19th Annual ACM Symposium on
Theory of Computing
In cooperation with IEEE-Computer Society
May 25-27, 1987
Grand Hyatt Hotel
New York, NY

CONFERENCE INFORMATION

Location. Technical sessions are at the Grand Hyatt Hotel, on 42nd Street between Park and Lexington
Avenues, adjacent to Grand Central Terminal and across the street from the East Side Airlines Terminal.
Please make reservations directly with the hotel. Rates and availability not guaranteed after May 2, 1987.
Transportation. All participants of STOC 1987 are urged to use our official discount travel service, Direct
Travel, Inc., (800-858-6228 and 212-302-7870). Every 40 American Airlines roundtrip air tickets booked
through Direct Travel provides a student participant free transportation. Direct Travel will also fill your
Amtrack needs. Participants should mention STOC 1987 when contacting Direct Travel. Major credit cards
are preferred.

Local transportation. From Kennedy Airport, Carey Bus to Grand Central is $8, Abbey's Airport Minibus
to Grand Hyatt is $11, and taxi is about $26. From La Guardia Airport, Carey Bus to Grand Central is $6,
Abbey's Airport Minibus to Grand Hyatt is $8.00, and taxi is about $22. From Newark Airport, Olympia
Trails to East Side Terminal is $5, Airport Minibus to Grand Hyatt is $15.75, and taxi is about $26. From
Penn Station, the subway to Grand Central is $1.

Things to do. New York City is lovely in the spring time. Temperatures average in the mid-60's with a
chance of refreshing showers. The city is one of the world's cultural centers: theater from Broadway musicals
to off-Broadway dramas, music from classical to jazz, museums from modern art to American crafts, shopping
from the Lower East Side to glamorous Fifth Avenue, restaurants from northern Italian cuisine to exotic Thai
food, and sports from baseball to tennis. There is an abundance of interesting free/inexpensive activities:
concerts in the parks, historic walking tours, bus rides through the City, visits to the Empire State Building
or to the newly renovated South Street Seaport, and even tram rides over the East River.

Registration and Reception. Initial registration will be from 6-9 p.m., Sunday, May 24, outside of
Ballrooms C&D. On Monday through Wednesday the registration desk will be located outside of Ballrooms
C&D during the general sessions. There will be a reception on Sunday night from 8 to 11 in Ballrooms C&D.

ASL Spring Meeting. The 1987 Spring Meeting of the Association for Symbolic Logic (ASL) will be held
May 23 - 24, 1987, at the Graduate School and University Center of CUNY, and the Courant Institute of
Mathematical Sciences of NYU. Program information can be obtained from Prof. M. Davis, NYU - Courant
Institute, 251 Mercer St., New York, NY 10012. A special session of invited addresses on topics of particular
interest to STOC participants is being planned for Sunday afternoon.

UNIVERSITY SUPPORTERS

Brooklyn College - CUNY Brooklyn, NY 11210
Graduate School and University Center City University of New York New York, NY 10036

For Further Information. Contact the Conference Chair:

Prof. Dana May Latch, Dept. of CIS Brooklyn College - CUNY Brooklyn, NY 11210 (718) 780-5657,
dml@cunyvmsl.bitnet

Program Committee. A. Aho (chair), M. Blum, J. Halpern, R. Kannan, D. Kozen, A. LaPaugh, M. Luby,

SIGACT Chair. Zvi Galil, Dept. of Computer Science, Columbia University, New York, NY 10027.
ADVANCE REGISTRATION FORM

Mail check payable in US dollars to ACM - STOC 87 before April 25, 1987 to:

STOC Registration
Prof. Dana May Latch
Dept. of CIS
Brooklyn College of CUNY
Brooklyn, NY 11210

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<tr>
<th>Before 4/25</th>
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<tr>
<td>Member ACM, SIGACT,</td>
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One copy of the proceedings is included in the fee.

Extra lunches @$35/meal Mon ____ Tue ____ Wed ____

Special lunch preference: Kosher ____ Vegetarian ____

Name

Affiliation

Address

City State Zip

Email address

HOTEL RESERVATION FORM

Mail before April 25, 1987 to:

ACM SIGACT Symposium on Theory of Computing
Grand Hyatt New York
Park Avenue at Grand Central
New York, NY 10017

Telephone: (212) 883-1234 Telex: 645601

Single $105/day ____ Double $105/day ____ Triple $125/day ____

Rates subject to New York State tax and New York City occupancy tax. Check-in: 3 pm. Check-out: 12 noon.

Arrival Date Time

Departure Date Time

For arrivals after 6pm, the hotel requests that you guarantee your room by providing a major credit card number or a check for one night's deposit.

Credit Card # Exp.

Sharing room with:

Name

Affiliation

Address

City State Zip

Telephone
STOC ’87 Program
Monday May 25, 1987

Session 1: Ballrooms C&D
Chair: Alfred Aho

9:00 Matrix Multiplication via Behrend’s Theorem. D. Coppersmith and S. Winograd, (IBM Watson).
10:00 An Algorithm for Linear Programming which Requires $O((m+n)n^2 + (m+n)^{1.5n}L)$ Arithmetic Operations. Pravin M. Vaidya, (AT&T Bell Labs).

10:20 Coffee Break

Session 2: Ballrooms C&D
Chair: Frances Yao

11:00 A Linear Time Algorithm for Computing the Voronoi Diagram of a Convex Polygon. A. Aggarwal, (IBM Watson), L. Guibas, (Stanford and DEC SRC), J. Saxe, (DEC SRC), and P. Shor, (AT&T Bell Laboratories).
12:00 The Complexity of Cutting Convex Polytopes. B. Chazelle, (Princeton), H. Edelsbrunner, (Illinois), and L. Guibas, (Stanford and DEC SRC).

