Conference Events

A reception will be held on Wednesday from 17.00 until 20.00 at the Technische Universität München. Drinks and *Brezn* (a bavarian speciality) will be served. Details on the excursion and the banquet will be provided on site. For accompanying persons, please ask at the registration desk for additional tickets. Lunches will be served in the Mensa on Thursday and Friday.

Proceedings

Additional copies of the proceedings will be sold during the conference at the registration desk.

Points of Interest

The main sights are located in or near the Old Town of Munich. The heart of the Old Town is the Marienplatz with the Old and New Town Hall. Near the Marienplatz you will find the well-known Cathedral of Munich named Frauenkirche and, in the opposite direction, the Viktualienmarkt, a large food market. Another interesting sight is the Royal Residence located north of the New Town Hall. Located at east of the Old Town, the German Museum offers you one of the biggest collection of science and technology exhibits in the world. The Old and New Pinakothek at the northern border of the Old Town exhibit paintings from the 14th century on. Further away from the center you will find the Nymphenburg Palace and the Olympic Park, where the Olympic Games took place in 1972. Of course, this is only a small and very incomplete list of sights to be found in Munich. Also note that the stout season starts at the beginning of March. Several bavarian breweries offer their own stout in their numerous beer halls. But be careful, don't get drunk.

Organizers

Organizing Committee

E. Bayer, Th. Erlebach, V. Heun, U. Koppenhagen, K. Kühnle, E.W. Mayr, A. Schmidt, H. Stadtherr, I. Wohlrab.

Program Committee

M. Ben-Or, I. Castellani, J.-P. Delahaye, M. Dietzfelbinger, Z. Ésik, H. Ganzinger, D. Krob, E.W. Mayr, P. Pudlák, C. Puech, A. Restivo, P. Schmitt, U. Schöning, J. Stern, M. Yung.

Sponsoring

STACS'95 is sponsored by GI, afcet, BMW, Cray, DFG, EU, hp, IBM and Sun Microsystems.

Further Information

Please contact:

Ernst W. Mayr
Institut für Informatik
Technische Universität München
D-80290 München
Germany

Phone: +49-89-2105-2680
FAX: +49-89-2105-5297
Email: `stacs@informatik.tu-muenchen.de`

For up to date information see WWW at URL:
`http://hpmayr1.informatik.tu-muenchen.de/stacs95`

afcet

STACS '95

12th Symposium on Theoretical Aspects of Computer Science

March 2-4, 1995
Munich, Germany

TECHNISCHE UNIVERSITÄT MÜNCHEN

STACS '95

The Symposium on Theoretical Aspects of Computer Science is held annually, alternating between Germany and France. STACS is organized jointly by the Special Interest Group for Theoretical Computer Science of GESELLSCHAFT FÜR INFORMATIK (GI) and the Special Interest Group for Applied Mathematics of AFCET. STACS '95, the 12th in this series, will be held in Munich, March 2-4, 1995.

The symposium will feature invited talks and the presentation of original research papers. The proceedings will be published by Springer in Lecture Notes in Computer Science.

180 papers have been submitted from all over the world, e.g. United States, Australia, Japan, Russia and nearly every European country. They discuss new results from many areas of computer science, including algorithms and data structures, automata and formal languages, computational complexity, computational geometry, cryptography, learning theory, logic in computer science, parallel algorithms, semantics of programming languages, theory of data bases, theory of parallel and distributed computation, and VLSI structures.

53 papers have been selected for presentation in this symposium, giving you an overview on outstanding research results in computer science. We encourage you to participate in what promises to be an exciting and important event.

