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## Final Technical Report

# Seventh SIAM Conference on Discrete Mathematics

June 22-25, 1994  
Albuquerque, New Mexico

The Seventh SIAM Conference on Discrete Mathematics was held in Albuquerque, New Mexico, June 22-25, 1994. The conference brought together leading experts in discrete mathematics, theoretical computer science, discrete and combinatorial optimization, algebraic combinatorics, computational geometry and operations research. The principal themes for this year's conference were:

- Combinatorics and Applications
- Graph Theory and Algorithms
- Computational Complexity
- Integer Programming and Large-Scale Optimization
- Combinatorial Optimization
- Random Methods and Randomized Algorithms
- Applications of Topology and Algebra to Combinatorics
- Parallel and Distributed Computing
- Computational Geometry
- Cryptology

In organizing this conference, a concerted effort was made to address important goals. First, the Committee attempted to strengthen ties between researchers whose work emphasizes the applications of discrete mathematics with those whose work provides the foundations for applications. Second, the Committee attempted to identify and promote promising areas for future investigation. Third, the Committee sought to strengthen the scientific interactions between the mathematics and computer science segments of the field.

There were six plenary speakers who gave presentations on different aspects of discrete mathematics and its applications. The speakers and their talks follow:

Mihalis Yannakakis, AT&T Bell Laboratories  
"Approximability of Combinatorial Problems"

Nathan Linial, The Hebrew University, Israel  
"Geometric Aspects of Graphs"

Noga Alon, Tel Aviv University, Israel  
"Derandomization"

Anders Björner, Royal Institute of Technology, Sweden  
"Topological Methods in Complexity Theory"

Fan R. K. Chung, Bellcore  
"Graph Eigenvalues -- From the Continuous to the Discrete and Back"

Frank Thomson Leighton, Massachusetts Institute of Technology  
"Multicommodity Flows: A Survey of Recent Research"

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Originally, the 1994 SIAM Discrete Mathematics conference was to be held in Denver but was moved to Albuquerque during the planning stage. Despite the relatively late shift in location, attendance was very good. Another indicator of the research community's continuing enthusiasm for the SIAM Discrete Mathematics conferences is the substantial number of contributed minisymposia on the 1994 program. These sessions were of very high quality and added much to the overall success of the conference.

The total number of attendees was 242, including 20 from industry and 26 from government. Besides those from the U.S.A. there were 56 attendees from 17 different foreign countries.

Submitted by

William T. Trotter, Chair  
1994 Conference Organizing Committee

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There were four invited minisymposia. The minisymposium organizers and session topics were:

Helene Barcelo, Arizona State University  
"Algebraic Combinatorics"

Michael Jacobson, University of Louisville  
"Graph Theory"

Joel Spencer, Courant Institute of Mathematical Sciences, New York  
University  
"Random Methods and Randomized Algorithms"

Vijay Vazirani, Indian Institute of Technology - India, and DIMACS,  
Princeton  
"Approximation Algorithms for NP-hard Combinatorial Optimization  
Problems"

The other sessions that added to the vitality and importance of the conference were the 19 contributed sessions and additional minisymposia whose organizers and session topics were:

Brigitte Servatius, Worcester Polytechnic Institute, and Cornell  
University  
"Rigidity of Bar and Joint Frameworks"

Lenwood S. Heath, Virginia Polytechnic Institute and State University  
"Stack and Queue Layouts of Directed Graphs"

Terry A. McKee, Wright State University  
"The Applicability of Chordal Graphs"

Sorin Istrail, Sandia National Laboratories; James Orlin and Michael  
Sipser, Massachusetts Institute of Technology  
"Computational Molecular Biology"

Chjan C. Lim, Rensselaer Polytechnic Institute  
"Even Cycles and Combinatorial Linear Algebra"

Joseph G. Rosenstein, Rutgers University  
"Implementing Discrete Mathematics in K-12 Classrooms"

Tandy J. Warnow, University of Pennsylvania; and Eugene Lawler,  
University of California, Berkeley  
"Evolutionary Trees and Physical Maps as Problems in Computational  
Biology"

James Abello, Texas A&M University, College Station  
"On Visibility Graphs"