

1. Record Nr.	UNIPARTHENOPE000007401
Autore	Guerrini, Mauro
Titolo	Authority control / Mauro Guerrini, Lucia Sardo
Pubbl/distr/stampa	Roma : Associazione italiana biblioteche, c2003
ISBN	88-7812-115-0
Descrizione fisica	135 p. ; 17 cm
Collana	Enciclopedia tascabile ; 23
Altri autori (Persone)	Sardo, Lucia
Disciplina	025.3222
Collocazione	025-A/1
Lingua di pubblicazione	Italiano
Formato	Materiale a stampa
Livello bibliografico	Monografia
2. Record Nr.	UNINA9910957127203321
Titolo	Condensed-matter physics : physics through the 1990s // Panel on Condensed-Matter 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	9786610222407 9781280222405 1280222409 9780309568043 0309568048
Edizione	[1st ed.]
Descrizione fisica	1 online resource (325 p.)
Collana	Physics through the 1990s
Disciplina	530.4
Soggetti	Condensed matter Matter
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa

Livello bibliografico

Monografia

Note generali

Includes index.

Nota di contenuto

Condensed-Matter Physics -- Copyright -- Preface -- Contents -- I Highlights, Opportunities, and Needs -- CONDENSED-MATTER PHYSICS AND ITS IMPORTANCE -- DISCOVERY -- Artificially Structured Materials -- The Quantized Hall Effect -- Effects of Reduced Dimensionality -- Charge-Density Waves -- Disorder -- Mixed Valence and Heavy Fermions -- The Superfluid Phases of  $^3\text{He}$  -- The Renormalization Group Methods -- Chaotic Phenomena in Time and Space -- Widespread Use of Synchrotron Radiation -- Atomic Resolution Experimental Probes -- RESEARCH OPPORTUNITIES IN CONDENSED-MATTER PHYSICS IN THE NEXT DECADE -- NEEDS OF CONDENSED-MATTER PHYSICS IN THE NEXT DECADE -- Support for Individual Researchers -- MANPOWER -- INSTRUMENTATION -- COMPUTATION -- FUNDING -- Support for National Facilities -- NEUTRON FACILITIES -- SYNCHROTRON RADIATION SOURCES RECOMMENDATIONS -- HIGH-MAGNETIC-FIELD FACILITIES RECOMMENDATIONS -- ELECTRON-MICROSCOPE FACILITIES RECOMMENDATIONS -- GENERAL RECOMMENDATIONS CONCERNING NATIONAL FACILITIES -- University-Industry-Government Relations -- II A Decade of Condensed-Matter Physics -- 1 Electronic Structure and Properties of Matter -- INTRODUCTION -- ADVANCES IN ELECTRONIC STRUCTURE DETERMINATIONS -- MANY-ELECTRON EFFECTS -- QUANTIZED HALL EFFECT -- ELECTRON-HOLE DROPLETS -- ELECTRONICALLY ORDERED STATES -- DISORDERED SYSTEMS -- MIXED MEDIA -- CONDENSED MATTER AT HIGH PRESSURE -- OPPORTUNITIES -- 2 Structures and Vibrational Properties of Solids -- INTRODUCTION -- THEORETICAL CALCULATIONS -- MEASUREMENTS OF STRUCTURES AND PHONON SPECTRA -- PHONON TRANSPORT -- ELECTRON-PHONON INTERACTIONS -- DISORDERED SOLIDS AND INCOMMENSURATE PHASES -- PHASE TRANSITIONS AND NONLINEAR EXCITATIONS -- OPPORTUNITIES -- 3 Critical Phenomena and Phase Transitions -- INTRODUCTION -- WHAT ARE CRITICAL PHENOMENA, AND WHY ARE THEY INTERESTING TO PHYSICISTS? -- EXAMPLES OF PHASE TRANSITIONS AND CRITICAL POINTS -- HISTORY -- WHAT DOES ONE MEASURE? -- WHAT DETERMINES THE UNIVERSALITY CLASS? -- EXPERIMENTAL REALIZATIONS OF LOW-DIMENSIONAL SYSTEMS -- MULTICRITICAL POINTS -- SYSTEMS WITH ALMOST-BROKEN SYMMETRY -- Two-Dimensional Superfluid and XY Model -- Melting of a Two-Dimensional Crystal -- Smectic A-to-Nematic Transition -- QUENCHED DISORDER -- PERCOLATION AND THE METAL-INSULATOR TRANSITION IN DISORDERED SYSTEMS -- NONEQUILIBRIUM SYSTEMS -- FIRST-ORDER TRANSITIONS -- OUTLOOK -- 4 Magnetism -- INTRODUCTION -- MAGNETIC INSULATORS -- Low-Dimensional Systems -- Critical Phenomena -- METALLIC MAGNETS -- Transition-Metal Ferromagnets -- Rare-Earth and Actinide Magnets -- DISORDERED SYSTEMS -- Introduction -- Disordered Ferromagnets, Antiferromagnets, and Paramagnets -- Spin Glasses -- COMPUTER SIMULATIONS IN MAGNETISM -- FUTURE DEVELOPMENTS -- 5 Semiconductors -- INTRODUCTION -- SURFACES AND INTERFACES -- DEFECTS IN SEMICONDUCTORS -- REDUCED DIMENSIONALITY IN SEMICONDUCTORS -- OPTICAL PROPERTIES OF COMPOUND SEMICONDUCTORS -- AMORPHOUS SEMICONDUCTORS -- FUTURE PROSPECTS -- Semiconductor Surfaces and Interfaces -- SEMICONDUCTOR-SEMICONDUCTOR INTERFACES -- SEMICONDUCTOR-INSULATOR INTERFACES -- SEMICONDUCTOR-METAL INTERFACES --

