

## 11TH ANNUAL ACM SYMPOSIUM ON THEORY OF COMPUTING

April 30 - May 2, 1979

SPONSORED BY: ACM/SIGACT, with the cooperation of the IEEE Computer Society, Technical Committee on Mathematical Foundations of Computing, and Georgia Institute of Technology, Atlanta.

LOCATION: Most of the technical sessions will be held at the Century Center Hotel, 2000 Century Boulevard, N.E., Atlanta, Georgia 30345. Telephone number (404)325-0000. The Tuesday afternoon session will be held at Stone Mountain State Park.

A block of rooms has been reserved (until April 15, 1979) at the Century Center Hotel at the rate of \$34.00 per day for single occupancy and \$42.00 per day for double occupancy. Please make reservations directly with the hotel using the attached form. Students desiring less expensive accommodations should contact Ms. Esther Richards, (404) 894-3180.

TRANSPORTATION: The Century Center Hotel is four miles north of downtown Atlanta on Interstate 85 (Clairmont Road exit). Taxis and private shuttle services provide transportation between the Atlanta airport and the hotel.

Taxis - cab fare is approximately \$13.50.

Northside Airport Express - Northside Airport Express to East Terminal; then telephone Century Center Hotel bellman on courtesy telephone -- he will transfer you to the hotel. Tickets to the terminal are \$5.00; transfer to the hotel is gratis. Northside Airport Express buses leave the airport every 30 to 45 minutes. Buses run throughout the day to midnight commencing 5:15 a.m.

Airport Limousine - The Airport Limousine fare to the hotel is \$5.00; the limousine makes many stops along the way.

CLIMATE: Weather during the first week of May in Atlanta is mild and summer-like. The average temperature is 61.3 degrees and average rainfall for the week is 2.01 inches.

## REGISTRATION FEE:

	Advanced Registration <u>before April 23, 1979</u>	Late <u>Registration</u>
Member of ACM or SIGACT	\$55 (b)	\$60 (b)
Non-member	\$60 (b)	\$65 (b)
Author	\$48 (b)	\$53 (b)
Student	\$12 (a)	\$15 (a)

(a) The student fee provides a copy of the proceedings but not tickets to the reception, luncheons, or banquet. Separate tickets may be purchased for these functions at the conference, if available.

(b) Includes (a), plus reception (Sunday), luncheons (Monday and Tuesday), excursion and banquet (Tuesday evening), and coffee breaks.

Additional copies of the proceedings can be purchased at the symposium for \$8.00 each.

## THINGS TO DO:

The Century Center Hotel has a swimming pool and tennis courts. As a major center of business, convention trade, and transportation, Atlanta hosts a large variety of good restaurants of all types and price ranges. The new downtown hotel centers such as Peachtree Center and Omni exemplify these attractions.

Stone Mountain State Park has a variety of exhibits presenting an interesting picture of Southern history, as well as hiking, boating, golfing, and other recreational facilities. Kennesaw Mountain is a battlefield park with films and exhibits of interest to Civil War buffs. Calloway Gardens, a lovely place to enjoy the spectacular Atlanta spring floral display, is about a one-and-one-half hour drive from Atlanta.

The excursion will be to Stone Mountain State Park ten miles west of Atlanta and will include a southern barbeque as well as a tour of an antebellum plantation.

FURTHER INFORMATION: Contact one of the local arrangement chairpersons:

Professor Richard A. DeMillo or Professor Nancy A. Lynch  
 Georgia Institute of Technology  
 School of Information and Computer Science  
 Atlanta, Georgia 30332  
 Telephone: (404)894-3152

PROGRAM

MONDAY, APRIL 30

Session 1: Morning 9:00 a.m. - 12:30 p.m. Century Center Hotel  
 Chairman: Nick Pippenger

- 9:00 The Recognition of Series-Parallel Digraphs. (Long)  
 Jacobo Valdes, Princeton University, Robert E. Tarjan, Stanford University, and Eugene L. Lawler, University of California at Berkeley
- 9:30 Network Flow and Generalized Path Compression. (Long)  
 Zvi Galil and Amnon Naamad, Tel-Aviv University, Israel
- 10:00 A New Algorithm for Determining the Genus of a Graph. (Short)  
 I.S. Filotti, Columbia University, Gary L. Miller, Massachusetts Institute of Technology, and John H. Reif, University of Rochester
- 10:15 Decomposing a Polygon into its Convex Parts. (Short)  
 Bernard Chazelle, Yale University, and David Dobkin, University of Arizona
- 10:30-  
 11:00 COFFEE BREAK
- 11:00 Computing Integrated Costs of Sequences of Operations with Application to Dictionaries. (Long)  
 P. Flajolet, IRIA-LABORIA, J. Francon, Centre de calcul du CNRS, and J. Vuillemin, Universite de Paris-Sud, France
- 11:30 A Near Optimal Data Structure for a Type of Range Query Problem. (Long)  
 Michael L. Fredman, University of California at San Diego
- 12:00 On a Multidimensional Search Problem. (Short)  
 S. Rao Kosaraju, The Johns Hopkins University
- 12:15 The Complexity of Finding Periods. (Short)  
 Robert Sedgewick, Brown University, and Thomas G. Szymanski, Bell Laboratories
- 12:30-  
 2:00 LUNCHEON

Session 2: Afternoon 2:00 p.m. - 5:30 p.m. Century Center Hotel  
 Chairman: Michael Harrison

