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ABSTRACT

Two Problems in Magneto (electro) Statics

Lennox Isidore Celestin

This thesis consists of two problems in Electrostatics (Magnetostatics).

The first problem considers a system consisting of a thin electrically charged conductor of finite length placed vertically above an infinite plane which is at zero potential. The conductor is assumed to be at constant potential. By solving an appropriate integral equation we obtain asymptotic expressions for the charge density distribution and the electrical potential. We also obtain asymptotic expressions for the lower and upper bounds for the interval outside of which the charge is zero. An example is then considered.

The second problem consists of a two-dimensional infinitely long conducting slab with parallel sides perpendicular to an insulating plane. Expressions for the magnetic field intensity using a modified form of the Schwarz-Christoffel mapping are obtained. These intensities in three examples are displayed graphically.