

936

**Proceedings of the
Fourth ACM SIGACT-SIGMOD
Symposium on
Principles of Database Systems**



**March 25-27, 1985
Portland, Oregon**

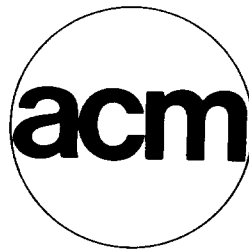
Special Interest Group for Automata and Computability Theory
(SIGACT)

Special Interest Group for the Management of Data
(SIGMOD)

BIBLIOTHEQUE DU CERIST



Proceedings of the
Fourth ACM SIGACT-SIGMOD
Symposium on
Principles of Database Systems



March 25-27, 1985
Portland, Oregon

**Special Interest Group for Automata and Computability Theory
(SIGACT)**

**Special Interest Group for the Management of Data
(SIGMOD)**

The Association for Computing Machinery, Inc.
11 West 42nd Street
New York, New York 10036

© 1985 by the Association for Computing Machinery, Inc. Copying without fee is permitted provided that the copies are not made or distributed for direct commercial advantage, and credit to the source is given. Abstracting with credit is permitted. For other copying of articles that carry a code at the bottom of the first page, copying is permitted provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. For permission to republish write to: Director of Publications, Association for Computing Machinery. To copy otherwise, or republish, requires a fee and/or specific permission.

ISBN 0-89791-153-9

Additional copies may be ordered prepaid from:

ACM Order Department
P.O. Box 64145
Baltimore, MD. 21264

Price
Members\$16.00
All others\$21.00

ACM Order Number: 475850

Printed in The United States of America

FOREWORD

The 30 papers in these proceedings were delivered at the Fourth Annual ACM SIGACT-SIGMOD Symposium on Principles of Database Systems, held March 25–27, 1985, at the Portland Hilton, in Portland, Oregon. These papers were selected by the program committee from 91 extended abstracts submitted in response to the call for papers. Although these abstracts were examined by all members of the committee, there was no formal refereeing process. The papers generally represent preliminary reports of ongoing research. It is anticipated that most of these papers will appear in more polished form in scientific journals.

Jeffrey D. Ullman, Program Committee Chairman

CONFERENCE ORGANIZATION

Chairman: Seymour Ginsburg, University of Southern California
Local Arrangements Chairman: David Maier, Oregon Graduate Center
Publicity Chairman: Victor Vianu, University of California, San Diego
Program Committee:
Jim Gray, Tandem
Richard Hull, University of Southern California
Frank Manola, Computer Corporation of America
Stott Parker, University of California, Los Angeles
Avi Silberschatz, University of Texas
Jeffrey Ullman, Stanford University
Moshe Vardi, Stanford University
Peter Weinberger, ATT Bell Laboratories
Harry Wong, Lawrence Berkeley Laboratory

Fourth Annual
ACM SIGACT/SIGMOD
Symposium on
Principles of Database Systems
Portland, Oregon
March 24–27, 1985

Table of Contents

Monday Morning, March 25, 1985

Session 1: Richard Hull, Chair

Concurrency and Linear Hashing	1
<i>Carla Schlatter Elliš</i>	
Semantically Based Concurrency Control for Search Structures	8
<i>Dennis Shasha</i>	
The Interpolation-Based Grid File	20
<i>Mohamed Ouksel</i>	
Concurrent Operations on B*-Trees with Overtaking	28
<i>Yehoshua Sagiv</i>	
On Optimizing Summary-Table-By-Example Queries	38
<i>Gultekin Ozsoyoglu and V. Matos</i>	
A Query Language for a Homogenous Temporal Database	51
<i>Shashi K. Gadia and Jay H. Vaishnav</i>	

Monday Afternoon, March 25, 1985

Session 2: Victor Vianu, Chair

Querying Logical Databases	57
<i>Moshe Vardi</i>	
Updating a Relational Database through a Universal Schema Interface	66
<i>V. Brosda and G. Vossen</i>	
Relaxing the Universal Scheme Assumption	76
<i>Jacob Stein and David Maier</i>	

Session 3: Ronald Fagin, Chair

A Semantic Approach to Correctness of Concurrent Transaction Executions	85
<i>Paul G. Spirakis and Alexander Tuzhilin</i>	
Some Algorithmic Aspects of Multiversion Concurrency Control	96
<i>Thanasis Hadzilacos and Christos H. Papadimitriou</i>	
Deadlock-Freedom (and Safety) of Transactions in a Distributed Database	105
<i>Ouri Wolfson and Mihalis Yannakakis</i>	

Tuesday Morning, March 26, 1985

Session 4: Moshe Vardi, Chair

An Experimental Evaluation of Crash Recovery Mechanisms	113
<i>Hector Garcia-Molina and Jack Kent</i>	
On the Correctness of a Local Recovery Subsystem	123
<i>Marco A. Casanova, Arnaldo V. Moura, and Luiz Tucherman</i>	
Distributed Data Management in Local Area Networks	135
<i>Thomas W. Page Jr. and Gerald J. Popek</i>	

Session 5: David Maier, Chair

Equivalence of Views by Query Capacity	143
<i>Tim Connors</i>	
Algebraic Versus Probabilistic Independence in Data Bases	149
<i>F. Bancilhon and M. Spyratos</i>	
Algorithms for Translating View Updates to Database Updates for Views Involving Selections, Projections, and Joins	154
<i>Arthur Keller</i>	

Session 6: Patrick Fischer, Chair

Chordality Properties on Graphs and Minimal Conceptual Connections in Semantic Data Models	164
<i>G. Ausiello and A. D'Atri</i>	
On Computing Restricted Projections of Representative Instances	171
<i>Yehoshua Sagiv</i>	
Efficient Query Answering in the Representative Instance Approach	181
<i>Paolo Atzeni and Edward P. F. Chan</i>	
An Improved Algorithm for Finding a Key of a Relation	189
<i>Sukhamay Kundu</i>	
Transactions and Integrity Constraints	193
<i>Serge Abiteboul and Victor Vianu</i>	
Embedded Join Dependencies as a Tool for Decomposing Full Join Dependencies	205
<i>Marc Gyssens</i>	

Wednesday Morning, March 27, 1985

Session 7: Seymour Ginsburg, Chair

An Efficient Fault-Tolerant Algorithm for Replicated Data Management	215
<i>Dale Skeen, Flaviu Cristian, and Amr El Abbadi</i>	
The Complexity of Reliable Concurrency Control	230
<i>Mihalis Yannakakis and Christos H. Papadimitriou</i>	
On the Complexity of Commit Protocols	235
<i>K.V.S. Ramarao</i>	

Session 8: Jeffrey Ullman, Chair

Small Armstrong Relations for Database Design	245
<i>Helkki Mannila and Kari-Jouko Raiha</i>	
A Normal Form for Nested Relations	251
<i>Z. Meral Ozsoyoglu and Li-Yan Yuan</i>	
Partition Semantics for Relations	261
<i>Stavros S. Cosmadakis and Paris C. Kanellakis</i>	