

Table of Contents

Invited Talks

Complexity Dichotomy for Counting Problems	1
<i>Jin-Yi Cai</i>	
Algorithms for Analyzing and Verifying Infinite-State Recursive Probabilistic Systems	12
<i>Kousha Etessami</i>	
Recursion Schemes, Collapsible Pushdown Automata and Higher-Order Model Checking	13
<i>Luke Ong</i>	
Discrete Linear Dynamical Systems	42
<i>Joël Ouaknine</i>	
XML Schema Management: A Challenge for Automata Theory	43
<i>Thomas Schwentick</i>	

Regular Papers

On the Complexity of Shortest Path Problems on Discounted Cost Graphs	44
<i>Rajeev Alur, Sampath Kannan, Kevin Tian, and Yifei Yuan</i>	
Termination of Rule-Based Calculi for Uniform Semi-Unification	56
<i>Takahito Aoto and Munehiro Iwami</i>	
Deciding WQO for Factorial Languages	68
<i>Aistis Atminas, Vadim Lozin, and Mikhail Moshkov</i>	
On the Construction of a Family of Automata That Are Generically Non-minimal	80
<i>Parisa Babaali and Christopher Knaplund</i>	
Limited Non-determinism Hierarchy of Counter Automata	92
<i>Sebastian Bala and Dariusz Jackowski</i>	
Unambiguous Automata Denoting Finitely Sequential Functions	104
<i>Sebastian Bala and Artur Koniński</i>	
Duplication-Loss Genome Alignment: Complexity and Algorithm	116
<i>Billel Benzaid, Riccardo Dondi, and Nadia El-Mabrouk</i>	

Maximizing Entropy over Markov Processes	128
<i>Fabrizio Biondi, Axel Legay, Bo Friis Nielsen, and Andrzej Wąsowski</i>	
MAT Learning of Universal Automata	141
<i>Johanna Björklund, Henning Fernau, and Anna Kasprzik</i>	
A Graph Polynomial Approach to Primitivity	153
<i>Francine Blanchet-Sadri, Michelle Bodnar, Nathan Fox, and Joe Hidakatsu</i>	
Suffix Trees for Partial Words and the Longest Common Compatible Prefix Problem	165
<i>Francine Blanchet-Sadri and Justin Lazarow</i>	
Dynamic Communicating Automata and Branching High-Level MSCs	177
<i>Benedikt Bollig, Aiswarya Cyriac, Loïc Hélouët, Ahmet Kara, and Thomas Schwentick</i>	
Visibly Pushdown Automata: Universality and Inclusion via Antichains	190
<i>Véronique Bruyère, Marc Ducobu, and Olivier Gauwin</i>	
Two-Sided Derivatives for Regular Expressions and for Hairpin Expressions	202
<i>Jean-Marc Champarnaud, Jean-Philippe Dubernard, Hadrien Jeanne, and Ludovic Mignot</i>	
How to Travel between Languages	214
<i>Krishnendu Chatterjee, Siddhesh Chaubal, and Sasha Rubin</i>	
Execution Information Rate for Some Classes of Automata	226
<i>Cewei Cui, Zhe Dang, Thomas R. Fischer, and Oscar H. Ibarra</i>	
Decidability and Complexity Results for Verification of Asynchronous Broadcast Networks	238
<i>Giorgio Delzanno and Riccardo Traverso</i>	
The Buffered π -Calculus: A Model for Concurrent Languages	250
<i>Xiaojie Deng, Yu Zhang, Yuxin Deng, and Farong Zhong</i>	
Mix-Automatic Sequences	262
<i>Jörg Endrullis, Clemens Grabmayer, and Dimitri Hendriks</i>	
A Multivariate Analysis of Some DFA Problems	275
<i>Henning Fernau, Pinar Heggernes, and Yngve Villanger</i>	
On the Size Complexity of Deterministic Frequency Automata	287
<i>Rūsiņš Freivalds, Thomas Zeugmann, and Grant R. Pogosyan</i>	

On the Number of Unbordered Factors	299
<i>Daniel Goč, Hamoon Mousavi, and Jeffrey Shallit</i>	
Primitive Words and Lyndon Words in Automatic and Linearly Recurrent Sequences	311
<i>Daniel Goč, Kalle Saari, and Jeffrey Shallit</i>	
Efficient Submatch Extraction for Practical Regular Expressions	323
<i>Stuart Haber, William Horne, Pratyusa Manadhata, Miranda Mowbray, and Prasad Rao</i>	
Determinacy and Subsumption for Single-Valued Bottom-Up Tree Transducers	335
<i>Kenji Hashimoto, Ryuta Sawada, Yasunori Ishihara, Hiroyuki Seki, and Toru Fujiwara</i>	
Revealing vs. Concealing: More Simulation Games for Büchi Inclusion	347
<i>Milka Hutagalung, Martin Lange, and Etienne Lozes</i>	
On Bounded Languages and Reversal-Bounded Automata	359
<i>Oscar H. Ibarra and Bala Ravikumar</i>	
Rewrite Closure and CF Hedge Automata	371
<i>Florent Jacquemard and Michael Rusinowitch</i>	
Linear-Time Version of Holub's Algorithm for Morphic Imprimitivity Testing	383
<i>Tomasz Kociumaka, Jakub Radoszewski, Wojciech Rytter, and Tomasz Waleń</i>	
From Regular Tree Expression to Position Tree Automaton	395
<i>Éric Laugerotte, Nadia Ouali Sebti, and Djelloul Ziadi</i>	
Convergence of Newton's Method over Commutative Semirings	407
<i>Michael Luttenberger and Maximilian Schlund</i>	
Counting Minimal Symmetric Difference NFAs	419
<i>Brink van der Merwe, Mark Farag, and Jaco Geldenhuys</i>	
Interval Logics and ωB -Regular Languages	431
<i>Angelo Montanari and Pietro Sala</i>	
Eliminating Stack Symbols in Push-Down Automata and Linear Indexed Grammars	444
<i>Katsuhiko Nakamura and Keita Imada</i>	
Asynchronous PC Systems of Pushdown Automata	456
<i>Friedrich Otto</i>	

Model Checking Metric Temporal Logic over Automata with One Counter	468
<i>Karin Quaas</i>	
Coinductive Proof Techniques for Language Equivalence	480
<i>Jurriiaan Rot, Marcello Bonsangue, and Jan Rutten</i>	
Ostrowski Numeration and the Local Period of Sturmian Words	493
<i>Luke Schaeffer</i>	
Boolean Algebras of Regular ω -Languages	504
<i>Victor Selivanov and Anton Kononov</i>	
Pumping, Shrinking and Pronouns: From Context Free to Indexed Grammars	516
<i>Eli Shamir</i>	
Online Matching of Multiple Regular Patterns with Gaps and Character Classes	523
<i>Seppo Sippu and Eljas Soisalon-Soininen</i>	
Infiniteness and Boundedness in 0L, DT0L, and T0L Systems	535
<i>Tim Smith</i>	
Uniformisation of Two-Way Transducers	547
<i>Rodrigo de Souza</i>	
A Conditional Superpolynomial Lower Bound for Extended Resolution	559
<i>Olga Tveretina</i>	
A Turing Machine Distance Hierarchy	570
<i>Stanislav Žák and Jiří Šíma</i>	
Author Index	579