

## PREFACE

In 1981 a group of Italian researchers planned an International Conference devoted to a fruitful exchange of ideas and views between researchers from several countries, interested in the fields of wave propagation and nonlinear stability in Continuous Media. Thus the cycle of WASCOM Conferences (*Waves and Stability in Continuous Media*) began. After its first edition, the WASCOM Conference was regularly held every two years. The meeting received an increasing interest and participation by the international scientific community and nowadays it is a well known and appreciated forum. The last conference, the XIV edition (WASCOM 2007), was held in Sampieri (Ragusa), from June 30 to July 7, 2007. The previous editions took place in Catania (1981), Arcavacata di Rende (Cosenza, 1983), Giovinazzo (Bari, 1985), Taormina (Messina, 1987), Sorrento (Napoli, 1989), Acireale (Catania, 1991), Bologna (1993), Altavilla Milicia (Palermo, 1995), Capitolo di Monopoli (Bari, 1997), Vulcano (Messina, 1999), Porto Ercole (Grosseto, 2001), Villasimius (Cagliari, 2003), Acireale (Catania, 2005). Each edition has provided a book of proceedings documenting the updated research work and progress in the area. The 14th edition of the International Conference on Waves and Stability in Continuous Media, has been promoted by the Research Project of National Interest “Nonlinear Propagation and Stability in Thermodynamical Processes of Continuous Media” (PRIN 2005, national coordinator Prof. Tommaso Ruggeri). The research group working on this project belongs to Local Units of Bologna, Messina, Naples, Palermo, Turin and came from 12 different Italian universities. The Local Unit of Messina was in charge of organizing the meeting. The members of the Organizing Committee of the Conference belong to the Department of Mathematics of Universities of Bologna, Catania, Messina and Naples. One hundred and twenty-three participants coming from 14 different countries attended the XIV edition of the Conference. The main topics discussed were:

- Discontinuity and shock waves;
- Linear and non-linear stability in fluid dynamics;
- Small parameter problems;
- Kinetic theories and comparison with continuum models;
- Wave propagation and non equilibrium thermodynamics;
- Group analysis and reduction techniques;
- Numerical and technical applications.

This volume contains 80 papers which have been presented at the WASCOM 2007 as invited lectures and communications. The Editors of this volume would like to thank the Scientific Committee who carefully suggested the invited lectures and selected the contributed papers, as well as the member of the Organizing Committee. A special thank is addressed to all the participants to whom ultimately the success of the conference has been ascribed to. A thank as well to Fiammetta Conforto (Università di Messina) and Sandra Pieraccini (Politecnico di Torino) for their help in preparing the final version of the manuscript. Lastly the Editors are especially indebted to Fondazione CRT of Turin which has partially supported the publishing expenses of this volume.

The Editors

Natale Manganaro

Roberto Monaco

Salvatore Rionero

January 2008