12:20 Lunch: Ballrooms A&B

Session 3: Ballrooms C&D
Chair: Michael Sipser

2:00 Algebraic Methods in the Theory of Lower Bounds for Boolean Circuit Complexity. R. Smolensky, (UC Berkeley).
2:40 Two Tapes Are Better than One for Offline Turing Machines. W. Maass, (Illinois), G. Schnitger, (Penn. State), and E. Szemerédi, (Rutgers and Hungarian Academy of Sciences).

3:20 Coffee Break

Session 4: Ballrooms C&D
Chair: Dexter Kozen

3:40 The Strong Exponential Hierarchy Collapses. Lane A. Hemachandra, (Cornell University).
4:20 The Boolean Formula Value Problem is in ALOGTIME. Samuel R. Buss, (UC Berkeley).
4:40 Deterministic Simulation in LOGSPACE. M. Ajtai, (IBM ARC), J. Kornélis, (UC San Diego), and E. Szemerédi, (Rutgers).
5:00 A Semi-Unboundedness Property that Characterizes LOGCFL. H. Venkateswaran, (Georgia Institute of Technology).

9:00pm Business Meeting: Ballrooms C&D
Tuesday, May 26, 1987

Session 5: Ballrooms C&D
Chair: Michael Luby
8:40 Some Consequences of the Existence of Pseudorandom Generators. E. Allender, (Rutgers).
9:00 Efficiency Considerations in Using Semi-random Sources. Umesh V. Vazirani, (Harvard).
9:20 Imperfect Random Sources and Discrete Controlled Sources. D. Lichtenstein, (Yale), N. Linial, 
(Hebrew U.), and M. Saks, (Bell Communications Research and Rutgers).
10:00 Towards a Theory of Software Protection and Simulation by Oblivious RAMs. Oded Goldreich, 
(Technion).
10:20 Coffee Break

Session 6: Ballrooms C&D
Chair: Manuel Blum
11:00 On Hiding Information from an Oracle. M. Abadi, (DEC SRC), J. Feigenbaum, (AT&T Bell Lab-
oratories), and J. Kilian, (MIT).
11:40 Zero Knowledge Proofs of Identity. U. Feige, (Weizmann), A. Fiat, (UC Berkeley), and A. Shamir, 
(Weizmann).
12:00 How to Play Any Mental Game. O. Goldreich, (Technion), S. Micali, (MIT), and A. Wigderson, 
(Hebrew U.).
12:20 Lunch: Ballrooms A&B

Session 7: Ballrooms C&D
Chair: Joseph Halpern
2:00 Optimal Distributed Algorithms for Minimum Weight Spanning Tree, Counting, Leader Election and 
Related Problems. B. Awerbuch (MIT).
2:20 Analysis of Backoff Protocols for Multiple Access Channels. J. Hastad, T. Leighton, and M. Rogoff, 
(MIT).
3:00 Constructing Disjoint Paths on Expander Graphs. D. Peleg, (Stanford), and E. Upfal, (IBM ARC).
3:20 Reconfiguring a Hypercube in the Presence of Faults. J. Hastad, T. Leighton, and M. Newman, 
(MIT).
3:40 Coffee Break

Session 8: Ballrooms C&D
Chair: Joseph Halpern
and L. Valiant, (Harvard).
4:50 An Hierarchical Memory Model. A. Aggarwal, B. Alpern and A. Chandra, (IBM Watson).
5:10 Parallel Symmetry-Breaking in Sparse Graphs. A. Goldberg, (MIT), S. Plotkin, (MIT), and G. 
Shannon, (Purdue).
Wednesday, May 27, 1987

Session 9: Ballrooms C&D
Chair: Michael Luby
9:00 A Random NC Algorithm for Depth First Search. A. Aggarwal, (IBM Watson), and R. Anderson, (Washington).
9:20 A New Graph Triconnectivity Algorithm and Its Parallelization. G. Miller, (USC), and V. Ramanathan, (Illinois).
9:40 Matching is as Easy as Matrix Inversion. K. Mulmuley, (UC Berkeley), U. V. Vazirani, (Harvard), and V. V. Vazirani, (AT&T Bell Labs).
10:20 Coffee Break

Session 10: Ballrooms C&D
Chair: Andrea LaPaugh
11:00 Two Algorithms for Maintaining Order in a List. P. Dietz, (Schlumberger-Doll), D. Sleator, (CMU).
11:20 An Optimal Online Algorithm for Metrical Task Systems. A. Borodin, (Toronto), N. Linial, (Hebrew U.), and M. Saks, (Rutgers and Bell Communications Research).
11:40 Searching a Two Key Table Under a Single Key. J. Ian Munro, (Waterloo).
12:00 The Pagenumber of Genus g Graphs is O(g). L. Heath, (MIT), and S. Istrail, (Wesleyan).
12:20 Lunch: Ballrooms A&B

Session 11: Ballrooms C&D
Chair: Manuel Blum
2:00 Simple Algebras are Difficult. L. Rónyai, (Hungarian Academy of Sciences).
2:20 Permutation Groups in NC. L. Babai, (Eötvös and Chicago), E. Luks, (Oregon), and A. Seress, (Hungarian Academy of Sciences).
2:40 Zero-One Laws for Sparse Random Graphs. S. Shelah, (Jerusalem), and J. Spencer, (Stony Brook).
3:00 The Decision Problem for the Probabilities of Higher-Order Properties. P. Kolaitis and M. Vardi, (IBM ARC).
3:20 Coffee Break

Session 12: Ballrooms C&D
Chair: Michael Sipser

18.2-19