



# Theory of Fluctuations in Superconductors (International Series of Monographs on Physics)

By Anatoly Larkin, Andrei Varlamov

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This book presents a complete encyclopaedia of superconducting fluctuations, summarising the last thirty-five years of work in the field. The first part of the book is devoted to an extended discussion of the Ginzburg-Landau phenomenology of fluctuations in its thermodynamical and time-dependent versions and its various applications. The second part deals with microscopic justification of the Ginzburg-Landau approach and presents the diagrammatic theory of fluctuations. The third part is devoted to a less-detailed review of the manifestation of fluctuations in observables: diamagnetism, magnetoconductivity, various tunneling characteristics, thermoelectricity, and N.M.R. relaxation. The final chapters turn to the manifestation of fluctuations in unconventional superconducting systems: nanodrops, nanorings, Berezinsky-Kosterlitz-Thouless state, quantum phase transition between superconductor and insulator, and thermal and quantum fluctuations in weak superconducting systems. The book ends with a brief discussion on theories of high temperature superconductivity, where fluctuations appear as the possible protagonist of this exciting phenomenon.

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#### **Review**

"Theory of Fluctuations in Superconductors is a thorough and timely book aimed at both theorists and experimentalists interested in current topics in superconductivity. The book will be a useful guide and reference for graduate students and established workers in the field."

--James F. Annett, Physics Today

#### **About the Author**

The late Anatoly Larkin was William I. Fine and Bianca Chair in Theoretical Physics at the University of Minnesota, U.S.A. as well as a principal researcher at the Landau Institute for Theoretical Physics in Russia. Andrei Varlamov is a principal researcher at Coherentia-I.N.F.M. in Rome, Italy.

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