

1. Record Nr.	UNINA9910830469503321
Titolo	The SQUID handbook // edited by John Clarke, Alex I. Braginski
Pubbl/distr/stampa	Weinheim, Germany : , : Wiley-VCH GmbH, , [2004] ©2004
ISBN	1-280-51987-8 9786610519873 3-527-60364-6 3-527-60458-8
Descrizione fisica	1 online resource (413 p.)
Disciplina	530.12
Soggetti	Superconducting quantum interference devices
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	2.2.3.1 General Considerations2.2.3.2 Numerical Simulations (Langevin Equation); 2.2.3.3 Analytical Theory of the dc SQUID; 2.2.4 Effect of Asymmetry; 2.3 Theory of the rf SQUID; 2.3.1 Introduction; 2.3.2 SQUID Potential and the Equation of Motion for the Phase Difference; 2.3.3 Unitary Theory for Output Signal and Noise; 2.3.4 Noise as a Small Perturbation; 2.3.4.1 Introduction; 2.3.4.2 Adiabatic Operation; Hysteretic Phase Diagram; 2.3.4.3 Non-adiabatic Regime; 3 SQUID Fabrication Technology; 3.1 Junction Electrode Materials and Tunnel Barriers; 3.2 Low-temperature SQUID Devices 3.2.1 Refractory Junction Electrodes3.2.2 Tunnel Barrier Technology; 3.2.3 Deposition Techniques; 3.2.4 Junction Definition; 3.2.5 Dielectric Insulation; 3.2.6 Patterning Techniques; 3.2.7 Passive Components for Device Fabrication; 3.2.8 Integrated SQUID Fabrication Process; 3.3 High-temperature SQUID Devices; 3.3.1 General Requirements and Problems; 3.3.2 Thin-film Deposition; 3.3.3 Patterning Techniques; 3.3.4 Junction Fabrication; 3.3.5 Fabrication of Single-layer Devices; 3.3.6 Fabrication of Multilayer Devices; 3.3.7 Device Passivation and Encapsulation; 3.4 Future Trends 4.4.2 Basic Building Blocks of rf SQUID Readout Electronics4.4.3 Construction of the Tank Circuit; 4.4.4 Coupling of the Tank Circuit to

the Transmission Line; 4.4.5 Cryogenic Preamplifiers; 4.4.6 Optimization for Maximum Sensitivity; 4.4.7 Multiplexed Readouts for Multichannel rf SQUID Systems; 4.5 Trends in SQUID Electronics; 5 Practical DC SQUIDS: Configuration and Performance; 5.1 Introduction; 5.2 Basic dc SQUID Design; 5.2.1 Uncoupled SQUIDS; 5.2.2 Coupled SQUIDS; 5.3 Magnetometers; 5.3.1 Overview; 5.3.2 Magnetometers for High Spatial Resolution
5.3.3 Magnetometers for High Field Resolution

Sommario/riassunto

This two-volume handbook offers a comprehensive and well coordinated presentation of SQUIDS (Superconducting Quantum Interference Devices), including device fundamentals, design, technology, system construction and multiple applications. It is intended to bridge the gap between fundamentals and applications, and will be a valuable textbook reference for graduate students and for professionals engaged in SQUID research and engineering. It will also be of use to specialists in multiple fields of practical SQUID applications, from human brain research and heart diagnostics to airplane and nuclear