Program

Thursday, March 2

8.25 Welcome

8.30 Invited Talk
On the Synthesis of Nonterminating Reactive Programs, *W. Thomas*

Session 1A: Complexity Theory I

9.30 Finding the Maximum with Linear Error Probabilities: A Sequential Analysis Approach, *G. Louchard*

9.55 Completeness and Weak Completeness Under Polynomial-Size Circuits, *David W. Juedes, Jack H. Lutz*

Session 1B: Cryptography

9.30 Communication Complexity of Key Agreement on Small Ranges, *Jin-Yi Cai, Richard J. Lipton, Luc Longpré, Mitsunori Ogihara, Kenneth W. Regan, D. Sivakumar*

9.55 Pseudorandom Generators and the Frequency of Simplicity, *Yenjo Han, Lane A. Hemaspaandra*

10.20 Coffee Break

Session 2A: Complexity Theory II

10.50 Classes of Bounded Counting Type and their Inclusion Relations, *Ulrich Hertrampf*

11.15 Lower Bounds for Depth-Three Circuits With Equals and Mod-Gates, *Frederic Green*

11.40 On Realizing Iterated Multiplication by Small Depth Threshold Circuits, *Matthias Krause*

12.05 A Random NP-Complete Problem for Inversion of 2D Cellular Automata, *Bruno Durand*

Session 2B: Automata Theory I

10.50 On the Subword Equivalence Problem for Infinite Words, *Isabelle Fagnot*

11.15 On the Separators of an Infinite Word Generated by a Morphism, *Emmanuelle Garel*

11.40 Systolic Tree ω-Languages, *Angelo Monti, Adriano Peron*

12.05 Structural Complexity of ω-Automata, *Sriram C. Krishnan, Anuj Puri, R.K. Brayton*

12.30 Lunch

Session 3A: Algorithms

14.00 Algorithms Explained by Symmetries, *Torsten Minkwitz*

14.25 Generalized Scans and Tri-Diagonal Systems, *Paul F. Fischer, Franco P. Preparata, John E. Savage*

14.50 Two-Dimensional Pattern Matching in Linear Time and Small Space, *Maxime Crochemore, Leszek Gąsieniec, Wojciech Plandowski, Wojciech Rytter*

15.15 On-line and Dynamic Algorithms for Shortest Path Problems, *Hristo N. Djidjev, Grammati E. Pantziou, Christos D. Zaroliagis*

Session 3B: Logic

14.00 On Compact Representations of Propositional Circumscription, *Marco Cadoli, Francesco M. Donini, Marco Schaerf*

14.25 A Set-Theoretic Translation Method for (Poly)modal Logics, *Giovanna D'Agostino, Angelo Montanari, Alberto Policriti*

14.50 On the Synthesis of Discrete Controllers for Timed Systems, *Oded Maler, A. Pnueli, J. Sifakis*

15.15 A Fully Abstract Semantics for Causality in the π-Calculus, *Michele Boreale, Davide Sangiorgi*

15.40 Coffee Break

Session 4A: Theory of Parallel Computing I

16.10 On the Size of Permutation Networks and Consequences for Efficient Simulation of Hypercube Algorithms on Bounded-Degree Networks, *J. Hromkovič, K. Loryś, P. Kanarek, R. Klasing, W. Unger, H. Wagener*

16.35 Exploiting Storage Redundancy to Speed Up Randomized Shared Memory Simulations, *Friedhelm Meyer auf der Heide, Christian Scheideler, Volker Stemann*

17.00 Interval Routing Schemes, *Michele Flammini, Giorgio Gambosi, Sandro Salomone*

17.25 A Packet Routing Protocol for Arbitrary Networks, *Friedhelm Meyer auf der Heide, Berthold Vöcking*

Session 4B: Automata Theory II

16.10 A Family of Tag Systems for Paperfolding Sequences, *Christiane Bercoff*

16.35 Growing Context-Sensitive Languages and Church-Rosser Languages, *Gerhard Buntrock, Friedrich Otto*

17.00 Deterministic Generalized Automata, *Dora Giammarresi, Rosa Montalbano*

17.25 Optimal Simulation of Automata by Neural Nets, *Piotr Indyk*

Friday, March 3

8.30 Invited Talk
Concurrent Process Equivalences: Some Decision Problems, *A. R. Meyer*

Session 5A: Communication Theory

9.30 Optimal Lower Bounds on the Multiparty Communication Complexity, *Pavol Ďuriš, José Rolim*

Ernst W. Mayr
Institut für Informatik
Technische Universität München
D-80290 München
Germany

