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6TH CONFERENCE ON COMPUTABILITY IN EUROPE "PROGRAMS, PROOFS, PROCESSES"

CO-SPONSORED BY THE ASSOCIATION FOR SYMBOLIC LOGIC

University of Azores, Ponta Delgada, Azores, Portugal
June 30–July 4, 2010

CiE 2010 is the sixth conference of the series ***Computability in Europe***. The theme of CiE 2010, *Programs, Proofs, Processes*, points to the usual CiE synergy of Computer Science, Mathematics and Logic, with important computability-theoretic connections to science and applications. Formal systems, attendant proofs, and the possibility of their computer generation and manipulation (for instance, into programs) have been changing a whole spectrum of disciplines. The conference addressed not only the more established lines of research of computational complexity and the interplay between proofs and computation, but also novel views that rely on physical and biological processes and models to find new ways of tackling computations and improving their efficiency.

The conference was based on invited tutorials and lectures, and six special sessions. There also were many contributed papers and informal presentations. The conference proceedings volume has been published in the Springer LNCS series, Volume 6158, and contains twenty of the invited papers and twenty-eight of the submitted contributed papers. An abstract and handout booklet, locally published by the Center for Applied Mathematics and Information Technology of the University of Azores, contains the abstracts of two tutorials, of six invited plenary speakers, of a tribute to Marian Pour-El, two abstracts and a paper of the special sessions, thirty-six contributed papers as well as twenty-nine abstracts of informal presentations. The Best Student Paper Award was given to Rebecca Steiner (CUNY) for her paper *Computable fields and weak truth-table reducibility*. There will be a number of post-conference publications, including special issues of ***Annals of Pure and Applied Logic*** and ***Theory of Computing Systems***.

There were eight invited plenary talks:

Eric Allender (Rutgers University), *New surprises from self-reducibility*.
José L. Balcázar (University of Cantabria), *Towards a logic of association rules*.
Shafi Goldwasser (Weizmann Institute and MIT), *On the possibility of cryptography without (so many) secrets*.
Denis Hirschfeldt (University of Chicago), *Algorithmic randomness and lowness*.
Seth Lloyd (MIT), *Quantum algorithm for solving linear systems of equations*.
Sara Negri (University of Helsinki), *A survey of labelled sequent systems*.
Toniann Pitassi (University of Toronto), *The story of set disjointness*.
Ronald de Wolf (CWI, Amsterdam), *Quantum proofs for classical theorems*.

Toniann Pitassi was the APAL lecturer. Bruno Codenotti (Istituto di Informatica e Telematica, CNR, Pisa) gave a three part tutorial entitled *Computational game theory*. Due to sickness, the other invited tutorial speaker, Jeffrey Bub (University of Maryland), could not be present.

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A special tribute to Professor Marian Pour-El was presented by Ning Zhong (University of Cincinnati): *Where to go*: *download into a computer or uplift to become a cloud*? Marian Pour-El died on June 10, 2009 and was considered a leader in the field of computability and functional analysis, and its applications to physical theory.

Six special sessions were held:

Biological Computing, organized by Paola Bonizzoni (Milano) and Shankara Krishna (Mumbai). *Speakers*: Nataša Jonoska (University of South Florida), Giancarlo Mauri (University of Milano-Bicocca), Yasubumi Sakakibara (Keio University), Stéphane Vialette (University of Paris-Est Marne-la-Vallé).

Computational Complexity, organized by Luís Antunes (Porto) and Alan Selman (Buffalo, NY). *Speakers*: Eric Allender (Rutgers University), Christian Glaßer (University of Würzburg), Luís Antunes (University of Porto), Rahul Santhanam (University of Edinburgh).

Computability of the Physical, organized by Cris Calude (Auckland) and Barry Cooper (Leeds). *Speakers*: Seth Lloyd (MIT), Yuri Manin (Max-Planck Institute and Northwestern University; talk delivered by Cris Calude, University of Auckland, due to incapacity of Yuri Manin), Cris Moore (University of New Mexico and Santa Fe Institute), David Wolpert (Ames Research Center, NASA).

Proof Theory and Computation, organized by Fernando Ferreira (Lisbon) and Martin Hyland (Cambridge). *Speakers*: Thorsten Altenkirch (University of Nottingham), Samuel Mimram (CEA LIST, Gif-sur-Yvette), Paulo Oliva (Queen Mary, University of London), Lutz Straßburger (INRIA, Paris).

Reasoning and Computation from Leibniz to Boole, organized by Benedikt Löwe (Amsterdam) and Guglielmo Tamburrini (Napoli). *Speakers*: Nimrod Bar-Am (Sapir Academic College), Michèle Friend (George Washington University), Olga Pombo (University of Lisbon), Sara Uckelman (University of Amsterdam).

Web Algorithms and Computation, organized by Thomas Erlebach (Munich) and Martin Olsen (Aarhus). *Speakers*: Hannah Bast (University of Freiburg), Debora Donato (Yahoo! Labs, Sunnyvale, CA), Alex Hall (Google Switzerland GmbH), Jeannette Janssen (Dalhousie University).

The conference CiE 2010 was organized by Luís Antunes (Porto), Fernando Ferreira (Lisbon), Elisabete Freire (Ponta Delgada), Matthias Funk (Ponta Delgada), Hélia Guerra (Ponta Delgada), Luís Mendes Gomes (Ponta Delgada), and João Rasga (Lisbon).

The members of the Program Committee were: Klaus Ambos-Spies (Heidelberg), Luís Antunes (Porto), Arnold Beckmann (Swansea), Paola Bonizzoni (Milano), Alessandra Carbone (Paris), Steve Cook (Toronto ON), Barry Cooper (Leeds), Erzsébet Csuhaj-Varjú (Budapest), Fernando Ferreira (Lisbon, Co-Chair), Nicola Galesi (Rome), Rosalie Iemhoff (Utrecht), Achim Jung (Birmingham), Michael Kaminski (Haifa), Jarkko Kari (Turku), Viv Kendon (Leeds), James Ladyman (Bristol), Kamal Lodaya (Chennai), Giuseppe Longo (Paris), Benedikt Löwe (Amsterdam), Elvira Mayordomo (Zaragoza, Co-Chair), Luís Mendes Gomes (Ponta Delgada), Wolfgang Merkle (Heidelberg), Russell Miller (New York NY), Dag Normann (Oslo), Isabel Oitavem (Lisbon), João Rasga (Lisbon), Nicole Schweikardt (Frankfurt), Alan Selman (Buffalo NY), Peter van Emde Boas (Amsterdam), and Albert Visser (Utrecht)

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For the Organizing Committee
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