

2009 24th Annual IEEE Symposium on Logic in Computer Science

(LICS 2009)

**Los Angeles, California, USA
11 – 14 August 2009**



**IEEE Catalog Number: CFP09039-PRT
ISBN: 978-1-4244-4645-2**

2009 24th Annual IEEE Symposium on Logic In Computer Science

LICS 2009

Table of Contents

Foreword
Conference Organization
Additional Reviewers

Sessions 1 and 2 (Joint LICS/SAS)

My 27-year Quest to Overcome the State Explosion Problem	3
<i>Edmund M. Clarke</i>	
The General Vector Addition System Reachability Problem by Presburger Inductive Invariants	4
<i>Jérôme Leroux</i>	

Session 3

Applications of Game Semantics: From Program Analysis to Hardware Synthesis	17
<i>Dan R. Ghica</i>	
Boundedness vs. Unboundedness of Lock Chains: Characterizing Decidability of Pairwise CFL-Reachability for Threads Communicating via Locks	27
<i>Vineet Kahlon</i>	

Session 4

Psi-calculi: Mobile Processes, Nominal Data, and Logic	39
<i>Jesper Bengtson, Magnus Johansson, Joachim Parrow, and Björn Victor</i>	
An Algebra for Kripke Polynomial Coalgebras	49
<i>Marcello Bonsangue, Jan Rutten, and Alexandra Silva</i>	
Trace Semantics is Fully Abstract	59
<i>Sumit Nain and Moshe Y. Vardi</i>	

Session 5

Logical Step-Indexed Logical Relations	71
<i>Derek Dreyer, Amal Ahmed, and Lars Birkedal</i>	
Fully Abstract Logical Bisimilarity for a Polymorphic Object Calculus	81
<i>Luis Dominguez</i>	
Reflexive Scott Domains are Not Complete for the Extensional Lambda Calculus	91
<i>Alberto Carraro and Antonino Salibra</i>	
Substructural Operational Semantics as Ordered Logic Programming	101
<i>Frank Pfenning and Robert J. Simmons</i>	

Session 6

Logics with Rank Operators	113
<i>Anuj Dawar, Martin Grohe, Bjarki Holm, and Bastian Laubner</i>	
On Finite Satisfiability of Two-Variable First-Order Logic with Equivalence Relations	123
<i>Emanuel Kieronski and Lidia Tendera</i>	
Pointer Programs and Undirected Reachability	133
<i>Martin Hofmann and Ulrich Schöpp</i>	

Session 7

An Exponential Lower Bound for the Parity Game Strategy Improvement Algorithm as We Know it	145
<i>Oliver Friedmann</i>	
Graph Reachability and Pebble Automata over Infinite Alphabets	157
<i>Tony Tan</i>	
An Improved Lower Bound for the Complementation of Rabin Automata	167
<i>Yang Cai, Ting Zhang, and Haifeng Luo</i>	

Session 8

A Type System Equivalent to the Modal Mu-Calculus Model Checking of Higher-Order Recursion Schemes	179
<i>Naoki Kobayashi and C.-H. Luke Ong</i>	
Clipping: A Semantics-Directed Syntactic Approximation	189
<i>Dan R. Ghica and Adam Bakewell</i>	
Expressiveness and Closure Properties for Quantitative Languages	199
<i>Krishnendu Chatterjee, Laurent Doyen, and Thomas A. Henzinger</i>	

Session 9

Computation and the Periodic Table	211
<i>John Baez</i>	
The Structure of First-Order Causality	212
<i>Samuel Mimram</i>	
The Inverse Taylor Expansion Problem in Linear Logic	222
<i>Michele Pagani and Christine Tasson</i>	

Session 10

On the Computational Complexity of Verifying One-Counter Processes	235
<i>Stefan Göller, Richard Mayr, and Anthony Widjaja To</i>	
Co-ing Büchi Made Tight and Useful	245
<i>Udi Boker and Orna Kupferman</i>	
Wreath Products of Forest Algebras, with Applications to Tree Logics	255
<i>Mikolaj Bojanczyk, Howard Straubing, and Igor Walukiewicz</i>	

Session 11

Dinatural Terms in System F	267
<i>Joachim de Lataillade</i>	
Indexed Containers	277
<i>Thorsten Altenkirch and Peter Morris</i>	
Functional Reachability	286
<i>C.-H. Luke Ong and Nikos Tzevelekos</i>	

Session 12

Statistic Analysis for Probabilistic Processes	299
<i>Michel de Rougemont and Mathieu Tracol</i>	
Quantitative Model Checking of Continuous-Time Markov Chains Against Timed Automata Specifications	309
<i>Taolue Chen, Tingting Han, Joost-Pieter Katoen, and Alexandru Mereacre</i>	
Qualitative Determinacy and Decidability of Stochastic Games with Signals	319
<i>Nathalie Bertrand, Blaise Genest, and Hugo Gimbert</i>	

Session 13

Combining Ehrenfeucht-Fraïssé Games	331
<i>Benjamin Rossman</i>	
Winning Concurrent Reachability Games Requires Doubly-Exponential Patience	332
<i>Kristoffer Arnsfelt Hansen, Michal Koucký, and Peter Bro Miltersen</i>	
Graded Computation Tree Logic	342
<i>Alessandro Bianco, Fabio Mogavero, and Aniello Murano</i>	

Session 14

A Unified Sequent Calculus for Focused Proofs	355
<i>Chuck Liang and Dale Miller</i>	
Non-linear Rewrite Closure and Weak Normalization	365
<i>Carles Creus, Guillem Godoy, Francesc Massanes, and Ashish Tiwari</i>	
Ludics with Repetitions (Exponentials, Interactive Types and Completeness)	375
<i>Michele Basaldella and Claudia Faggian</i>	

Session 15

Trichotomy in the Complexity of Minimal Inference	387
<i>Arnaud Durand, Miki Hermann, and Gustav Nordh</i>	
A Logic for PTIME and a Parameterized Halting Problem	397
<i>Yijia Chen and Jörg Flum</i>	
A Note on the Complexity of the Satisfiability Problem for Graded Modal Logics	407
<i>Yevgeny Kazakov and Ian Pratt-Hartmann</i>	

Session 16

The Complexity of Global Cardinality Constraints	419
<i>Andrei A. Bulatov and Dániel Marx</i>	
The Complexity of Positive First-order Logic without Equality	429
<i>Florent Madelaine and Barnaby Martin</i>	

Author Index	439
---------------------------	-----