The non-student registration fee includes the Wednesday night reception, the Friday excursion and conference dinner, coffee breaks (Thursday, Friday and Saturday) and lunches (Thursday and Friday), and a copy of the proceedings. The student fee includes the reception, coffee breaks and lunches. Students must include a note from their department or supervisor verifying student status. Full payment in DM must accompany registration. Make sure that **ALL** bank charges are included.

AFCET-GI member	390,-
Non-member	440,-
Student	230,-

You also have the possibility to transfer the fee directly to Postbank München (BLZ 700 100 80), Account Ernst W. Mayr, keyword STACS '95, Acct. No. 5720 66-805.

Accommodation

For reservation of a hotel room, please contact yourself one of the hotels listed below. Please be sure to identify yourself as a STACS (at the Technische Universität München) attendee when making your reservation and at check-in.

Hotel Category 2

Hotel Meier
Schützenstraße 12
D-80335 München, Germany
Phone: +49-89-59 56 23, Fax: +49-89-55 38 29

Single room: DM 118,-
Double room: DM 166,-

Best Western
Hotel ATRIUM
Landwehrstraße 59
D-80336 München, Germany
Phone: +49-89-55 50 25, Fax: +49-89-59 84 91

Single room: DM 120,-
Double room: DM 170,-

Hotel Europäischer Hof
Bayerstraße 31
D-80335 München, Germany
Phone: +49-89-55 15 10, Fax: +49-89-55 15 12 22

	Komfort	Superior
Single room:	DM 125,-	DM 146,-
Double room:	DM 150,-	DM 176,-

All rates are per room and per night, including breakfast and taxes.

General Information

Location

Munich (1.3 mio. inhabitants) is the capital of Bavaria and is located about 50 km north of the Alps in Central Europe. Munich was founded in 1158 by duke Heinrich dem Löwen. All conference events, except for the banquet, will take place in the Robert Sauer-Buildings (Arcisstraße 16 or Barerstraße 23) at the Technische Universität München, which is located in the center of Munich.

Climate

The weather at the beginning of March is usually cold and wet. Day heights vary from 5 to 10 degrees Celsius, night lows vary from 0 to -5 degrees Celsius. Rain or snow is likely.

Transportation

The international airport Munich II is located about 40 km northeast of Munich. Munich airport is served by the S-Bahn, a fast urban railway. It runs every 20 minutes except from $1.^{15}$ to $3.^{55}$ at night. The trip to the city of Munich takes 40 minutes and costs roughly DM 13,-. The rates for a cab are approximately DM 100,-. The main railway station of Munich is located in the center, a 15 minute walk away from the Technische Universität München. The conference hotels are located near the main railway station.

Registration

The registration desk will be open from $15.^{00}$ until $21.^{00}$ on Wednesday, March 1, and during the day on Thursday and Friday.

