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1.2.2.2 Normal/Insulator/Normal Tunnel Junctions1.2.2.3 Normal/Insulator/Superconducting Tunnel Junctions; 1.2.2.4 Superconductor/Insulator/Superconducting Tunnel Junctions; 1.2.2.5 Superconducting Quantum Interference Devices (SQUIDs); 1.2.2.6 Phonon Structure; 1.2.2.7 Geometrical Resonances; 1.2.2.8 Scanning Tunneling Microscopy; 1.2.2.9 Charging Effects; References; 1.2.3 Flux Pinning; 1.2.3.1 Introduction; 1.2.3.2 Flux Lines, Flux Motion, and Dissipation; 1.2.3.3 Sources of Flux Pinning; 1.2.3.4 Flux Pinning in Technological Superconductors
1.2.3.5 Experimental Determination of Pinning Forces1.2.3.6 Regimes of Flux Motion; 1.2.3.7 Limitations on Core Pinning Efficacy; 1.2.3.8 Magnetic Pinning of Flux Lines; 1.2.3.9 Flux Pinning Anisotropy; 1.2.3.10 Maximum Entropy Treatment of Flux Pinning; References; 1.2.4 AC Losses and Numerical Modeling of Superconductors; 1.2.4.1 Introduction; 1.2.4.2 General Features of AC Loss Characteristics; 1.2.4.3 Measuring AC Losses; 1.2.4.3.1 Transport Losses; 1.2.4.3.2 Magnetization Losses; 1.2.4.3.3 Combination of Transport and Magnetization AC Losses; 1.2.4.4 Computing AC Losses
1.2.4.4.1 Analytical Computation1.2.4.4.2 Numerical Computation; References; Chapter 2 Superconducting Materials; 2.1 Low-Temperature Superconductors; 2.1.1 Metals, Alloys, and Intermetallic Compounds; 2.1.1.1 Introduction; 2.1.1.2 Type I and Type II Superconductor Elements and High-Field Alloys; 2.1.1.2.1 Fundamental Superconductor Properties; 2.1.1.2.2 Elemental Superconductors and Their Applications; 2.1.1.2.3 The Effect of Alloying; 2.1.1.3 Superconducting Intermetallic Compounds; 2.1.1.4 Pinning in Hard Type II Superconductors; 2.1.1.5 Design Principles of Technical Conductors
2.1.1.5.1 Electromagnetic Considerations

Sommario/riassunto

This wide-ranging presentation of applied superconductivity, from fundamentals and materials right up to the details of many applications, is an essential reference for physicists and engineers in academic research as well as in industry. Readers looking for a comprehensive overview on basic effects related to superconductivity and superconducting materials will expand their knowledge and understanding of both low and high Tc superconductors with respect to their application. Technology, preparation and characterization are covered for bulk, single crystals, thins fi lms as well as electronic

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