

## PREFACE

The Second International Symposium on the Frontier of Applied Mathematics was held at Tsinghua University on 8-9 June 2006. It was also an occasion to celebrate the 90th Birthday of Prof. Chia-Chiao Lin (C.C. Lin) and to honor his contributions to the advancement of applied mathematics. This volume is a collection of 14 original articles by world famous scientists from various parts of the world, including China, United State of America, Japan and Italy. The symposium presented a special opportunity to discuss state-of-the-art researches in applied mathematics.

Applied mathematics play an important role in all fundamental sciences and engineering applications. The scope of applied mathematics is very broad, and can be best described by the following words of C.C. Lin:

“The principal theme is the interdependence of mathematics and the sciences. In common with the pure mathematician, the applied mathematician is interested in the stimulation of the development of new mathematics, - but with primary emphasis on those aspects directly or at least very strongly motivated by scientific problems. In common with theoretical scientists, the applied mathematician seeks knowledge and understanding of scientific facts and real world phenomena through the use of mathematical methods.”

This volume provides an introduction to frontier research of certain areas of applied mathematics. The scope of this proceeding also coincides with the past and present research interests of Professor Lin. The 14 articles in this proceeding can be essentially divided into four parts: **neural science, protein structure, astrophysics, and nonlinear waves.**

In closing, we would like to thank all authors for submitting their works. They are Nancy Kopell, Din-Yu Hsieh, Frederic Y.M. Wan, Kerson Huang, S. Takahashi, Haijun Zhou, Chi Yuan, Giuseppe Bertin, Chung-Pei Ma, Frank H. Shu, Mark J. Ablowitz, Michael I. Weinstein, David J. Benney, Jianke Yang. We also thank Douglas N. C. Lin for his interesting lecture in this symposium. The preparation and organization of the symposium, as well the preparation of this volume, are supported by the staffs of the Zhou Pei-Yuan Center for Applied Mathematics at Tsinghua University (ZCAM).