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## Preface

This volume contains papers that were presented at HYP2006, the International Conference on “Hyperbolic Problems: Theory, Numerics and Applications” held at École Normale Supérieure de Lyon, France, July, 17–21, 2006.

HYP2006 is the 11th meeting in a biennial series that was initiated in 1986 in Saint-Étienne and that has become one of the most important international events in Applied Mathematics. The very first conference in Saint-Étienne had been the occasion to gather western and eastern researchers working on hyperbolic PDEs. At that time, all participants had of course in mind various applications of those PDEs, but the meeting was mainly focused on analytical tools. Since then, as computers were becoming more and more powerful, the interplay between theory, modelling, and numerical algorithms, gained considerable impact, and the scope of HYP conferences expanded accordingly. The field is nowadays in interaction with a lot of scientific domains, including physics, chemistry, biology and engineering. For example, many effective numerical methods, originally developed in the context of Computational Fluid Dynamics, have found new applications in the recent years. Applications of hyperbolic PDEs now range from fluid dynamics to biology, from road or network traffic to electro-magnetism, from meso/nano-scale material properties of semi-conductors to multi-phase flows, including phase transitions, geophysical flows, and from chemical or industrial processes to astro-physical problems where general relativity is relevant - this list is of course not limitative. Of course, other kinds of PDEs are also concerned, especially parabolic and dispersive equations, as far as, either they tell something about the hyperbolic theory, or the hyperbolic theory helps in studying them. Probabilistic tools (particle systems) also bring another valuable point of view.

A total of about 240 participants attended HYP2006. We had the great pleasure to welcome leading researchers from many different areas, who addressed theoretical, modelling and computational issues involving hyperbolic PDEs, with applications to a variety of domains, including everyday life problems (e.g. traffic flow). More than one hundred selected papers are

collected in this volume. They reflect the high quality of contributions, invited or not, to HYP2006, and cover a wide range of topics. We hope that HYP2006 and its present Proceedings will contribute to encourage younger generations to work in the field, to generate future cooperations, and to promote cross-disciplinary interactions.

We would like to acknowledge financial support from the following institutions:

- École Normale Supérieure de Lyon,
- Office of Naval Research,
- Centre National de la Recherche Scientifique (CNRS),
- Ministère de l'Éducation Nationale et de la Recherche,
- CNRS laboratories: UMPA (UMR # 5569) and ICJ (UMR # 5208),
- Commissariat à l'Énergie Atomique,
- CNRS groupement de recherche CHANT (GDR # 2900),
- Conseil de la Région Rhône-Alpes,
- Conseil du Département du Rhône,
- ACI "Études mathématiques de paramétrisations en océanographie",
- Ministère des Affaires étrangères.

Lyon,  
July 2007

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Hyperbolic Problems: Theory, Numerics, Applications  
Proceedings of the Eleventh International Conference  
on Hyperbolic Problems held in Ecole Normale  
Supérieure, Lyon, July 17-21, 2006  
Benzoni-Gavage, S.; Serre, D. (Eds.)  
2008, XXXVI, 1123 p., Hardcover  
ISBN: 978-3-540-75711-5