PREFACE

The rapid accumulation of experimental data and observations at the interface between different disciplines continues to pose challenges to our theoretical understanding of many natural and social phenomena. Topics as diverse as neuronal dynamics and competitions in industry, therefore, are being analyzed, modeled, and simulated using tools and techniques predominantly used by physicists and mathematicians. In view of this, the Research Center for Theoretical Physics (RCTP), Central Visayan Institute Foundation, organized the *6th Jagna International Workshop: Mathematical Analysis, Modelling, and Simulation in Interdisciplinary Sciences* on 4 – 7 January 2012. The Workshop, held in the coastal town of Jagna in the island province of Bohol, Philippines, was the 6th in a series organized by the RCTP which is marking its 20th year in 2012.

The Workshop aimed to provide a forum for: (a) investigating novel methods applicable to varied physical situations, (b) identifying essential new ideas and underlying principles; and (c) discussing recent breakthroughs and open questions in interdisciplinary sciences. With 54 participants from 10 countries, the informal nature of the Workshop encouraged graduate students and young Ph.D.'s to learn as much as they can from invited lecturers so that collaborative research directions can be clearly defined. Aside from research level talks, a tutorial lecture and roundtable discussion were also held.

To allow a wider audience to benefit from the Workshop, camera-ready manuscripts were contributed by lecturers and speakers for the publication of the Proceedings. The first two sections of this volume deal with applications of theoretical, experimental and numerical methods to the life sciences with papers on neurophysics as well as the biomechanics of cells and biopolymers. These are followed by a section on modeling polymers using computer simulation and tools from physics and mathematics. The papers in the fourth section deal with modeling of complex social systems. The volume ends with a section on general analytical and computational methods useful in exploring interdisciplinary areas and more complex physical systems.

The Workshop organizers wish to express their gratitude to the speakers, lecturers, and participants, as well as to the Workshop sponsors for the invaluable support. They are also grateful to the Workshop project assistants and staff who ensured the smooth running of the Workshop.

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C. C. Bernido and M. V. Carpio-Bernido
Editors