GI **STACS '97: Program** afcet

14^{th} Symposium on Theoretical Aspects of Computer Science

Hansestadt Lübeck, Germany,

February 27 – March 1, 1997

Plenary sessions and all sessions numbered "A" will take place in room "Prismensaal", all sessions numbered "B" will take place in room "Saal Münster/Braunschweig".

Thursday, February 27

9.00 **Welcome** *(R. Reischuk)*

9.05 **Invited Talk:** Unifying Models, *B. Steffen (Passau, Germany)*

Session 1A: Algorithms I
Chair: *A. Ferreira*

10.15 Predecessor Queries in Dynamic Integer Sets, *G.S. Brodal (Aarhus, Denmark)*

10.45 Semi-Dynamic Shortest Paths and Breadth-First Search in Digraphs, *P.G. Franciosa (Roma, Italy), D. Frigioni (L'Aquila, Italy), R. Giaccio (Roma, Italy)*

Session 1B: Automata Theory I
Chair: *J. Dassow*

10.15 Greibach Normal Form Transformation, Revisited, *R. Koch, N. Blum (Bonn, Germany)*

10.45 Translating Regular Expressions into Small ε-Free Nondeterministic Finite Automata, *J. Hromkovič, S. Seibert, T. Wilke (Kiel, Germany)*

Session 2A: Algorithms II
Chair: *D. Wagner*

11.45 Memory Management for Union-Find Algorithms, *C. Fiorio, J. Gustedt (Berlin, Germany)*

12.15 Fast Online Multiplication of Real Numbers, *M. Schröder (Hagen, Germany)*

Session 2B: Structural Complexity I
Chair: *M. Santha*

11.45 The Operators min and max on the Polynomial Hierarchy, *H. Hempel, G. Wechsung (Jena, Germany)*

12.15 Resource-Bounded Kolmogorov Complexity Revisited, *H. Buhrman (Amsterdam, The Netherlands), L. Fortnow (Chicago, USA)*

Session 3A: Probabilism
Chair: *M. Santha*

14.30 Las Vegas Versus Determinism for One-way Communication Complexity, Finite Automata, and Polynomial-time Computations, *P. Ďuriš (Bratislava, Slovakia), J. Hromkovič (Kiel, Germany), J.D.P. Rolim (Geneva, Switzerland), G. Schnitger (Frankfurt/M, Germany)*

15.00 Interactive Proof Systems with Public Coin: Lower Space Bounds and Hierarchies of Complexity Classes, *M. Liśkiewicz (Berkeley, USA)*

15.30 MOD_p-tests, Almost Independence and Small Probability Spaces, *C. Bertram-Kretzberg, H. Lefmann (Dortmund, Germany)*

Session 3B: Specification and Verification
Chair: *C. Lengauer*

14.30 Hybrid Diagrams: A Deductive-Algorithmic Approach to Hybrid System Verification, *L. de Alfaro, A. Kapur, Z. Manna (Stanford, USA)*

15.00 Temporal Logics for the Specification of Performance and Reliability, *L. de Alfaro (Stanford, USA)*

15.30 Efficient Scaling-Invariant Checking of Timed Bisimulation, *C. Weise, D. Lenzkes (Aachen, Germany)*

Session 4A: Boolean Functions
Chair: *D. Wagner*

16.30 Gossiping and Broadcasting versus Computing Functions in Networks, *M. Dietzfelbinger (Dortmund, Germany)*

17.00 On the Descriptive and Algorithmic Power of Parity Ordered Binary Decision Diagrams, *S. Waack (Göttingen, Germany)*

17.30 A Reducibility Concept for Problems Defined in Terms of Ordered Binary Decision Diagrams, *C. Meinel, A. Slobodová (Trier, Germany)*

Session 4B: Logic and Learning
Chair: *M. Kummer*

16.30 On the Classification of Computable Languages, *J. Case (Newark, USA), E. Kinber (Fairfield, USA), A. Sharma (Sydney, Australia), F. Stephan (Heidelberg, Germany)*

17.00 A Conditional-Logical Approach to Minimum Cross-Entropy, *G. Kern-Isberner (Hagen, Germany)*

17.30 Undecidability Results on Two-Variable Logics, *E. Grädel, M. Otto (Aachen, Germany), E. Rosen (Haifa, Israel)*

19.00 **Reception** in the "Audienzsaal", Rathaus (Town Hall)

Friday, February 28

9.00 **Invited Talk:** Methods and Applications of (MAX,+) Linear Algebra, *S. Gaubert (Rocquencourt, France)*

Session 5A: Automata Theory II
Chair: *J. Dassow*

10.15 Regular Expressions and Context-Free Grammars for Picture Languages, *O. Matz (Kiel, Germany)*

10.45 Measuring Nondeterminism in Pushdown Automata, *J. Goldstine (University Park, PA, USA), H. Leung (Las Cruces, USA), D. Wotschke (Frankfurt/M, Germany)* [presented by *C. Herzog*]

