

## PREFACE

The *Thirtieth International Workshop on Condensed Matter Theories* (CMT30) was held at the Max-Planck-Institut für Physik Komplexer Systeme (MPIPKS) in Dresden, Germany on 5–10 June, 2006. It provided a forum in which to discuss advanced theoretical research in the area of quantum many-body theory. The Workshop was highly interdisciplinary, with the emphasis placed on the common concerns of theorists applying many-particle methods in such diverse areas as solid-state, low-temperature, nuclear, particle, statistical, and biological physics, as well as in quantum field theory, quantum information and the theory of complex systems. Additionally, overview lectures on current experimental research with respect to strongly-correlated electronic systems were included in the program.

The series of *International Workshop on Condensed Matter Theories* was initiated in 1977 in São Paulo, Brazil as a small two-week-long gathering of about 20 physicists. Since then, it has been held annually and uninterrupted. Although the original meetings in the series were designed to bring together US and Latin American physicists working in similar fields, later workshops have become truly international meetings which have been held at various locations around the world. The Brazil meeting was followed by later workshops in Trieste, Italy (1978); Buenos Aires, Argentina (1979); Caracas, Venezuela (1980); Mexico City (1981); St. Louis, USA (1982); Altenberg, Germany (1983); Granada, Spain (1984); San Francisco, USA (1985); Argonne, USA (1986); Oulu, Finland (1987); Taxco, Mexico (1988); Campos do Jordão, Brazil (1989); Elba, Italy (1990); Mar del Plata, Argentina (1991); San Juan, Puerto Rico (1992); Nathiagali, Pakistan (1993); Valencia, Spain (1994); Caracas, Venezuela (1995); Pune, India (1996); Luso, Portugal (1997); Nashville, USA (1998); Ithaca, Greece (1999); Buenos Aires, Argentina (2000); Canberra, Australia (2001); Luso, Portugal (2002); Toulouse, France (2003); St. Louis, USA (2004); and Kizu, Kyoto, Japan (2005). The MPIPKS in Dresden was eminently worthy of the Workshop's 30th anniversary. It served in particular as a place where the physics of complex systems was at the center of attention.

Since 1985, workshop invited talks have been published annually in a *Condensed Matter Theories* proceedings series, thus making the main results of these Workshops available to a larger community. The present volume of *Condensed Matter Theories* contains the contributions of most of the invited talks delivered at the Dresden workshop as well as a selection from the poster presentations. Points of view

exchanged between participants from distinct scientific branches in modern techniques used in condensed many-body theories gave rise to a highly stimulating atmosphere. The main areas covered at this workshop were: Fermi liquids, Bose liquids, strongly-correlated electronic systems, magnetism, superconductivity, nuclear systems, density-functional theory, molecular-dynamics simulations, biophysics, quantum information, and new formalisms.

We would like to express our deep gratitude to Professor Peter Fulde and the host institute for its excellent workshop facilities. We gratefully thank the Max Planck Society for financial support. Also, we thankfully acknowledge the financial support of the US Army Research Office in support of US participants.

Special thanks go to Marita Schneider for providing the organizational infrastructure, and also to John Adams for taking on the technical management. All of the participants enjoyed the opportunity to spend some time in the beautifully restored city of Dresden and its surroundings, such as the “Swiss Saxonian region” and the “Festung Königstein” that most of us visited during an excursion.

On behalf of the Program Committee and the Local Organizing Committee, we thank all the members of the International Advisory Committee for their constant support. We wish the organizers of future Workshops the very best in fostering the fine tradition of these *International Workshops on Condensed Matter Theories*, which will continue to flourish.

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