



Preface

This volume contains the proceedings of the 6th Workshop on Intuitionistic Modal Logic and Applications (IMLA 2013) held in association with UNILOG 2013, in Rio de Janeiro, Brazil, on April 7th, 2013. The workshop IMLA 2013 continues a series of interdisciplinary workshops bringing together computer scientists, logicians and mathematicians interested in the different aspects of constructive or intuitionistic modal logics. Previous workshops were held as part of FLoC1999, Trento, Italy, of FLoC2002, Copenhagen, Denmark, of LiCS2005, Chicago, USA, of LiCS2008, Pittsburgh, USA and as part of the 14th Congress of Logic, Methodology and Philosophy of Science, Nancy, France, 25th July, 2011. The workshops represent a loose collective of researchers interested in the theme, and have no institutional funding for the series, as a whole. This makes them a bit more challenging to organize, but also offer the possibility of experimenting with venues and formats, allowing them to be more computer science or more philosophically-orientated in different years.

Constructive modal logics and type theories are of increasing foundational and practical relevance in computer science. Constructive modal logics are very essential to type disciplines for programming languages, they are used as meta-logics for reasoning about a variety of computational phenomena and provide explanatory frameworks in philosophical logic. The workshop aims at developing and explaining theoretical and methodological issues centered around the question of how the proof-theoretic strengths of constructive logics can best be combined with the model-theoretic strengths of modal logics. Central issues concern the question of which modal connectives with which associated laws or proof rules capture computational phenomena accurately and at the right level of abstraction, for different applications.

The principal topics include: applications of intuitionistic necessity and possibility; (co)monads and strong (co)monads; constructive belief logics and type theories; applications of constructive modal logic and modal type theory to formal verification, abstract interpretation, and program analysis and optimization; modal types for integration of inductive and co-inductive types, higher-order abstract syntax, strong functional programming; models of constructive modal logics such as algebraic, categorical, Kripke, topological, and realizability interpretations; notions of proof for constructive modal logics; extraction of constraints or programs from modal proofs; and proof search methods for constructive modal logics and their

implementations.

We would like to thank all the authors for their interest in IMLA 2013. Each submission was reviewed by at least three careful reviewers. The workshop chairs would also like to thank the Program Committee members: Natasha Alechina (University of Nottingham, UK), Gavin Bierman (Microsoft Research, UK), Frank Pfenning (Carnegie Mellon University, US), Michael Mendler (University of Bamberg, Germany) and the additional reviewers for their excellent work, as well as for the constructive discussions. The workshop program was greatly enriched by the invited talks by Yuri Gurevich (Microsoft Research, USA), Luca Viganò (University of Verona, Italy) and Gianluigi Bellin (University of Verona, Italy).

We would like to thank every one who contributed to the organization of IMLA 2013 and we hope that many more IMLAs will be organized in the future.

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