Electrostatics 1998

Physics of Liquid Matter: Modern Problems—Gerald Fazekas 2015-08-08 These proceedings contain invited and contributed papers presented at FLNPST 2014, addressing modern problems in the fields of liquids, solutions and confined systems, critical phenomena, as well as colloidal and biological sciences. The book focuses on state-of-the-art developments in contemporary physics of liquid matter. The papers presented here are organized into four parts: (i) structure of liquids in confined systems, (ii) phase transitions, supercritical liquids and glasses, (iii) colloids, and (iv) medical and biological aspects and cover the most recent developments in the broader field of liquid-state including interdisciplinary problems.

Mathematical Analysis of Partial Differential Equations Modeling Electrostatic MEMS—Sharp-Pei Englebret 2010 Micro- and nanoelectromechanical systems (MEMS and NEMS), which combine electronics with miniature-size mechanical devices, are essential components of modern technology. In this mathematical modeling description—"Electrostatically Actuated" MEMS—this is addressed in this monograph. The five simplified domains that were unified and the resulting simple problems are the base of the model. The models build on this base in order to investigate electrostatics within the electrostatic potential model in the stationary state and with nonlinear potentials. While nonlinear problems are solved in the stationary model using the finite-dimensional model, the type of inverse square potential that appears here helps the state-of-the-art numerical computation. Thus, based on a simple and intuitive model, the model can be used to model MEMS problems. The model is a rich source for many applications in electromechanical devices, and it is a rich source for further developments in MEMS.

Compendium On Electromagnetic Analysis - From Electrodynamics To Photonics: Fundamentals And Applications For Physicists And Engineers (In 5 Volumes) - 2020-08-15 The five-volume set may serve as a comprehensive reference on electromagnetic analysis and its applications at all frequencies, from static fields to optical systems. It is addressed to physicists and engineers in the fields of nanotechnology, quantum mechanics, electrical engineering, and materials science. Volume 1: Fundamentals presents the basics of electrodynamics, including the Maxwell equations, boundary conditions, and the principles of electromagnetic waves. Volume 2: Electromagnetic Fields and Waves covers the propagation of electromagnetic waves in various media, including free space, dielectric media, and magnetic materials. Volume 3: Electromagnetic Scattering and Imaging discusses the scattering of electromagnetic waves by different objects and the imaging techniques. Volume 4: Electromagnetic Imaging and Sensing addresses the applications of electromagnetic imaging in various fields, such as medical imaging, geophysical imaging, and security imaging. Volume 5: Advanced Topics in Electromagnetic Analysis presents advanced topics in electromagnetic analysis, such as the analysis of electromagnetic waves in complex media, the analysis of electromagnetic fields in time-varying media, and the analysis of electromagnetic fields in non-linear media.


Accurate Treatments of Electrostatics for Computer Simulations of Biological Systems: A Brief Survey of Developments and Existing Problems—Project Supported by the National Natural Science Foundation of China (Grant Nos. 91127005 and 21522304) and the Open Project from the State Key Laboratory of Theoretical Physics and the State Key Laboratory of Supramolecular Structure and Materials—2015 Molecular electrostatic potentials have become a rich source of intuition for chemists, and have been of great interest to physicists. The understanding of the electrostatic potential is closely tied to the understanding of the electron density. The molecular electrostatic potential is a potential that can be calculated for a molecule, and it is used to predict the location of reactive sites and to understand the formation of chemical bonds. This monograph provides a comprehensive overview of the development of the molecular electrostatic potential and its applications in computational chemistry. It includes discussions on the calculation of the molecular electrostatic potential, the interpretation of the results, and the applications of the molecular electrostatic potential in various fields, such as drug design, materials science, and biochemistry. It also covers the recent developments in the field of molecular electrostatic potential and its applications in the biological sciences.

Electrostatics: Fundamental Aspects and Applications—J.S. Murray 1996-11-22 Over the past 25 years, the molecular electrostatic potential has become firmly established as an important tool for understanding the molecular origins of biological phenomena. It is used to understand the behavior of molecules, to design new drugs, and to understand the interactions between molecules. This monograph provides a comprehensive overview of the development of the molecular electrostatic potential and its applications in computational chemistry. It includes discussions on the calculation of the molecular electrostatic potential, the interpretation of the results, and the applications of the molecular electrostatic potential in various fields, such as drug design, materials science, and biochemistry. It also covers the recent developments in the field of molecular electrostatic potential and its applications in the biological sciences.

A Guide to Problems in Modern Electrostatics—Maria E. Gamboa-Aldeco 2011-06-27 It has always been an incentive for students to find whether their efforts to solve exercises give correct results, or to find tips for problems that belabor finds more difficult. These are the main reasons for the appearance of the present book. As part of the industrial Modern Electrostatics 1, issues, A Guide to Problems in Modern Electrostatics. Part 1: Issues comprises many of the solutions to the exercises and problems presented in the text, as well as many new problems.

The Modern Problems Of Electrostatics With Applications In Environment Protection—J.S. Murray 1996-11-22 Over the past 25 years, the molecular electrostatic potential has become firmly established as an important tool for understanding the molecular origins of biological phenomena. It is used to understand the behavior of molecules, to design new drugs, and to understand the interactions between molecules. This monograph provides a comprehensive overview of the development of the molecular electrostatic potential and its applications in computational chemistry. It includes discussions on the calculation of the molecular electrostatic potential, the interpretation of the results, and the applications of the molecular electrostatic potential in various fields, such as drug design, materials science, and biochemistry. It also covers the recent developments in the field of molecular electrostatic potential and its applications in the biological sciences.

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Introduction to Numerical Electrostatics Using MATLAB—Luiz Costa 2015-04-02-20 Readers are guided step by step through numerous specific problems and challenges, covering all aspects of electrostatics with emphasis on numerical procedures. The authors focus on practical examples, derive mathematical equations, and address common issues with algorithms. Introduction to Numerical Electrostatics contains problem sets, an accompanying website with solutions, and a complete list of computer codes. The book also contains MATLAB code listings on accompanying site. The book is unique in its approach to teaching electrostatics using MATLAB, and it is aimed at students and professionals who want to learn numerical methods for solving electrostatics problems. The book is also a valuable resource for researchers and engineers who need to solve electrostatics problems in their work.

The Modern Problems Of Electrostatics With Applications In Environment Protection—J.S. Murray 1996-11-22 Over the past 25 years, the molecular electrostatic potential has become firmly established as an important tool for understanding the molecular origins of biological phenomena. It is used to understand the behavior of molecules, to design new drugs, and to understand the interactions between molecules. This monograph provides a comprehensive overview of the development of the molecular electrostatic potential and its applications in computational chemistry. It includes discussions on the calculation of the molecular electrostatic potential, the interpretation of the results, and the applications of the molecular electrostatic potential in various fields, such as drug design, materials science, and biochemistry. It also covers the recent developments in the field of molecular electrostatic potential and its applications in the biological sciences.

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Molecular Electrostatic Potential—J. Winary 1999-11-22 Over the past 25 years, the molecular electrostatic potential has become firmly established as an important tool for understanding the molecular origins of biological phenomena. It is used to understand the behavior of molecules, to design new drugs, and to understand the interactions between molecules. This monograph provides a comprehensive overview of the development of the molecular electrostatic potential and its applications in computational chemistry. It includes discussions on the calculation of the molecular electrostatic potential, the interpretation of the results, and the applications of the molecular electrostatic potential in various fields, such as drug design, materials science, and biochemistry. It also covers the recent developments in the field of molecular electrostatic potential and its applications in the biological sciences.

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