Defects in Semiconductors -- Systems of Reduced Dimensionality -- QUANTIZED HALL EFFECT -- GROWTH TECHNIQUES AND LITHOGRAPHY -- SMALL STRUCTURES -- HETEROSTRUCTURES -- THE TWO-DIMENSIONAL WIGNER CRYSTAL -- 6 Defects and Diffusion -- INTRODUCTION -- NEW FIELDS FROM OLD: AN EXAMPLE -- Phase Microstructure and Phase Generation in Radiation Fields -- Surface and Near-Surface Probes -- Ion-Beam Microfabrication -- CALCULATIONS OF DEFECT STRUCTURE -- FUNDAMENTALS OF ATOMIC MOBILITY -- COMMENTS ON ACTIVE AREAS -- Point Defects in Simple Solids -- Surface Diffusion -- Photochemical Processes.

Molecular Dynamics -- Dislocation Motion in Glasses -- Defect Imaging at Atomic Resolution -- SOME DIRECTIONS FOR FUTURE RESEARCH -- 7 Surfaces and Interfaces -- INTRODUCTION -- THE STRUCTURE OF THE CRYSTAL SURFACE -- SPECTROSCOPY AND ELEMENTARY EXCITATIONS ON THE SURFACE -- INTERACTIONS OF ATOMS AND MOLECULES ON THE SURFACE -- THE INTERFACE BETWEEN SOLIDS AND DENSE MEDIA -- THEORY -- OPPORTUNITIES -- 8 Low-Temperature Physics -- DEFINITION OF SUBFIELD -- QUANTUM FLUIDS -- Superfluid  $^3\text{He}$  -- NUCLEAR MAGNETIC RESONANCE IN SUPERFLUID  $^3\text{He}$  -- ULTRASOUND -- OTHER SOUND MODES -- DEFECTS -- SUPERFLUID FLOW AND HYDRODYNAMICS -- Novel Quantum Fluids -- MIXTURES OF  $^3\text{He}$  IN  $^4\text{He}$  -- SPIN-POLARIZED HYDROGEN AND DEUTERIUM -- LIQUID  $^4\text{He}$  IN UNUSUAL GEOMETRIES -- ELECTRONS ON HELIUM SURFACES -- SUPERCONDUCTIVITY -- Nonequilibrium Superconductivity -- Novel Superconducting Materials -- Magnetic Superconductors -- High-Transition-Temperature, High-Magnetic-Field Materials -- The Josephson Effects -- QUANTUM CRYSTALS -- LOW-TEMPERATURE TECHNOLOGY -- RESEARCH OPPORTUNITIES IN LOW-TEMPERATURE PHYSICS -- 9 Liquid-State Physics -- CLASSICAL LIQUIDS -- Introduction -- Static Properties -- Dynamical Properties of Classical Liquids -- Colloidal Systems-Soap Solutions -- LIQUID CRYSTALS -- What Are Liquid Crystals? -- Why Are Liquid Crystals Interesting? -- Major Advances -- OPPORTUNITIES FOR FUTURE WORK -- 10 Polymers -- INTRODUCTION -- RESEARCH PROBLEMS -- Amorphous State-Solutions and Melts -- Glass -- Elastomers, Gels, Cross-linked Networks -- Polymer Crystals -- Electrical Properties -- Other Polymer Properties -- OPPORTUNITIES -- 11 Nonlinear Dynamics, Instabilities, and Chaos -- INTRODUCTION -- MAJOR ADVANCES -- A New Paradigm -- New Experimental Methods -- Routes to Chaos -- Dynamical Systems Theory of the Routes to Turbulence -- Dynamical Systems Analysis of Experiments.

