# Table of Contents

## Invited Talks

The Proof-Search Problem between Bounded-Width Resolution and Bounded-Degree Semi-algebraic Proofs

_Abert Atserias_  
1

Turing's Computable Real Numbers and Why They Are Still Important Today

_Edmund M. Clarke_  
18

There Are No CNF Problems

_Peter J. Stuckey_  
19

## Best Paper

Soundness of Inprocessing in Clause Sharing SAT Solvers

_Norbert Manthey, Tobias Philipp, and Christoph Wernhard_  
22

## Technical Papers

### Propositional Proof Complexity I

Exponential Separations in a Hierarchy of Clause Learning Proof Systems

_Jan Johannsen_  
40

On the Resolution Complexity of Graph Non-isomorphism

_Jacobo Torán_  
52

### Quantified Boolean Formulas

On Propositional QBF Expansions and Q-Resolution

_Mikoláš Janota and Joao Marques-Silva_  
67

Recovering and Utilizing Partial Duality in QBF

_Alexandra Goultiaeva and Fahiem Bacchus_  
83

Efficient Clause Learning for Quantified Boolean Formulas via QBF

_Florian Lonsing, Uwe Egly, and Allen Van Gelder_  
100
### Parallel Solving

Concurrent Clause Strengthening .................................. 116  
*Siert Wieringa and Keijo Heljanko*

Parallel MUS Extraction ........................................... 133  
*Anton Belov, Norbert Manthey, and Joao Marques-Silva*

### Maximum Satisfiability

A Modular Approach to MaxSAT Modulo Theories .................. 150  
*Alessandro Cimatti, Alberto Griggio,  
Bastiaan Joost Schaafsma, and Roberto Sebastiani*

Exploiting the Power of MIP Solvers in MAXSAT ................ 166  
*Jessica Davies and Fahiem Bacchus*

Community-Based Partitioning for MaxSAT Solving ............... 182  
*Ruben Martins, Vasco Manquinho, and Inês Lynce*

### Encodings and Applications

Experiments with Reduction Finding ................................ 192  
*Charles Jordan and Lukasz Kaiser*

A Constraint Satisfaction Approach for Programmable Logic Detailed Placement ........................................... 208  
*Andrew Mihal and Steve Teig*

Minimizing Models for Tseitin-Encoded SAT Instances .......... 224  
*Markus Iser, Carsten Sinz, and Mana Taghdiri*

### Beyond SAT

Solutions for Hard and Soft Constraints Using Optimized Probabilistic Satisfiability ........................................... 233  
*Marcelo Finger, Ronan Le Bras, Carla P. Gomes, and Bart Selman*

Quantified Maximum Satisfiability: A Core-Guided Approach .... 250  
*Alexey Ignatiev, Mikoláš Janota, and Joao Marques-Silva*

Nested Boolean Functions as Models for Quantified Boolean Formulas ....................................................... 267  
*Uwe Bubeck and Hans Kleine Büning*
# Table of Contents

## Solver Techniques and Algorithms

Factoring Out Assumptions to Speed Up MUS Extraction .......................... 276  
*Jean-Marie Lagniez and Armin Biere*

On the Interpolation between Product-Based Message Passing  
Heuristics for SAT .......................................................... 293  
*Oliver Gableske*

Improving Glucose for Incremental SAT Solving with Assumptions:  
Application to MUS Extraction ............................................ 309  
*Gilles Audemard, Jean-Marie Lagniez, and Laurent Simon*

## Clique-Width and SAT

A SAT Approach to Clique-Width ............................................. 318  
*Marijn J.H. Heule and Stefan Szeider*

Cliquewidth and Knowledge Compilation ..................................... 335  
*Igor Razgon and Justyna Petke*

## Propositional Proof Complexity II

A Rank Lower Bound for Cutting Planes Proofs of Ramsey’s Theorem .......... 351  
*Massimo Lauria*

The Complexity of Theorem Proving in Autoepistemic Logic ................. 365  
*Olaf Beyersdorff*

## Parameterized Complexity

Local Backbones .............................................................. 377  
*Ronald de Haan, Iyad Kanj, and Stefan Szeider*

Upper and Lower Bounds for Weak Backdoor Set Detection .................... 394  
*Neeldhara Misra, Sebastian Ordyniak, Venkatesh Raman, and Stefan Szeider*

## Tool Papers

LearnSAT: A SAT Solver for Education ........................................ 403  
*Mordechai (Moti) Ben-Ari*

MUStICCa: MUS Extraction with Interactive Choice of Candidates ........ 408  
*Johannes Dellert, Christian Zielke, and Michael Kaufmann*
SCSat: A Soft Constraint Guided SAT Solver ................................ 415
Hiroshi Fujita, Miyuki Koshimura, and Ryuzo Hasegawa

Snappy: A Simple Algorithm Portfolio ....................................... 422
Horst Samulowitz, Chandra Reddy, Ashish Sabharwal, and Meinolf Sellmann

Scarab: A Rapid Prototyping Tool for SAT-Based Constraint
Programming Systems ............................................................ 429
Takehide Soh, Naoyuki Tamura, and Mutsunori Banbara

Author Index ........................................................................ 437