

Contents

SESSION 0

Polynomial Equations-Solving and its Applications 1
Wen-Tsun Wu

Quasi-Random Combinatorial Structures 10
Ronald L. Graham

SESSION 1A: Computational Geometry

Hamiltonian Abstract Voronoi Diagrams in Linear Time 11
Rolf Klein and Andrzej Lingas

Every Set of Disjoint Line Segments Admits a Binary Tree 20
Prosenjit Bose, Michael E. Houle, and Godfried Toussaint

The Traveling Cameraman Problem, with Applications to Automatic
Optical Inspection 29
Kazuo Iwano, Prabhakar Raghavan, and Hisao Tamaki

On Determining the Congruity of Point Sets in Higher Dimensions 38
Tatsuya Akutsu

SESSION 1B: Computational Complexity

On Random Hard Sets for NP 47
Ronald V. Book and Osamu Watanabe

Computing Solutions Uniquely Collapses the Polynomial Hierarchy 56
*Lane A. Hemaspaandra, Ashish V. Naik, Mitsunori Ogihara,
and Alan L. Selman*

Verifying the Determinant in Parallel 65
Miklos Santha and Sovanna Tan

Hardness of Approximating Graph Transformation Problem 74
Chih-Long Lin

SESSION 2A: Distributed Algorithms

Randomized Wait-Free Naming	83
<i>Alessandro Panconesi, Marina Papatriantafylou, Philippas Tsigas, and Paul Vitányi</i>	
Unifying Themes for Network Selection	92
<i>Sanguthevar Rajasekaran, Wang Chen, and Shibu Yooseph</i>	
Robust Asynchronous Algorithms in Networks with a Fault Detection Ring	101
<i>M. Molcho and S. Zaks</i>	
Distributed Algorithms for Finding Small Cycle Covers in Arbitrary Networks	110
<i>Esther Jennings and Lenka Motyčková</i>	

SESSION 2B: Learning

A Neural Network Model for Quadratic Programming with Simple Upper and Lower Bounds and its Application to Linear Programming	119
<i>Xiang-Sun Zhang and Hui-Can Zhu</i>	
Analysis of the Convergency of Topology Preserving Neural Networks on Learning	128
<i>Daming Zhu, Shaohan Ma, and Hongze Qiu</i>	
On Helping and Interactive Proof Systems	137
<i>V. Arvind, J. Köbler, and R. Schuler</i>	
Average Time Complexity of the SAT 1.2 Algorithm	146
<i>Jun Gu and Qian-Ping Gu</i>	

SESSION 3A: Combinatorial Algorithms

Average Cost to Produce Partial Orders	155
<i>Jingsen Chen</i>	
Two Notes on Low-Density Subset Sum Algorithms	164
<i>Dazing Li and Shaohan Ma</i>	
Rotation Distance, Triangulations of Planar Surfaces and Hyperbolic Geometry	172
<i>Jin-Yi Cai and Michael D. Hirsch</i>	

Finitely Representable Spatial Objects and Efficient Computation	181
<i>Yongmao Chen and Terence R. Smith</i>	
SESSION 3B: Graph Algorithms	
Computing All Small Cuts in Undirected Networks	190
<i>Hiroshi Nagamochi, Kazuhiro Nishimura, and Toshihide Ibaraki</i>	
Edge-Coloring and f-Coloring for Various Classes of Graphs	199
<i>Xiao Zhou and Takao Nishizeki</i>	
Edge-Disjoint Paths in Permutation Graphs	208
<i>C.P. Gopalakrishnan and C.Pandu Rangan</i>	
Minimum Augmentation to k-Edge-Connect Specified Vertices of a Graph	217
<i>Satoshi Taoka and Toshimasa Watanabe</i>	
SESSION 4A: Randomized Algorithms	
Algorithmic Chernoff-Hoeffding Inequalities in Integer Programming	226
<i>Anand Srivastav and Peter Stangier</i>	
Approximate Pattern Matching with Samples	234
<i>Tadao Takaoka</i>	
An Efficient Optimal Algorithm for Minimizing the Overall Communication Cost in Replicated Data Management	243
<i>Xuemin Lin and Maria E. Orlowska</i>	
Multispace Search: A New Optimization Approach	252
<i>Jun Gu</i>	
SESSION 4B: Parallel Algorithms	
Realizing Degree Sequences in Parallel	261
<i>Srinivasa Arikati and Anil Maheshwari</i>	
Efficient Sequential and Parallel Algorithms for the Negative Cycle Problem	270
<i>Dimitris Kavvadias, Grammati E. Pantziou, Paul G. Spirakis, and Christos D. Zaroliagis</i>	
Fast and Efficient Operations on Parallel Priority Queues	279
<i>Danny Z. Chen and Xiaobo Hu</i>	

