1. Record Nr. UNINA9910822475803321

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Titolo	One-Dimensional Superconductivity in Nanowires
Pubbl/distr/stampa	Hoboken, : Wiley, 2013
ISBN	3-527-64904-2 1-299-44876-3 3-527-64907-7
Edizione	[1st ed.]
Descrizione fisica	1 online resource (345 p.)
Altri autori (Persone)	ChangAlbert M
Disciplina	620.115
Soggetti	Low-dimensional semiconductors Nanostructured materials Nanowires Nanowires - Electric properties Superconductivity
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	One Dimensional Superconductivity in Nanowires; Contents; Preface; Abbreviations and Symbols; Color Plates; Part One Theoretical Aspects of Superconductivity in 1D Nanowires; 1 Superconductivity: Basics and Formulation; 1.1 Introduction; 1.2 BCS Theory; 1.3 Bogoliubov-de Gennes Equations - Quasiparticle Excitations; 1.4 Ginzburg-Landau Theory; 1.4.1 Time-Dependent Ginzburg-Landau Theory; 1.5 Gorkov Green's Functions, Eilenberger-Larkin-Ovchinnikov Equations, and the Usadel Equation; 1.6 Path Integral Formulation; References; 2 1D Superconductivity: Basic Notions; 2.1 Introduction 2.2 Shape Resonances - Oscillations in Superconductivity Properties 2.2.1 Early Treatments of Shape Resonances in 2D Films; 2.2.2 Bogoliubov-de Gennes Equations, Finite Temperature, and Parabolic-Band Approximation for Realistic Materials; 2.2.3 Numerical Solutions and Thin Film Shape Resonances; 2.2.4 1D Nanowires - Shape Resonances and Size Oscillations; 2.3 Superconductivity in Carbon Nanotubes - Single-Walled Bundles and Individual Multiwalled Nanotubes; 2.4 Phase Slips; 2.4.1 Finite Voltage in a Superconducting Wire and Phase Slip; 2.4.2 Phase Slip in a Josephson Junction

Sommario/riassunto

The book introduces scientists and graduate students to superconductivity, and highlights the differences arising from the different dimensionality of the sample under study. It focuses on transport in one-dimensional superconductors, describing relevant theories with particular emphasis on experimental results. It closely relates these results to the emergence of various novel fabrication techniques. The book closes by discussing future perspectives, and the connection and relevance to other physical systems, including superfluidity, Bose-Einstein condensates, and possibly cosmic strings.

2. Record Nr. UNINA9910894397303321

Titolo	Progress in health sciences
Pubbl/distr/stampa	Biaystok : , : Medical University of Bialystok
ISSN	2083-6260
Descrizione fisica	1 online resource
Soggetti	Medical sciences Sciences de la santé Periodicals.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Periodico
Note generali	Refereed/Peer-reviewed