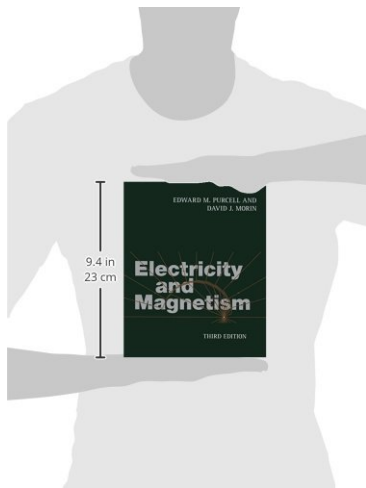


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Electricity and Magnetism (last updated: 2020 April 17). Chapter 1. Electric Fields. 1.1. Force on a Dipole in an Inhomogeneous Electric Field. 3.6. Induced Dipoles and Polarizability. 3.7. The Simple Dipole. Within electricity and magnetism attempts at theoretical unification were conceived in terms of either gravitational-type forces acting at a distance, as with Ampère, or, with Faraday, in terms of lines of force and the ambient medium in which they were thought to travel. Electricity and Magnetism For 50 years, Edward M. Purcell's classic textbook has introduced students to the world of electricity and magnetism. This third edition has been brought up to date and is now in SI units. It features hundreds of new examples, problems, and figures, and contains discussions of real-life applications. The textbook covers all the standard introductory topics, such as electrostatics, magnetism, circuits, electromagnetic waves, and electric and magnetic fields in matter.

Electricity and magnetism. Chapter 1. Electric Fields. 1.1 Introduction 1.2 Triboelectric Effect 1.3 Experiments with Pith Balls 1.4 Experiments with a Gold-leaf Electroscope 1.5 Coulomb's Law 1.6 Electric Field E. 1.6.1 Field of a Point Charge 1.6.2 Spherical Charge Distributions 1.6.3 A Long, Charged Rod 1.6.4 Field on the Axis of and in the Plane of a Charged Ring 1.6.5 Field on the Axis of a Uniformly Charged Disc 1.6.6 Field of a Uniformly Charged Infinite Plane Sheet 1.7 Electric. Electricity and Magnetism is a standard textbook in electromagnetism originally published by Nobel laureate Edward Mills Purcell in 1963. Along with David Griffiths' Introduction to Electrodynamics, the book is one of the most widely adopted undergraduate textbooks in electromagnetism. A Sputnik-era project funded by a National Science Foundation grant, the book is influential for its use of relativity in the presentation of the subject at the undergraduate level. The 1965 edition, now freely available, is titled Electricity and Magnetism. Definition. The Physical phenomena involving electric charges, their motions, and their effects. The motion of a charge is affected by its interaction with the electric field and, for a moving charge, the magnetic field. The electric field acting on a charge arises from the presence of other charges and from a time-varying magnetic field. The magnetic field acting on a moving charge arises from the motion of other charges and from a time-varying electric field. The interactions of electricity and magnetism are difficult to explain in nontechnical terms. This is primarily because one has to describe the interactions in terms of invisible "force fields" which shift, expand, contract, strengthen, weaken, and rotate in space, and these are very difficult to describe adequately in verbal terms. As far as we know, the total electric charge in the Universe is exactly zero. The electrostatic force between two point charges is given by Coulomb's Law: $F = k q_1 q_2 / r^2$. Purcell, Edward M. Electricity and magnetism / Edward M. Purcell, David J. Morin, Harvard University, Massachusetts. Third edition. pages cm ISBN 978-1-107-01402-2 (Hardback) 1. Electricity. 2. Magnetism. I. Title. QC522.P85 2012 537—dc23.