9.55 Simultaneous Messages vs. Communication, *László Babai, Peter Kimmel, Satyanarayana V. Lokam*

Session 5B: Automata Theory III

9.30 Coding and Strong Coding in Trace Monoids, *Véronique Bruyère, Clelia De Felice*

9.55 On Codings of Traces, *Volker Diekert, Anca Muscholl, Klaus Reinhardt*

10.20 Coffee Break

Session 6A: Graph Theory, Data Bases

10.50 Finding Largest Common Embeddable Subtrees, *Arvind Gupta, Naomi Nishimura*

11.15 The χ_t-Coloring Problem, *Damon Kaller, Arvind Gupta, Tom Shermer*

11.40 Expander Properties in Random Regular Graphs with Edge Faults, *S.E. Nikoletseas, P.G. Spirakis*

12.05 Dynamic Analysis of the Sizes of Relations, *Danièle Gardy, Guy Louchard*

Session 6B: Automata Theory IV

10.50 On Slender Context-Free Languages, *Danny Raz*

11.15 Partial Derivatives of Regular Expressions and Finite Automata Constructions, *Valentin Antimirov*

11.40 Dependence Orders for Computations of Concurrent Automata, *Felipe Bracho, Manfred Droste, Dietrich Kuske*

12.05 On the Undecidability of Deadlock Detection in Families of Nets, *Anne-Cécile Fabret, Antoine Petit*

12.30 Lunch

Session 7A: Theory of Parallel Computing II

14.00 On the Average Running Time of Odd-Even Merge Sort, *Christine Rüb*

14.25 Optimal Average Case Sorting on Arrays, *Manfred Kunde, Rolf Niedermeier, Peter Rossmanith, Klaus Reinhardt*

Session 7B: Complexity Theory III

14.00 Normal Numbers and Sources for BPP, *Martin Strauss*

14.25 Lower Bounds on Learning Decision Lists and Trees, *Thomas Hancock, Tao Jiang, Ming Li, John Tromp*

15.45 Social Event
(to be announced)

19.00 Conference Dinner

Saturday, March 4

Session 8A: Computational Geometry

8.45 Line Segmentation of Digital Curves in Parallel, *Peter Damaschke*

9.10 Computability of Convex Sets, *Martin Kummer, Marcus Schäfer*

9.35 Enumerating Extreme Points in Higher Dimensions, *Th. Ottmann, S. Schuierer, S. Soundaralakshmi*

10.00 The Number of Views of Piecewise-Smooth Algebraic Objects, *Sylvain Petitjean*

Session 8B: Complexity Theory IV

8.45 On the Structure of log-Space Probabilistic Complexity Classes, *Ioan I. Macarie*

9.10 Resource-Bounded Instance Complexity, *Lance Fortnow, Martin Kummer*

9.35 On the Sparse Set Conjecture for Sets with Low Density, *Harry Buhrman, Montserrat Hermo*

10.00 Beyond $\mathcal{P}^{\mathcal{NP}}$ = NEXP, *Stephen Fenner, Lance Fortnow*

10.25 Coffee Break

Session 9: Complexity Theory V

10.55 Malign Distributions for Average Case Circuit Complexity, *Andreas Jakoby, Rüdiger Reischuk, Christian Schindelhauer*

11.20 Invited Talk
Statistical Properties in Genes, their Simulation by Stochastic Automata: An Application to the Genetic Code, *D. Arquès*

Registration

Please fill in the registration form (type or use block letters) and send it together with a euro-check or international money order made out in German marks and payable to Ernst W. Mayr/STACS '95 to:

Ernst W. Mayr
Institut für Informatik
Technische Universität München
D-80290 München
Germany

Registration Form for STACS '95

Please fill in (type or use block letters) and return this form with proof of payment to Ernst W. Mayr, Institut für Informatik, Technische Universität München, D-80290 München, Germany.

☐ Mr ☐ Ms Acad. Title: ....
First Name: ....
Name: ....
Institute: ....
Address: ....
....
Country: ....
Phone: ....
FAX: ....
Email: ....
AFCET-GI No.: ....
Dietary restrictions: Vegetarian: .... None: ....

The fees are listed below, all prices are in DM:

AFCET-GI member	390,-
Non-member	440,-
Student	230,-

Students must include a note from their department or supervisor verifying student status.

Registration fee: DM: ....
Additional conference dinner and
excursion tickets (DM 100,-) No.: .... DM: ....
Total amount: DM: ....
☐ Euro-check (in DM) or money order (in DM) is enclosed.
☐ The money has already been transferred to Postbank München (BLZ 700 100 80), Account Ernst W. Mayr, keyword STACS '95, Acct. No. 5720 66-805.
Make sure that **ALL** bank charges are included.

Date: .... Signature: ....