

Forewords

Since 2001, every two years, the S.M.A.I. (Société de Mathématiques Appliquées et Industrielles) co-organizes, jointly with a french laboratory, a conference, entitled “Congrès National de Mathématiques Appliquées et Industrielles”, which gathers the CANUM Workshop (Congrès National d’Analyse Numérique) and the annual conferences of the five thematic groups of the SMAI

- AFA: Association Française d’Approximation (now called SIGMA).
- GAMNI: Groupe pour l’Avancement des Méthodes Numériques de l’Ingénieur,
- MAIRCI: Mathématiques Appliquées, Informatique, Réseaux, Industrie,
- MAS: Modélisation Aléatoire et Statistique,
- MODE: Mathématiques de l’Optimisation et de la Décision.

It is oriented towards a wide spectrum of subjects going from theoretical to numerical issues.

In 2011, this conference was organized by the Fédération Denis Poisson, which gathers the laboratories of Mathematics and Theoretical Physics of the Universities of Orléans (MAPMO) and Tours (LMPT), and took place from May 23th to 27th 2011, at the Club Belambra of Guidel (close to Lorient); see web page

<http://smai.emath.fr/smai2011/>.

In this 2011 SMAI Conference, there were 308 participants, 180 scientific lectures were given, consisting of 11 plenary conferences, 48 lectures in 16 mini-symposia, 89 conferences in parallel sessions, and 32 poster presentations, as well as an evening session devoted to Mathematics in Industries (“Mathématiques en Entreprises”). At least one person from the industry was involved in most of the mini-symposia. Besides, since the Fédération Denis Poisson has a strong component on Theoretical Physics, one plenary conference and one mini-symposium were devoted to this thematic.

The 11 plenary lectures were chosen by a scientific committee, chaired by Thierry Gallouet and composed of V. Bally, A. Cohen, F. Comets, A. De Bouard, P. Degond, P. Flajolet, J.-B. Lasserre, M. Massot, A. Niemi, D. Picard, E. Trélat. The speakers of these plenary lectures were

François Baccelli, Pierre Cardaliaguet, Rama Cont, Monique Dauge, Etienne De Rocquigny, Emmanuel Grenier, Oleg Lepski, Roland Masson, Paul Sutcliffe, Cédric Villani, Wendelin Werner.

All of them are warmly thanked, as well as the members of the organization committee (R. Abraham, G. Barles, E. Chasseigne, D. Chauveau, M. Cizeau, S. Cordier, L. Delsol, C. Georgelin, M.-F. Grespier, P. Grillot, T. Haberkorn, C. Laguerre, J.-R. Licois, A. Liger, C. Louchet, C. Lucas, S. Mancini, V. Pierfelice, O. Thibault, R. Théron, E. Trélat).

The present issue of ESAIM Proceedings gathers some contributions by participants to the 2011 SMAI Conference. It consists of 4 articles by plenary lecturers (P. Cardaliaguet, M. Dauge, E. Grenier and R. Masson), 7 articles by lecturers in mini-symposia, and 18 articles by lecturers in parallel sessions (the latter ones being limited to 6 pages). They span many different thematics, among which modelization, partial differential equations, discretization issues and numerical schemes, probabilities, differential games, optimal control, quantum physics, homogenization. We thank all the authors of these 29 articles for their contribution to this issue of ESAIM Proceedings.

The guest editors,
Fédération Denis Poisson (Orléans-Tours) and E. Trélat (UPMC)