Session 5B: Structural Complexity II
Chair: *M. Kummer*

10.15 On Polynomially D-Verbose Sets, *A. Nickelsen (Berlin, Germany)*

10.45 A Downward Translation in the Polynomial Hierarchy, *E. Hemaspaandra (Syracuse, USA), L.A. Hemaspaandra (Rochester, USA), H. Hempel (Jena, Germany)*

Session 6A: Complexity Theory I
Chair: *D. Wagner*

11.45 Strict Sequential P-completeness, *K. Reinhardt (Tübingen, Germany)*

12.15 An Unambiguous Class Possessing a Complete Set, *K.-J. Lange (Tübingen, Germany)*

Session 6B: Parallel and Distributed Systems I
Chair: *A. Ferreira*

11.45 Deadlock-Free Interval Routing Schemes, *M. Flammini (L'Aquila, Italy)*

12.15 Power Consumption in Packet Radio Networks, *L.M. Kirousis (Patras, Greece), E. Kranakis, D. Krizanc (Ottawa, Canada), A. Pelc (Québec, Canada)*

Session 7A: Complexity Theory II
Chair: *J.-P. Allouche*

14.30 The Complexity of Generating Test Instances, *C. Karg, J. Köbler, R. Schuler (Ulm, Germany)*

15.00 Efficient Construction of Hitting Sets for Systems of Linear Functions, *A.E. Andreev (Moscow, Russia), A.E.F. Clementi (Rome, Italy), J.D.P. Rolim (Geneva, Switzerland)*

15.30 Protocols for Collusion-Secure Asymmetric Fingerprinting, *I. Biehl, B. Meyer (Saarbrücken, Germany)*

Session 7B: Parallel and Distributed Systems II
Chair: *C. Lengauer*

14.30 Minimal Transition Systems for History-Preserving Bisimulation, *U. Montanari, M. Pistore (Pisa, Italy)*

15.00 On Ergodic Linear Cellular Automata over Z_m, *G. Cattaneo, E. Formenti (Milano, Italy), G. Manzini (Torino, Italy), L. Margara (Bologna, Italy)*

15.30 Intrinsic Universality of a 1-Dimensional Reversible Cellular Automaton, *J.O. Durand-Lose (Bordeaux, France)*

Session 8A: Complexity Theory III
Chair: *M. Santha*

16.30 The Computational Complexity of Some Problems of Linear Algebra, *J.F. Buss (Waterloo, Canada), G.S. Frandsen (Aarhus, Denmark), J.O. Shallit (Waterloo, Canada)*

17.00 Algebraic and Logical Characterizations of Deterministic Linear Time Classes, *T. Schwentick (Mainz, Germany)*

Session 8B: Parallel Algorithms
Chair: *A. Ferreira*

16.30 Finding the k Shortest Paths in Parallel, *E. Ruppert (Toronto, Canada)*

17.00 Sequential and Parallel Algorithms on Compactly Represented Chordal and Strongly Chordal Graphs, *E. Dahlhaus (Bonn, Germany)*

Social Event

17.45 Guided tour of the "Old Town" (optional)

19.00 Organ concert, Prof. Schoof, Jakobikirche: D. Buxtehude, J.S. Bach, Improvisation

20.00 **Conference Dinner**

Saturday, March 1

Session 9A: Algorithms III
Chair: *C. Lengauer*

9.15 Distance Approximating Spanning Trees, *E. Prisner (Clemson, USA)*

9.45 A Better Upper Bound on the Bisection Width of de Bruijn Networks, *R. Feldmann, B. Monien, P. Mysliwietz, S. Tschöke (Paderborn, Germany)*

Session 9B: Structural Complexity III
Chair: *M. Kummer*

9.15 An Information-Theoretic Treatment of Random-Self-Reducibility, *J. Feigenbaum (Murray Hill, USA), M. Strauss (Ames, USA)*

9.45 Equivalence of Measures of Complexity Classes, *J.M. Breutzmann (Waverly, USA), J.H. Lutz (Ames, USA)*

Session 10A: Algorithms IV
Chair: *J.-P. Allouche*

10.45 Better Algorithms for Minimum Weight Vertex-Connectivity Problems, *V. Auletta, M. Parente (Baronissi, Italy)*

11.15 RNC-Approximation Algorithms for the Steiner Problem, *H.J. Prömel (Berlin, Germany), A. Steger (München, Germany)*

Session 10B: Automata Theory III
Chair: *J. Dassow*

10.45 Pattern Matching in Trace Monoids, *J. Messner (Ulm, Germany)*

11.15 Removing ε-Transitions in Timed Automata, *V. Diekert (Stuttgart, Germany), P. Gastin (Paris, France), A. Petit (Cachan, France)*

11.50 **Invited Talk:** Probabilistic Proof Systems – A Survey, *O. Goldreich (Rehovot, Israel)*