

1. Record Nr.	UNIORUON00274937
Titolo	Minyrisma ptenou cheimazomenou : philologika ston Papadiamante / N.D. Triantaphyllopoulos
Pubbl/distr/stampa	Athena, : Kastaniote, 1986
Descrizione fisica	185 p. ; 21 cm.
Disciplina	889
Soggetti	PAPADIAMANTES ALEXANDROS
Lingua di pubblicazione	Greco Moderno
Formato	Materiale a stampa
Livello bibliografico	Monografia
2. Record Nr.	UNINA9910974433403321
Titolo	Atomic, molecular, and optical physics / / Panel on Atomic, Molecular, and Optical Physics, Physics Survey Committee, Board on Physics and Astronomy, Commission on Physical Sciences, Mathematics, and Resources, National Research Council
Pubbl/distr/stampa	Washington, D.C., : National Academy Press, 1986
ISBN	9786610222384 9781280222382 1280222387 9780309594561 0309594561 9780585085067 0585085064
Edizione	[1st ed.]
Descrizione fisica	1 online resource (200 p.)
Collana	Physics through the 1990's Atomic, molecular, and optical physics
Disciplina	530/.072073
Soggetti	Physics - Research - United States Atoms - Research - United States Molecules - Research - United States Optics - Research - United States
Lingua di pubblicazione	Inglese

Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	<p>Atomic, Molecular, and Optical Physics -- Copyright -- Preface -- Acknowledgments -- Contents -- Summary -- THE NATURE OF THE FIELD -- EDUCATIONAL ROLE -- CONTRIBUTIONS TO NATIONAL PROGRAMS -- RECENT ADVANCES IN BASIC ATOMIC, MOLECULAR, AND OPTICAL SCIENCE -- RESEARCH OPPORTUNITIES -- PRIORITIES OF RESEARCH -- RECOMMENDATIONS -- SUPPORT FOR THE RESEARCH INITIATIVES -- INSTRUMENTATION FOR THE PROGRAM OF RESEARCH INITIATIVES -- THEORY -- ACCESS TO LARGE COMPUTERS -- SPECIAL FACILITIES -- 1 A Program of Research Initiatives -- THE NATURE OF THE FIELD -- ORGANIZATION OF THE REPORT -- INTRODUCTION TO THE RESEARCH INITIATIVES -- INITIATIVE IN ATOMIC PHYSICS -- Fundamental Tests and High-Precision Techniques -- Many-Electron Dynamics -- Transient States of Atomic Systems -- INITIATIVE IN MOLECULAR PHYSICS -- The Physics of Isolated Molecules -- The Physics of Molecular Collisions -- INITIATIVE IN OPTICAL PHYSICS -- New Light Sources -- Advanced Spectroscopy -- Quantum Optics -- 2 Atomic, Molecular, and Optical Physics in the United States Today -- DEMOGRAPHICS OF ATOMIC, MOLECULAR, AND OPTICAL PHYSICS -- Size of the Field -- Employment -- Distribution of Effort -- THE EDUCATIONAL ROLE OF ATOMIC, MOLECULAR, AND OPTICAL PHYSICS -- SCIENTIFIC INTERFACES AND APPLICATIONS -- THE ECONOMIC IMPACT OF ATOMIC, MOLECULAR, AND OPTICAL PHYSICS -- THE HEALTH OF THE FIELD IN THE UNITED STATES -- 3 Recommendations -- BACKGROUND-THE HISTORY OF SUPPORT -- Comments -- A PLAN OF ACTION -- RECOMMENDATIONS -- Base Support -- Instrumentation -- Theory -- Access to Large Computers -- Special Facilities -- ACCELERATOR-BASED ATOMIC PHYSICS -- ATOMIC, MOLECULAR, AND OPTICAL PHYSICS WITH SYNCHROTRON RADIATION -- RELEVANCE OF ATOMIC, MOLECULAR, AND OPTICAL RESEARCH TO THE FUNDING AGENCIES -- Department of Defense -- Department of Energy -- National Science Foundation.</p> <p>National Aeronautics and Space Administration -- 4 Atomic Physics -- ELEMENTARY ATOMIC PHYSICS -- Advances in Quantum Electrodynamics -- Magnetic Moment of the Electron and Positron -- Lamb Shift of Hydrogen -- Muonium and Positronium -- Muonic and Hadronic Atoms -- Time-Reversal Symmetry -- Neutral-Current Parity Violations in Atomic Physics -- Foundations of Quantum Theory: Is Quantum Mechanics Complete? -- Studies of Time and Space -- Future Directions -- ATOMIC STRUCTURE -- Loosely Bound Atomic States -- Atoms in Strong Fields -- Double-Well Atomic Potentials -- Collective Atomic States -- Relativistic and Quantum Electrodynamic Effects in Atoms -- ATOMIC DYNAMICS -- Structure of the Electron Continuum -- Dielectronic Recombination -- Ultraslow Collisions -- Collisions with Rydberg Atoms -- Approximate Conservation Laws -- Toward the Complete Scattering Experiment -- Comparisons of Positron and Electron Scattering -- ACCELERATOR-BASED ATOMIC PHYSICS -- Atomic Coherence and Out-of-Round Atoms -- Quantum Electrodynamics of Highly Charged Systems -- Pair Production in Transient Superheavies -- Inner-Shell Molecular Orbitals and Molecular Orbital X Rays -- Charge Transfer -- Slow-Recoil Ion Production -- Tunable X Rays -- ATOMIC PHYSICS REQUIRING LARGER FACILITIES -- Accelerator-Based Atomic Physics -- Atomic, Molecular, and Optical Physics with Synchrotron Radiation -- 5 Molecular Physics -- THE NEW</p>

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Sommario/riassunto

The goals of atomic, molecular, and optical physics (AMO physics) are to elucidate the fundamental laws of physics, to understand the structure of matter and how matter evolves at the atomic and molecular levels, to understand light in all its manifestations, and to create new techniques and devices. AMO physics provides theoretical and experimental methods and essential data to neighboring areas of science such as chemistry, astrophysics, condensed-matter physics, plasma physics, surface science, biology, and medicine. It contributes to the national security system and to the nation's programs in fusion, directed energy, and materials research. Lasers and advanced technologies such as optical processing and laser isotope separation have been made possible by discoveries in AMO physics, and the research underlies new industries such as fiber-optics communications and laser-assisted manufacturing. These developments are expected to help the nation to maintain its industrial competitiveness and its military strength in the years to come. This report describes the field, characterizes recent advances, and identifies current frontiers of research.
