

## Preface

In this volume, the reader will first find the invited talks given at the conference. Then, in a second part, he/she will find the contributions which were presented at the conference after selection. In both cases, papers are given in the alphabetic order of the authors.

MCU 2004 was the fourth edition of the conference in theoretical computer science, *Machines, Computations and Universality*, formerly, *Machines et calculs universels*. The first and the second editions, MCU 1995 and MCU 1998, were organized by Maurice Margenstern, respectively in Paris and in Metz (France). The third edition, MCU 2001, was the first one to be organized outside France and it was held in Chişinău (Moldova). Its co-organizers were Maurice Margenstern and Yurii Rogozhin. The proceedings of MCU 2001 were the first to appear in Lecture Notes in Computer Science, see LNCS 2055.

From its very beginning, the MCU conference has been an international scientific event. For the fourth edition, Saint Petersburg was chosen to hold the meeting. The success of the meeting confirmed that the choice was appropriate.

MCU 2004 also aimed at high scientific standards. We hope that this volume will convince the reader that this tradition of the previous conferences was also upheld by this one. Cellular automata and molecular computing are well represented in this volume. And this is the case for quantum computing, formal languages and the theory of automata too. MCU 2004 also did not fail its tradition to provide our community with important results on Turing machines. Also a new feature of the Saint Petersburg edition was the contributions on analog models and the presence of unconventional models.

Here is an opportunity for me to thank the referees of the submitted papers for their very efficient work. The members of the program committee gave me decisive help on this occasion. Thanks to them, namely Anatoly Beltiukov (co-chair), Erzsebet Csuhaj-Varjú, Nikolai Kossovskii (co-chair), Kenichi Morita, Gheorghe Păun, Yurii Rogozhin and Arto Salomaa, I can offer the reader this issue of LNCS.

The local organizing committee included Anatoly Beltiukov, Nikolai Kossovskii, Michail Gerasimov, Igor Soloviov, Sorin Stratulat and, especially, Elena Novikova.

MCU 2004 could not have been held without decisive supports. For this reason, I thank the *Laboratoire d'Informatique Théorique et Appliquée, LITA*, the University of Metz, and one of its faculties, UFR MIM.

Metz, 29 November 2004

Maurice Margenstern

## Organization

MCU 2004 was organized by the Laboratoire d'Informatique Théorique et Appliquée (LITA), University of Metz, Metz, France and the Euler International Mathematical Institute, part of the Saint Petersburg Department of the Steklov Institute of Mathematics, Russia.

### Program Committee

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