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Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	In the Memory of Shlomo Alexander -- Topological Considerations in Superconductivity -- The de Gennes-Alexander Theory of Superconducting Micronetworks -- Nodal Sets, Multiplicity and Superconductivity in Non-simply Connected Domains -- Connectivity and Flux Confinement Phenomena in Nanostructured Superconductors -- Zero Set of the Order Parameter, Especially in Rings -- Persistent Currents in Ginzburg-Landau Models -- On the Normal/Superconducting Phase Transition in the Presence of Large Magnetic Fields -- On the Numerical Solution of the Time-Dependent Ginzburg-Landau Equations in Multiply Connected Domains -- Formation of Vortex-Antivortex Pairs -- The Order Parameter as a Macroscopic Quantum Wavefunction -- The Ehrenberg-Siday-Aharonov-Bohm Effect -- Connectivity and Superconductivity in Inhomogeneous Structures.
Sommario/riassunto	The motto of connectivity and superconductivity is that the solutions of the Ginzburg--Landau equations are qualitatively influenced by the topology of the boundaries, as in multiply-connected samples. Special

attention is paid to the "zero set", the set of the positions (also known as "quantum vortices") where the order parameter vanishes. The effects considered here usually become important in the regime where the coherence length is of the order of the dimensions of the sample. It takes the intuition of physicists and the awareness of mathematicians to find these new effects. In connectivity and superconductivity, theoretical and experimental physicists are brought together with pure and applied mathematicians to review these surprising results. This volume is intended to serve as a reference book for graduate students and researchers in physics or mathematics interested in superconductivity, or in the Schrödinger equation as a limiting case of the Ginzburg--Landau equations.