Heaps with Bits	288
<i>Svante Carlsson, Jingsen Chen, and Christer Mattsson</i>	

SESSION 5A: Algebraic Algorithms

Components and Projections of Curves over Finite Fields	297
<i>Joachim von zur Gathen and Igor Shparlinski</i>	

On the Approximation of Finding Various Minimal, Maximal, and Consistent Sequences	306
<i>Martin Middendorf</i>	

A Linear-Time Algorithm for Computing Characteristic Strings	315
<i>Michio Nakanishi, Morio Hasidume, Minoru Ito, and Akihiro Hashimoto</i>	

The Maximum Latency and Identification of Positive Boolean Functions	324
<i>Kazuhisa Makino and Toshihide Ibaraki</i>	

SESSION 5B: VLSI and Routing

Fast Deterministic Hot-Potato Routing on Processor Arrays	333
<i>Michael Kaufmann, Harald Lauer, and Heiko Schröder</i>	

k-Pairwise Cluster Fault Tolerant Routing in Hypercubes	342
<i>Qian-Ping Gu and Shietung Peng</i>	

On Steiner Minimal Trees in Grid Graphs and Its Application to VLSI Routing	351
<i>Michael Kaufmann, Shaodi Gao, and K. Thulasiraman</i>	

Optimal Routing of Permutations on Rings	360
<i>Xiaojun Shen, Qing Hu, Hao Dai, and Xiangzu Wang</i>	

SESSION 6A: Computational Complexity

Resource Bounded Randomness and Weakly Complete Problems	369
<i>Klaus Ambos-Spies, Sebastiaan A. Terwijn, and Xizhong Zheng</i>	

Deterministic ω Automata vis-a-vis Deterministic Buchi Automata	378
<i>Sriram C. Krishnan, Anuj Puri, and Robert K. Brayton</i>	

Quantum Computation and NP-Complete Problems	387
<i>Takashi Mihara and Tetsuro Nishino</i>	

Separability and One-Way Functions	396
<i>Lance Fortnow and John Rogers</i>	
SESSION 6B: Approximation and Optimization	
On the Approximation of Largest Common Subtrees and Largest Common Point Sets	405
<i>Tatsuya Akutsu and Magnús M. Halldórsson</i>	
An Approximation Scheme for Some Steiner Tree Problems in the Plane	414
<i>Tao Jiang and Lusheng Wang</i>	
A Chain Decomposition Algorithm for the Proof of a Property on Minimum Weight Triangulations	423
<i>Bo-Ting Yang, Yin-Feng Xu, and Zhao-Yong You</i>	
The Generating Algorithm for Quasi-Full Steiner Trees	428
<i>Jiyu Ding</i>	
SESSION 7A: Data Structures	
Analysing Deletions in Competitive Self-Adjusting Linear List Algorithms	433
<i>Lucas Chi Kwong Hui and Charles U. Martel</i>	
Are Fibonacci Heaps Optimal?	442
<i>Diab Abuaiadh and Jeffrey H. Kingston</i>	
Simple and Efficient Graph Compression Schemes for Dense and Complement Graphs	451
<i>Ming-Yang Kao and Shang-Hua Teng</i>	
Improved Algorithms for Coloring Random Graphs	460
<i>C.R. Subramanian</i>	
SESSION 7B: Parallel Algorithms	
On the Parallel Complexity of Solving Recurrence Equations	469
<i>Oscar H. Ibarra and Nicholas Q. Trân</i>	
Extended Graph Connectivity and Its Gradually Increasing Parallel Complexity	478
<i>Chuzo Iwamoto and Kazuo Iwama</i>	