Nonlinear Stability Theory -- Pattern Evolution -- Instabilities in Other Dissipative Systems -- Nonlinear Dynamics of Conservative Systems -- General Remarks -- CURRENT FRONTIERS -- Bifurcation Sequences -- Patterns -- Numerical Simulations -- Experimental Methods -- Transition from Weak to Fully Developed Turbulence -- Conservative Systems -- Nonequilibrium Systems -- New Directions -- Appendixes -- B New Experimental Techniques -- C New Materials -- INTRODUCTION -- NEW MATERIALS IN THE LAST DECADE -- One- and Two-Dimensional Transition-Metal Chalcogenides -- Materials with Open-Crystal Structures -- The Magnetic Superconductors -- Organic Conductors -- New Superconductors -- Glasses -- Artificially Structured Materials -- IMPACT OF NEW SYNTHESIS TECHNIQUES ON CONDENSED-MATTER PHYSICS -- Thin Metallic Films -- Epitaxial Materials -- Metallic Superlattices -- Materials Modification -- Filamentary Materials -- Metal Clusters -- MAJOR CONCERNS -- PROJECTIONS FOR THE FUTURE -- D Laser Spectroscopy of Condensed Matter -- INTRODUCTION -- ACCOMPLISHMENTS OF THE PAST DECADE

-- Nonlinear Optical Spectroscopy -- TWO-PHOTON SPECTROSCOPY --  
HOLE BURNING IN INHOMOGENEOUSLY BROADENED SPECTRA -- OTHER  
NONLINEAR SPECTROSCOPY TECHNIQUES -- Transient Optical  
Spectroscopy -- Ultrafast Laser Spectroscopy -- PICOSECOND LASER  
SPECTROSCOPY -- FEMTOSECOND LASER SPECTROSCOPY -- SOME  
DIRECTIONS FOR FUTURE RESEARCH -- E National Facilities --  
INTRODUCTION -- SYNCHROTRON RADIATION RESEARCH --  
Introduction -- Summary of Present Synchrotron Facilities in the United  
States -- Cornell High Energy Synchrotron Source (CHESS) -- National  
Synchrotron Light Source (NSLS) -- Stanford Synchrotron Radiation  
Laboratory (SSRL) -- Synchrotron Radiation Center (SRC) -- Synchrotron  
Ultraviolet Radiation Facility (SURF) -- Research Highlights of the Past  
Decade.  
Future Directions in Synchrotron Research -- NEUTRON-SCATTERING  
FACILITIES -- Description of Existing U.S. Facilities -- Research  
Highlights of the 1970s -- Future Directions -- Epithermal Neutrons --  
Neutron Guides -- High-Resolution Spectroscopy -- Interferometry --  
Growth of the Neutron User Community -- HIGH-MAGNETIC-FIELDS  
FACILITIES -- Description of U.S. Facilities -- Research Highlights of the  
1970s -- Opportunities -- FACILITIES FOR ELECTRON MICROSCOPY --  
Introduction -- Description of U.S. Facilities -- Advances of the Past  
Decade in Electron Microscopy -- Outlook for the Future --  
Contributors to This Volume -- PART I -- CHAPTER 1 -- CHAPTER 2 --  
CHAPTER 3 -- CHAPTER 4 -- CHAPTER 5 -- CHAPTER 6 -- CHAPTER 7  
-- CHAPTER 8 -- CHAPTER 9 -- CHAPTER 10 -- CHAPTER 11 --  
APPENDIX D -- APPENDIX E -- Index.

---