1. Record Nr. UNINA9910404088803321

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| Autore | Mottola Fabio |
| Titolo | Distributed Energy Storage Devices in Smart Grids |
| Pubbl/distr/stampa | MDPI - Multidisciplinary Digital Publishing Institute, 2020 |
| ISBN | 3-03928-435-5 |
| Descrizione fisica | 1 online resource (148 p.) |
| Soggetti | History of engineering and technology |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Sommario/riassunto | Energy storage systems have been recognized as viable solutions for implementing the smart grid paradigm, but have created challenges in terms of load levelling, integrating renewable and intermittent sources, voltage and frequency regulation, grid resiliency, improving power quality and reliability, reducing energy import during peak demand periods, and so on. In particular, distributed energy storage addresses a wide range of the above potential issues, and it is gaining attention from customers, utilities, and regulators. Distributed energy storage has considerable potential for reducing costs and improving the quality of electric services. However, installation costs and lifespan are the main drawbacks to the wide diffusion of this technology. In this context, a serious challenge is the adoption of new techniques and strategies for the optimal planning, control, and management of grids that include distributed energy storage devices. Regulatory guidance and proactive policies are urgently needed to ensure a smooth rollout of this technology. This book collects recent contributions of methodologies applied to the integration of distributed energy storage devices in smart power systems. Several areas of research (optimal siting and sizing of energy storage systems, adaption of energy storage systems to load leveling and harmonic compensation, integration for electric vehicles, and optimal control systems) are investigated in the contributions collected in this book. |

2. Record Nr. UNINA9911006800703321

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| Autore | Schwartz Melvin |
| Titolo | Principles of Electrodynamics |
| Pubbl/distr/stampa | Newburyport, : Dover Publications, 2012 |
| ISBN | 9780486134673<br>0486134679<br>9781621986379<br>1621986373 |
| Edizione | [1st ed.] |
| Descrizione fisica | 1 online resource (610 p.) |
| Collana | Dover Books on Physics |
| Disciplina | 537.6 |
| Soggetti | Electrodynamics<br>Physics<br>Physical Sciences & Mathematics<br>Electricity & Magnetism |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di contenuto | 2 - Principles of Electrostatics2-1 INTRODUCTION; COULOMB'S LAW; 2-2 THE DIVERGENCE OF E; GAUSS' LAW; 2-3 A FEW WORDS ABOUT MATERIALS; CONDUCTORS; 2-4 THE CONSERVATIVE NATURE OF ELECTROSTATICS; POTENTIAL; 2-5 SOME IMPORTANT THEOREMS ABOUT POTENTIAL FUNCTIONS; BOUNDARY CONDITIONS AND UNIQUENESS; 2-6 ELECTRIC DIPOLE MOMENT; POLARIZATION; DISPLACEMENT FIELD; 2-7 THE ENERGY OF A CHARGE DISTRIBUTION; 2-8 THE GENERAL THEORY OF CAPACITANCE; 2-9 CYLINDRICAL AND SPHERICAL COORDINATES; 2-10 SOLVING LAPLACE'S EQUATION IN CARTESIAN COORDINATES<br>2-11 SOLVING LAPLACE'S EQUATION IN CYLINDRICAL COORDINATES2-12 THE SOLUTION TO LAPLACE'S EQUATION IN SPHERICAL COORDINATES; 2-13 SOLVING BOUNDARY-VALUE PROBLEMS IN SPHERICAL COORDINATES WITH AZIMUTHAL SYMMETRY; 2-14 THE MULTIPOLE EXPANSION OF AN AZIMUTHALLY SYMMETRICAL CHARGE DISTRIBUTION; 2-15 THE INTERACTION ENERGY OF TWO NONOVERLAPPING AZIMUTHALLY SYMMETRIC CHARGE DISTRIBUTIONS; DETERMINATION OF NUCLEAR SHAPE; 2-16 THE ELECTROSTATIC |

STRESS TENSOR; 3 - Electromagnetism and Its Relation to Relativity; 3-1 INTRODUCTION;  THE MICHELSON-MORLEY EXPERIMENT; 3-2 THE LORENTZ TRANSFORMATION
3-3 CHARGE DENSITY AND CURRENT DENSITY AS COMPONENTS OF A FOUR-VECTOR3-4 THERE MUST BE A "MAGNETIC FIELD"| (THE REQUIREMENT OF LORENTZ INVARIANCE IMPLIES A VECTOR POTENTIAL); 3-5 THE ELECTRIC AND MAGNETIC FIELDS AS ELEMENTS OF A SECOND-RANK TENSOR; 3-6 MAXWELL'S EQUATIONS; 4 - Time-Independent Current Distributions;  Magnetostatics; 4-1 AN ELEMENTARY DERIVATION OF OHM'S LAW; 4-2 FINDING THE MAGNETIC FIELD THROUGH THE VECTOR POTENTIAL; 4-3 THE BIOT-SAVART LAW; 4-4 AMPERE'S LAW; 4-5 B AS THE GRADIENT OF A POTENTIAL FUNCTION; 4-6 MAGNETIZATION (M) AND THE H FIELD
4-7 THE ENERGY OF A STATIC CURRENT DISTRIBUTION FORCE AND TORQUE ON A MAGNETIC DIPOLE; 4-8 THE MOTION OF A CHARGED PARTICLE IN A CONSTANT MAGNETIC FIELD; 4-9 THE MOTION OF A CHARGED PARTICLE IN CROSSED ELECTRIC AND MAGNETIC FIELDS; 4-10 LARMOR PRECESSION IN A MAGNETIC FIELD; 4-11 A METHOD OF MEASURING g - 2; 4-12 THE MAGNETIC STRESS TENSOR; 5 - The Variation of the Electromagnetic Field with Time: Faraday's Law, Displacement Currents, the Retarded Potential; 5-1 FARADAY'S LAW; 5-2 THE CONSERVATION OF ENERGY;  THE POYNTING VECTOR; 5-3 MOMENTUM CONSERVATION IN ELECTROMAGNETISM
5-4 ELECTROMAGNETIC MASS

Sommario/riassunto

Unlike most textbooks on electromagnetic theory, which treat electricity, magnetism, Coulomb's law and Faraday's law as almost independent subjects within the framework of the theory, this well-written text takes a relativistic point of view in which electric and magnetic fields are really different aspects of the same physical quantity.Suitable for advanced undergraduates and graduate students, this volume offers a superb exposition of the essential unity of electromagnetism in its natural , relativistic framework while demonstrating the powerful constraint of relativistic invariance. It wil