1. Record Nr. UNINA9910830571803321 Autore Gontrand Christian Titolo Electromagnetism: links to special relativity / / Christian Gontrand Pubbl/distr/stampa London, England;; Hoboken, New Jersey:,: ISTE, Ltd.:,: John Wiley & Sons, Incorporated, , [2022] ©2022 **ISBN** 1-394-18600-2 1-394-18598-7 Descrizione fisica 1 online resource (302 pages) Disciplina 537 Soggetti Electromagnetism Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Cover -- Title Page -- Copyright Page -- Contents -- Preface --Chapter 1. Magnetic Field -- 1.1. Overview of history -- 1.2. Magnetic fields and magnetic forces -- 1.2.1. First experiments -- 1.2.2. Topography: invariances and symmetries -- 1.3. Magnetic fields created by currents -- 1.3.1. Magnetic field created by a volume current distribution -- 1.3.2. Magnetic field created by a surface current distribution or by a filiform current element -- 1.4. Biot-Savart experiment -- 1.5. From field B to vector potential A -- 1.6. Symmetry

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## Sommario/riassunto

This book is dedicated to the study of the theory of electromagnetism. It is not intended to cover all aspects of the topic, but instead will give a certain perspective, that of its relationship with special relativity. Indeed, special relativity is intrinsic to electromagnetism; thus, this paradigm eliminates some false paradoxes. Electromagnetism also discusses the limit of classical mechanics, and covers problems that arise when phenomena related to the propagation of electromagnetic waves are encountered. These are problems that even the greatest scientists of the last two hundred years have not been able to entirely overcome. This book is directed towards the undergraduate level, and will also support the readers as they move on to advanced technical training, such as an engineering or master's degree.