- 2:00 Area-Time Complexity of VLSI. (Long)  
 C. D. Thompson, Carnegie-Mellon University
- 2:30 Deadlock-Free Packet Switching Networks. (Long)  
 Sam Toueg and Jeffrey D. Ullman, Princeton University
- 3:00 Storage Representations for Tree-Like Data Structures. (Short)  
 Arnold L. Rosenberg, IBM Thomas J. Watson Research Center, Derick Wood, McMaster University, Canada, and Zvi Galil, Tel-Aviv University, Israel

- 3:15 Implicit Data Structures. (Short)  
J. Ian Munro and Hendra Suwanda, University of Waterloo, Canada
- 3:30-  
4:00 COFFEE BREAK
- 4:00 On the Cryptocomplexity of Knapsack Systems. (Long)  
Adi Shamir, Massachusetts Institute of Technology
- 4:30 Finding Patterns Common to a Set of Strings. (Long)  
Dana Angluin, University of California at Santa Barbara
- 5:00 The Complexity of the Equivalence Problem for Counter Machines,  
Semilinear Sets and Simple Programs. (Short)  
Eitan M. Gurari, University of Wisconsin at Milwaukee, and  
Oscar H. Ibarra, University of Minnesota

## TUESDAY, MAY 1

Session 3: Morning 8:30 a.m. - Noon Century Center Hotel  
Chairman: Vaughan Pratt

- 8:30 Some Connections between Mathematical Logic and Complexity Theory.  
(Long)  
Richard A. DeMillo, Georgia Institute of Technology, and  
Richard J. Lipton, University of California at Berkeley
- 9:00 A Completeness Technique for D-Axiomatizable Semantics. (Long)  
Francine Berman, University of Washington
- 9:30 On the Expressive Power of Dynamic Logic. (Long)  
Albert Meyer and Karl Winklmann, Massachusetts Institute of  
Technology
- 10:00-  
10:30 COFFEE BREAK
- 10:30 A Programming Language Theorem Which is Independent of Peano  
Arithmetic. (Long)  
Michael O'Donnell, Purdue University
- 11:00 Negation Can Be Exponentially Powerful. (Long)  
L. G. Valiant, Edinburgh University
- 11:30 On the Complexity of Bilinear Forms with Commutativity. (Long)  
Joseph Ja'Ja', The Pennsylvania State University
- 12:00-  
1:15 LUNCHEON Century Center Hotel

Session 4: Afternoon 2:30 p.m. - 6:00 p.m.

Stone Mountain Inn

Chairman: Larry Snyder

- 2:30 Some Complexity Questions Related to Distributive Computing. (Long)  
Andrew C. Yao, Stanford University
- 3:00 The Complexity of Problems in Systems of Communicating Sequential  
Processes. (Short)  
Richard E. Ladner, University of Washington
- 3:15 Time-Space Trade-Offs for Asynchronous Parallel Models -  
Reducibilities and Equivalences. (Short)  
G. L. Peterson, University of Rochester
- 3:30 Fast Parallel Processing Array Algorithms for Some Graph Problems.  
(Short)  
S. Rao Kosaraju, The Johns Hopkins University
- 3:45 The Pebbling Problem is Complete in Polynomial Space. (Short)  
John R. Gilbert, Thomas Lengauer and Robert Endre Tarjan,  
Stanford University
- 4:00-  
4:30 COFFEE BREAK
- 4:30 Completeness Classes in Algebra. (Long)  
L. G. Valiant, Edinburgh University
- 5:00 Upper and Lower Bounds on Time-Space Tradeoffs. (Long)  
Thomas Lengauer and Robert Endre Tarjan, Stanford University
- 5:30 On  $\gamma$ -Reducibility Versus Polynomial Time Many-One Reducibility.  
(Short)  
Timothy J. Long, New Mexico State University
- 5:45 Universal Games of Incomplete Information. (Short)  
John H. Reif, University of Rochester

WEDNESDAY, May 2

Session 5: Morning 8:30 a.m. - Noon

Century Center Hotel

Chairman: David Johnson

- 8:30 Computable Queries for Relational Data Bases. (Long)  
Ashok K. Chandra and David Harel, IBM Thomas J. Watson Research  
Center
- 9:00 Equivalence of Relational Database Schemes. (Long)  
Catriel Beeri, Hebrew University, Israel, Alberto O. Mendelzon,  
Princeton University, Yehoshua Sagiv, University of Illinois,  
and Jeffrey D. Ullman, Princeton University

- 9:30 Minimum Covers in the Relational Database Model. (Long)  
David Maier, State University of New York at Stony Brook
- 10:00-  
10:30 COFFEE BREAK
- 10:30 Deterministic CFL's are Accepted Simultaneously in Polynomial Time  
and Log Squared Space. (Short)  
Stephen A. Cook, University of Toronto, Canada
- 10:45 Real-time Simulation of Concatenable Double-ended Queues by Double-  
ended Queues. (Long)  
S. Rao Kosaraju, The Johns Hopkins University
- 11:15 Tree-Size Bounded Alternation. (Long)  
Walter L. Ruzzo, University of Washington
- 11:45 Lower Bounds on the Size of Sweeping Automata. (Short)  
Michael Sipser, University of California at Berkeley

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The ACM Special Interest Group for Automata and Computability Theory

WITH THE COOPERATION OF:

The IEEE Computer Society Technical Committee on Mathematical Foundations of Computing

AND:

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Georgia Institute of Technology  
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