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# Mathematical Modeling and Numerical Simulation in Continuum Mechanics

Proceedings of the International Symposium on Mathematical Modeling and Numerical Simulation in Continuum Mechanics, September 29 - October 3, 2000 Yamaguchi, Japan

With 83 Figures

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# Preface

The first international symposium on mathematical foundations of the finite element method was held at the University of Maryland in 1973. During the last three decades there has been great progress in the theory and practice of solving partial differential equations, and research has extended in various directions. Full-scale nonlinear problems have come within the range of numerical simulation. The importance of mathematical modeling and analysis in science and engineering is steadily increasing. In addition, new possibilities of analysing the reliability of computations have appeared. Many other developments have occurred: these are only the most noteworthy.

This book is the record of the proceedings of the International Symposium on Mathematical Modeling and Numerical Simulation in Continuum Mechanics, held in Yamaguchi, Japan from 29 September to 3 October 2000. The topics covered by the symposium ranged from solids to fluids, and included both mathematical and computational analysis of phenomena and algorithms. Twenty-one invited talks were delivered at the symposium. This volume includes almost all of them, and expresses aspects of the progress mentioned above. All the papers were individually refereed. We hope that this volume will be a stepping-stone for further developments in this field.

The symposium was supported by many people and organizations. Special thanks should go to Professor H. Fujita and Professor H. Hironaka, for their support and advice in planning this symposium, and also to Professor Ohtsuka, Professor Tabata and Mr. Hataya, the members of the local organization committee, for their enthusiastic and continued cooperation. It should be acknowledged that the symposium was sponsored by the Japan Association for Mathematical Sciences, the Inoue Foundation for Science, Mitsui Zosen System Research Inc., the Yamaguchi Tourism and Convention Association, Grants-in-Aid for Scientific Research (A)-10304012, 11304004, (B)-10440035,12440041, and Grant-in-Aid for Exploratory Research 11874022. Finally we wish to express our gratitude to The Japan Society for Industrial and Applied Mathematics, The Japan Society for Computational Engineering and Science, and the Department of Mathematical Science of Yamaguchi University, for their support and cooperation.

March 20, 2001

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