Parallel h-v Drawings of Binary Trees	487
<i>Panagiotis T. Metazas, Grammati E. Pantziou, and Antonis Symvonis</i>	

An Efficient Parallel Strategy for Recognizing Series-Parallel Graphs	496
<i>Sun-Yuan Hsieh and Chin-Wen Ho</i>	

SESSION 8A: Geometric Algorithms

Orthogonal Queries in Segments and Triangles	505
<i>Takeshi Tokuyama</i>	

Further Computational Geometry in Secondary Memory	514
<i>Binhai Zhu</i>	

Shortest Safari Routes in Simple Polygon	523
<i>Xuehou Tan and Tomio Hirata</i>	

On Greedy Tetrahedralization of Points in 3D	532
<i>Francis Y. Chin and Cao An Wang</i>	

SESSION 8B: Graph Algorithms

The Totally-Perfect Bipartite Graph and Its Construction	541
<i>Kunihiro Fujiyoshi, Yoji Kajitani, and Hiroshi Niitsu</i>	

k-Best Cuts for Circular-Arc Graphs	550
<i>K.-H. Tsai and D.T. Lee</i>	

Revisiting Circular Arc Graphs	559
<i>Lin Chen</i>	

Weighted Irredundance of Interval Graphs	567
<i>C.Pandu Rangan and Maw-Shang Chang</i>	

SESSION 9A: Complexity

A Reordering Operation for an Ordered Binary Decision Diagram and an Extended Framework for Combinatorics of Graphs	575
<i>Seiichiro Tani and Hiroshi Imai</i>	

On the Size of Ordered Binary Decision Diagrams Representing Threshold Functions	584
<i>Kazuhisa Hosaka, Yasuhiko Takenaga, and Shuzo Yajima</i>	

Nonuniform Lowness and Strong Nonuniform Lowness	593
<i>Hong-Zhou Li and Guan-Ying Li</i>	
Definition and Existence of Super Complexity Cores	600
<i>Ingrid Biehl</i>	
SESSION 9B: Combinatorial Algorithms	
Efficient Algorithms for Assigning Chain-Like Tasks on a Chain-Like Network Computer	607
<i>Gilbert H. Young, Chi-Lok Chan</i>	
Manpower Scheduling with Shift Change Constraints	616
<i>Hoong Chuin Lau</i>	
Fast Algorithms for Transversal Matroid Intersection Problems	625
<i>Ying Xu and Harold N. Gabow</i>	
A Convex Hull Algorithm on Coarse-Grained Multiprocessors	634
<i>Xiaotie Deng</i>	
SESSION 10A: Combinatorial Algorithms	
A Multiway Merging Network	643
<i>De-Lei Lee and Kenneth E. Batcher</i>	
Reporting and Counting Intersections of Lines within a Polygon	652
<i>Tetsuo Asano</i>	
A New Problem in String Searching	660
<i>George Havas and Jin Xian Lian</i>	
SESSION 10B: Distributed and R randomized Algorithms	
Achieving the Shortest Clock Period by Inserting the Minimum Amount of Delay	669
<i>Shangzhi Sun, David H.C. Du, and Guoliang Xue</i>	
A Randomized Algorithm to Finite Automata Public Key Cryptosystem	678
<i>Feng Bao and Yoshihide Igarashi</i>	
Author Index	687