

# Preface

This volume contains the papers presented at the 12th edition of the International Workshop on Satisfiability Modulo Theories (SMT 2014). The workshop was held on July 17th and 18th 2014 as part of the Vienna Summer of Logic (VSL 2014), in association with the 26th International Conference on Computer Aided Verification (CAV 2014), the 7th International Joint Conference on Automated Reasoning (IJCAR 2014), and the 17th International Conference on Theory and Applications of Satisfiability Testing (SAT 2014).

The workshop is the main annual event of the SMT community, where both researchers and users of SMT technology meet and discuss new theoretical ideas, implementation and evaluation techniques, as well as applications. Like in previous editions of the workshop, this year we invited submissions in three categories: extended abstracts, to present preliminary reports of work in progress; original papers, to describe original and mature research; and presentation-only papers, to provide additional access to important developments, recently published or submitted elsewhere and which SMT Workshop attendees may be unaware of. We received 13 submissions and each of them was reviewed by three program committee members. Due to the quality of and interest in the submissions, and in keeping with the desire to encourage presentation and discussion of work in progress, we were able to accept 11 contributions for presentation at the workshop: 2 original papers, 4 extended abstracts, and 5 presentation-only papers. Furthermore, the program included two invited talks, by Clark Barrett from New York University and Guillaume Melquiond from Inria. We would like to thank the authors, the invited speakers, the program committee, and the reviewers for their work and contributions to the workshop. We thank the CAV, IJCAR, SAT, and VSL organizers for their support and for hosting the workshop, and the EasyChair team for the availability of the EasyChair Conference System.

July, 2014

Philipp Rümmer  
Christoph M. Wintersteiger



# Table of Contents

SMT: Where do we go from here? .....	1
<i>Clark Barrett</i>	
Speeding Up SMT-Based Quantitative Program Analysis .....	3
<i>Daniel J. Fremont and Sanjit A. Seshia</i>	
Multi-solver Support in Symbolic Execution .....	15
<i>Hristina Palikareva and Cristian Cadar</i>	
Protocol Log Analysis with Constraint Programming .....	17
<i>Mats Carlsson, Olga Grinchtein and Justin Pearson</i>	
Reasoning About Set Comprehensions .....	27
<i>Edmund S. L. Lam and Iliano Cervesato</i>	
Weakly Equivalent Arrays .....	39
<i>Juergen Christ and Jochen Hoenicke</i>	
Decision Procedures for Flat Array Properties .....	51
<i>Francesco Alberti, Silvio Ghilardi and Natasha Sharygina</i>	
Extending SMT-LIB v2 with $\lambda$ -Terms and Polymorphism .....	53
<i>Richard Bonichon, David Déharbe and Cláudia Tavares</i>	
Automating the Verification of Floating-Point Algorithms .....	63
<i>Guillaume Melquiond</i>	
Leveraging Linear and Mixed Integer Programming for SMT .....	65
<i>Tim King, Clark Barrett and Cesare Tinelli</i>	
raSAT: SMT for Polynomial Inequality .....	67
<i>To Van Khanh, Vu Xuan Tung and Mizuhito Ogawa</i>	
Better Answers to Real Questions .....	69
<i>Marek Kosta, Thomas Sturm and Andreas Dolzmann</i>	
Towards Conflict-Driven Learning for Virtual Substitution .....	71
<i>Konstantin Korovin, Marek Kosta and Thomas Sturm</i>	



# Program Committee

Martin Brain	University of Oxford
Roberto Bruttomesso	Atrenta
Bruno Dutertre	SRI International
Pascal Fontaine	Inria, Loria, University of Lorraine
Malay Ganai	NEC Labs America
Sicun Gao	Carnegie Mellon University
Amit Goel	Calypto Design Systems
Alberto Griggio	FBK-IRST
Jochen Hoenicke	University of Freiburg
Dejan Jovanović	SRI International
Albert Oliveras	Technical University of Catalonia
Philipp Rümmer	Uppsala University
Christoph Stickel	The University of Iowa
Cesare Tinelli	The University of Iowa
Tjark Weber	Uppsala University
Georg Weissenbacher	Vienna University of Technology
Thomas Wies	New York University
Christoph M. Wintersteiger	Microsoft Research

## Additional Reviewers

Aleksandar Zeljić

