

Preface

The Program Committee also conferred a special Test-of-Time Award to the FCT 1991 paper *Lattice basis reduction: Improved practical algorithms and solving subset sum problems*, co-authored by Claus-Peter Schnorr and Martin Euchner. This volume contains the papers presented at FCT 2015: The 20th International Symposium on Fundamentals of Computation Theory, which was held during August 17–19, 2015, in Gdańsk, Poland. The Symposium on Fundamentals of Computation Theory was established in 1977 for researchers interested in all aspects of theoretical computer science, in particular in algorithms, complexity, and formal and logical methods. It is a biennial conference, which has previously been held in Poznań (1977), Wendisch-Rietz (1979), Szeged (1981), Borgholm (1983), Cottbus (1985), Kazan (1987), Szeged (1989), Gosen-Berlin (1991), Szeged (1993), Dresden (1995), Kraków (1997), Iasi (1999), Riga (2001), Malmö (2003), Lübeck (2005), Budapest (2007), Wrocław (2009), Oslo (2011), and Liverpool (2013). The suggested topics of FCT 2015 included three main areas:

- Algorithms (algorithm design and optimization; approximation, randomized, and heuristic methods; circuits and Boolean functions; combinatorics and analysis of algorithms; computational algebra; computational complexity; computational geometry; online algorithms; streaming algorithms; distributed and parallel computing)
- Formal methods (algebraic and categorical methods; automata and formal languages; computability and nonstandard computing models; database theory; foundations of concurrency and distributed systems; logics and model checking; models of reactive, hybrid, and stochastic systems; principles of programming languages; program analysis and transformation; specification, refinement, and verification; security; type systems)
- Emerging fields (ad hoc, dynamic, and evolving systems; algorithmic game theory; computational biology; foundations of cloud computing and ubiquitous systems; quantum information and quantum computing)

This year we received 60 submissions in response to the call for papers, of which 27 were accepted by the Program Committee after a careful review and discussion process. The conference program included three invited talks, by Marek Karpinski (University of Bonn), Antonín Kučera (Masaryk University), and Peter Widmayer (ETH Zürich), as well as a special session devoted to some of the most influential papers presented at FCT in the 40 years of the history of the conference. This volume contains the accepted papers and abstracts of the invited talks.

We would like to thank the members of the Program Committee for the evaluation of the submissions and the additional reviewers for their excellent cooperation in this work. We are grateful to all the contributors of the conference, in particular to the invited speakers for their willingness to share their insights on interesting new

developments. Furthermore, we thank the Organizing Committee chaired by Paweł Żyliński and Łukasz Kuszner for their invaluable help.

We are especially grateful to the sponsors of the conference: the Mayor of the City of Gdańsk, the University of Gdańsk, the Gdańsk University of Technology, and Springer, for their financial support. Finally, we acknowledge the use of the EasyChair system in managing paper submissions, the refereeing process, and preparation of the conference proceedings.

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