

Preface

This volume contains the proceedings of the Sixth Workshop on Quantitative Aspects of Programming Languages (QAPL 2008), held in Budapest, Hungary, on March 29 and 30, 2008. The workshop is a satellite event of the European Joint Conferences on Theory and Practice of Software (ETAPS).

Quantitative aspects of computation are important and sometimes essential in characterising the behaviour and determining the properties of systems. They are related to the use of physical quantities (storage space, time, bandwidth, etc.) as well as mathematical quantities (e.g. probability and measures for reliability, security and trust). Such quantities play a central role in defining both the model of systems (architecture, language design, semantics) and the methodologies and tools for the analysis and verification of system properties. The aim of this workshop is to discuss the explicit use of quantitative information such as time and probabilities either directly in the model or as a tool for the analysis of systems. In particular, the workshop focuses on:

- the design of probabilistic, real-time, quantum languages and the definition of semantical models for such languages;
- the discussion of methodologies for the analysis of probabilistic and timing properties (e.g. security, safety, schedulability) and of other quantifiable properties such as reliability (for hardware components), trustworthiness (in information security) and resource usage (e.g. worst-case memory/stack/cache requirements);
- the probabilistic analysis of systems which do not explicitly incorporate quantitative aspects (e.g. performance, reliability and risk analysis);
- applications to safety-critical systems, communication protocols, control systems, asynchronous hardware, and to any other domain involving quantitative issues.

The history of QAPL starts in 2001, when its first edition was held in Florence, Italy, as a satellite event to the ACM Principles, Logics, and Implementations of high-level programming languages, PLI 2001. The second edition, QAPL 2004, was held in Barcelona, Spain, as a satellite event of ETAPS. Since then, QAPL has become a yearly appointment with ETAPS. Based on QAPL 2004, a special issue of the journal Theoretical Computer Science was published in volume 346(1). In

the following years, QAPL was held in Edinburgh, UK (QAPL 2005), in Vienna, Austria (QAPL 2006), and in Braga, Portugal (QAPL 2007). The proceedings of all workshops appeared in *Electronic Notes in Theoretical Computer Science (ENTCS)*.

The QAPL 2008 programme committee members were:

Alessandro Aldini (Co-chair), *University of Urbino, Italy*

Rajeev Alur, *University of Pennsylvania, US*

Christel Baier (Co-chair), *Technical University Dresden, Germany*

Nathalie Bertrand, *IRISA/INRIA Rennes, France*

Patricia Bouyer, *Oxford University, UK*

Tomas Brazdil, *Masaryk University, Czech Republic*

Flavio Corradini, *University of Camerino, Italy*

Josee Desharnais, *University of Laval, Canada*

Alessandra Di Pierro, *University of Verona, Italy*

Maurizio Gabbrielli, *University of Bologna, Italy*

Marcus Größer, *Technical University Dresden, Germany*

Marta Kwiatkowska, *University of Oxford, UK*

Mieke Massink, *NR-ISTI Pisa, Italy*

Paulo Mateus, *Technical University of Lisbon, Portugal*

Annabelle McIver, *Maquarie University, Australia*

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Paul Pettersson, *Mälardalen University, Sweden*

Jeremy Sproston, *University of Torino, Italy*

Franck van Breugel, *York University, Toronto, Canada*

Herbert Wiklicky, *Imperial College London, UK*

The programme committee selected 11 full papers. Each paper was reviewed by at least three referees. The programme of the workshop was completed by two invited talks given by:

Simon Gay, *University of Glasgow, UK*

Jean-Francois Raskin, *Universite Libre de Bruxelles, Belgium*

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*Alessandro Aldini
Christel Baier*