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# CONCUR 2012 – Concurrency Theory

23rd International Conference, CONCUR 2012  
Newcastle upon Tyne, UK, September 4-7, 2012  
Proceedings



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# Preface

This volume contains the proceedings of the 23rd International Conference on Concurrency Theory (CONCUR 2012) held in Newcastle upon Tyne, UK, during September 4–7, 2012. The aim of the CONCUR conference series is to bring together researchers, developers and students in order to advance the theory of concurrency and to promote its applications.

This edition of the conference was an official event of The Alan Turing Year, a centenary celebration of the life and work of Alan Turing. To mark this special occasion, the conference programme included two invited talks on the historical context of his work and on its relevance to the current developments in the field of concurrency theory, presented by Brian Randell (Newcastle University) and Jos Baeten (CWI), respectively. The conference programme was further greatly enhanced by the invited talks by Gordon Plotkin (University of Edinburgh) and Peter Sewell (University of Cambridge).

CONCUR 2012 attracted 97 submissions, and we would like to thank everyone who submitted. Each submission was reviewed by at least three reviewers who provided detailed evaluations as well as constructive comments and recommendations. After careful reviewing and extensive discussions, the Programme Committee decided to accept 35 papers for presentation at the conference. We would like to thank the Programme Committee members and all the additional reviewers for their truly professional work and strong commitment to the success of CONCUR 2012. We are also grateful to the authors for taking into account the comments and suggestions provided by the referees during the preparation of the final versions of their papers.

The conference was organised jointly with the 22nd International Workshop on Power and Timing Modeling, Optimization and Simulation (PATMOS 2012) and the 7th Symposium on Trustworthy Global Computing (TGC 2012). In addition, CONCUR included eight satellite workshops:

- Combined 19th International Workshop on Expressiveness in Concurrency and 9th Workshop on Structural Operational Semantics (EXPRESS/SOS), organised by Bas Luttik and Michel Reniers
- 4th Workshop on Games for Design, Verification and Synthesis (GASICS), organised by Kim G. Larsen, Nicolas Markey, Jean-François Raskin, and Wolfgang Thomas
- First International Workshop on Hybrid Systems and Biology (HSB), organised by Luca Bortolussi
- Workshop on Trustworthy Cyber-Physical Systems (TCPS), organised by John Fitzgerald, Terrence Mak, Alexander Romanovsky, and Alex Yakovlev
- Young Researchers Workshop on Concurrency Theory (YR-CONCUR), organised by Benedikt Bollig

- 11th International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems (FOCLASA), organised by Natallia Kokash, and António Ravara
- 6th Workshop on Membrane Computing and Biologically Inspired Process Calculi (MeCBIC), organised by Bogdan Aman, and Gabriel Ciobanu
- Trends in Concurrency Theory (TRENDS), organised by Jos Baeten, and Bas Luttik

We would like to thank everyone who contributed to the organisation of CONCUR 2012, especially the workshop organisation chairs Jason Steggles and Emilio Tuosto, and the workshop organisers. Furthermore, we thank Microsoft Research Cambridge, Formal Methods Europe, the School of Computing Science and Centre for Software Reliability of Newcastle University, and the Department of Computer Science of the University of Leicester for their financial support.

We are also grateful to Andrei Voronkov for the conference software system EasyChair, which was extremely helpful for the Programme Committee discussions and the production of the proceedings.

June 2012

Maciej Koutny  
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