

## About the Author

**Hagen Kleinert** is Professor of Physics at the Freie Universität Berlin, Germany, and at ICRA Net, Pescara (Italy) and Nice (France). As a visiting scientist, he spent extended periods of time at CERN, the European Organization for Nuclear Research in Geneva; at the California Institute of Technology in Pasadena; at the Universities of California in Berkeley, Santa Barbara, and San Diego; at the University of Southern California; at the Los Alamos National Laboratories in New Mexico; and at Princeton University, New Jersey. He has made numerous contributions to our understanding of particle physics, mathematical physics, condensed matter physics, chemical physics, and nuclear physics.

His two-volume book *Gauge Fields in Condensed Matter* (World Scientific, 1989) develops a new quantum field-theory of phase transitions on the basis of *disorder fields*. Such fields have since become a powerful tool to investigate the statistical properties of fluctuating line-like excitations in various many-body systems such as superfluids, superconductors, and crystals.

His book *Critical Properties of  $\phi^4$ -Theories* (World Scientific, 2001) coauthored with V. Schulte-Frohlinde, gives a thorough introduction to the field theory of critical phenomena, and develops a powerful method for resumming the divergent perturbation expansions of quantum field theory leading to the most accurate critical exponents so far.

His latest book *Multivalued Fields in Condensed Matter, Electromagnetism, and Gravitation* (World Scientific, 2008) is the first to go beyond the standard single-valued field theories and to unveil the universal relevance of multivaluedness to many physical phenomena. It develops simple techniques to sum up fluctuations of these fields and to deduce consequences for the statistical properties of lines-like defect and vortex systems.