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Editors:

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Wessex Institute of Technology, UK

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Preface

This book contains the majority of the papers presented at the 14th International Conference on Computational Methods and Experimental Measurements (CMEM/09) held in Algarve (Portugal) in 2009. The series of these events is unique in the field and now part of a quite long tradition. Indeed, the first conference took place in Washington DC in 1981 and has been reconvened every two years, in several locations, with uninterrupted success. The main scope of the meeting is to provide to the international technical and scientific community a forum to discuss the interaction and the complementary aspects of computational methods and experimental measurements, the main consideration and importance being committed to their advantageous integration.

It is well known that the stable progresses in computers efficiency and numerical techniques are producing a steady growth of computational simulations which nowadays influence both an ever-widening range of engineering problems, as well as our everyday activities. As these simulations are continuously expanding and improving, there still exists the necessity of their validation, which can be only accomplished by performing dedicated experimental tests. Furthermore, because of their incessant development, experimental techniques are becoming more complex and sophisticated so that, both their running as well as data collection can only be performed by means of computers. Finally, it must be stressed that, for the majority of the measurements, the obtained data must be processed by means of numerical methods.

This volume contains a substantial number of excellent scientific papers, which present advanced approaches to modern research problems. They have been grouped in the following sections:

- Computational and experimental methods
- Experimental and computational analysis
- Direct, indirect and in-situ measurements
- Detection and signal processing

- Data processing
- Fluid flow
- Heat transfer and thermal processes
- Material characterization
- Structural and stress analysis
- Industrial applications
- Forest fires

The Editors are very grateful to all the authors for their valuable contributions and to the Members of the International Scientific Advisory Committee, as well as other colleagues, for their help in reviewing the papers published in this book.

The Editors
Algarve, 2009

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