



Fluid–solid interactions: modeling, simulation, bio-mechanical applications

Foreword

This thematic issue of the *Comptes Rendus Mécanique* contains the texts of the four lectures given 1 June 2004 during a special session of the *Section de Sciences Mécaniques* of the French National Academy of Sciences dedicated to *Fluid–Solid Interactions*; it contains also two additional articles, relevant to the main topics of this session. The above event took place at the Academy, quai de Conti, in Paris.

For many scientists and engineers *fluid–solid interaction = aero-elasticity*; this was never true, but one has to acknowledge that for many years aero-elasticity has been the dominating topic of this theme. It is our opinion that the situation is dramatically changing due to the strong emergence of applications from *bio-mechanics*, in particular those related to the *cardio-vascular system*. One of the main objectives of this special issue is to reflect this evolution by presenting research oriented articles discussing the modeling and simulation of fluid–elastic solid interactions, with a strong emphasis on cardio-vascular applications; it contains also articles related to particulate flow (in the spirit of [1]). All together these articles offer a perspective of fluid–solid interactions going beyond aero-elasticity. We definitely hope that this volume will motivate further investigations in an area very rich in complicated and interesting problems, related to important applications from Science and Engineering, and whose solution offers exciting challenges to the Modeling and Simulation communities.

Acknowledgements

The invited editor would like to acknowledge the most helpful assistance of his colleague Olivier Pironneau concerning the organization of the 1 June 2004 special session on Fluid–Solid Interactions, and of Professor Evariste Sanchez-Palencia and Mrs. Mireille Flay in the preparation of this thematic issue. Warmest thanks are also due to the authors of the six articles in this volume; all of them accepted with impressive enthusiasm to contribute and, even more impressive, in some sense, these authors respected the rather drastic deadlines imposed by the editor. My final thanks will go to the participants of the 1 June 2004 special session at the French Academy of Sciences and to the Elsevier people involved in this publication.

References

- [1] M.C. Rocco (Ed.), *Particulate Two-Phase Flow*, Butterworth–Heinemann, Boston, MA, USA, 1993.

Roland Glowinski
Laboratoire Jacques-Louis Lions
Université P. et M. Curie
4 Place Jussieu, 75005 Paris, France
and
Department of Mathematics
University of Houston
4800, Calhoun, Houston, TX 77004, USA
E-mail address: roland@math.uh.edu

Available online 16 November 2005