge from one point to another in an electric field. Equation is v=IR ,v=voltage