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Diamagnetism, Paramagnetism and Ferromagnetism; References
6 Persistence of Current 6.1 Quinn and Ittner; References; 7 Type I and Type II Superconductors; 7.1 Critical Magnetic Field; References; 8 Flux Pinning; 8.1 Vortex and Flux Lines; 8.2 The Original Abrikosov; References; SECTION III Superconducting Materials; 9 Low-Temperature Superconductors; 10 Organic Superconductors; References; 11 High-Temperature Superconductors; 11.1 Magnesium Diboride; 11.2 Transition Temperature of High-Tc Superconductors; References; SECTION IV Applications; 12 Superconducting Wire; 13 Medical Imaging; 13.1 Magnetic Resonance Imaging (MRI) 13.2 Magnetoencephalography 13.2.1 The Josephson Junction Revisited; 13.2.2 Neuronal Currents; References; 14 CERN and the LHC; References; 15 Maglev Trains; Appendices; A The BCS Theory; B Flux Penetration; C The Josephson Junction and the SQUID; D MRI; Generating the MRI Signal; References; E A Note on Superfluidity; F A Note on Safety; Index

Sommario/riassunto

Superconductivity is a quantum phenomenon that manifests itself in materials showing zero electrical resistance below a characteristic temperature resulting in the potential for an electric current to run continually through such a material without the need for a power source. Such materials are used extensively in medical and power applications, e.g. MRI and NMR machines. Discovering Superconductivity uses a series of practical and investigative activities, which can be used as tutor demonstr
