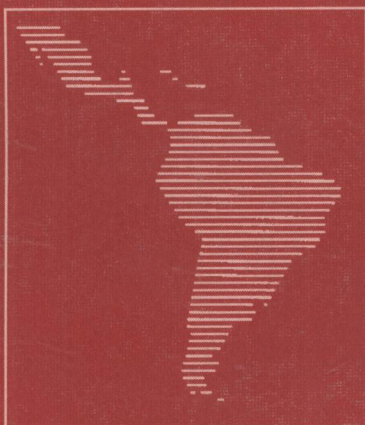


Martin Farach-Colton (Ed.)

LNCS 2976

LATIN 2004: Theoretical Informatics

6th Latin American Symposium
Buenos Aires, Argentina, April 2004
Proceedings



Springer

TP3-53
T396
2004
Martin Farach-Colton (Ed.)

LATIN 2004: Theoretical Informatics

6th Latin American Symposium
Buenos Aires, Argentina, April 5-8, 2004
Proceedings



E200401641



Springer

Series Editors

Gerhard Goos, Karlsruhe University, Germany
Juris Hartmanis, Cornell University, NY, USA
Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editor

Martin Farach-Colton
Rutgers University
Department of Computer Science, Piscataway, NJ 08855, USA
E-mail: farach@cs.rutgers.edu

Cataloging-in-Publication Data applied for

A catalog record for this book is available from the Library of Congress.

Bibliographic information published by Die Deutsche Bibliothek
Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliografie;
detailed bibliographic data is available in the Internet at <<http://dnb.ddb.de>>.

CR Subject Classification (1998): F.2, F.1, E.1, E.3, G.2, G.1, I.3.5, F.3, F.4

ISSN 0302-9743

ISBN 3-540-21258-2 Springer-Verlag Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable for prosecution under the German Copyright Law.

Springer-Verlag is a part of Springer Science+Business Media
springeronline.com

© Springer-Verlag Berlin Heidelberg 2004
Printed in Germany

Typesetting: Camera-ready by author, data conversion by PTP-Berlin, Protago-TeX-Production GmbH
Printed on acid-free paper SPIN: 10989654 06/3142 5 4 3 2 1 0



Springer

Berlin

Heidelberg

New York

Hong Kong

London

Milan

Paris

Tokyo

Lecture Notes in Computer Science

For information about Vols. 1–2854

please contact your bookseller or Springer-Verlag

- Vol. 2992: E. Bertino, S. Christodoulakis, D. Plexousakis, V. Christophides, M. Koubarakis, K. Böhm, E. Ferrari (Eds.), *Advances in Database Technology - EDBT 2004*. XVIII, 877 pages. 2004.
- Vol. 2983: S. Istrail, M. Waterman, A. Clark (Eds.), *Computational Methods for SNPs and Haplotype Inference*. IX, 153 pages. 2004. (Subseries LNBI).
- Vol. 2982: N. Wakamiya, M. SolarSKI, J. Sterbenz (Eds.), *Active Networks*. XI, 308 pages. 2004.
- Vol. 2981: C. Müller-Schloer, T. Ungerer, B. Bauer (Eds.), *Organic and Pervasive Computing – ARCS 2004*. XI, 339 pages. 2004.
- Vol. 2978: R. Groz, R.M. Hierons (Eds.), *Testing of Communicating Systems*. XII, 225 pages. 2004.
- Vol. 2976: M. Farach-Colton (Ed.), *LATIN 2004: Theoretical Informatics*. XV, 626 pages. 2004.
- Vol. 2973: Y. Lee, J. Li, K.-Y. Whang, D. Lee (Eds.), *Database Systems for Advanced Applications*. XXIV, 925 pages. 2004.
- Vol. 2970: F. Fernández Rivera, M. Bubak, A. Gómez Tato, R. Doallo (Eds.), *Grid Computing*. XI, 328 pages. 2004.
- Vol. 2964: T. Okamoto (Ed.), *Topics in Cryptology – CT-RSA 2004*. XI, 387 pages. 2004.
- Vol. 2962: S. Bistarelli, *Semirings for Soft Constraint Solving and Programming*. XII, 279 pages. 2004.
- Vol. 2961: P. Eklund (Ed.), *Concept Lattices*. IX, 411 pages. 2004. (Subseries LNAI).
- Vol. 2958: L. Rauchwerger (Ed.), *Languages and Compilers for Parallel Computing*. XI, 556 pages. 2004.
- Vol. 2957: P. Langendoerfer, M. Liu, I. Matta, V. Tsoulos (Eds.), *Wired/Wireless Internet Communications*. XI, 307 pages. 2004.
- Vol. 2954: F. Crestani, M. Dunlop, S. Mizzaro (Eds.), *Mobile and Ubiquitous Information Access*. X, 299 pages. 2004.
- Vol. 2953: K. Konrad, *Model Generation for Natural Language Interpretation and Analysis*. XIII, 166 pages. 2004. (Subseries LNAI).
- Vol. 2952: N. Guelfi, E. Astesiano, G. Reggio (Eds.), *Scientific Engineering of Distributed Java Applications*. X, 157 pages. 2004.
- Vol. 2951: M. Naor (Ed.), *Theory of Cryptography*. XI, 523 pages. 2004.
- Vol. 2949: R. De Nicola, G. Ferrari, G. Meredith (Eds.), *Coordination Models and Languages*. X, 323 pages. 2004.
- Vol. 2947: F. Bao, R. Deng, J. Zhou (Eds.), *Public Key Cryptography – PKC 2004*. XI, 455 pages. 2004.
- Vol. 2946: R. Focardi, R. Gorrieri (Eds.), *Foundations of Security Analysis and Design II*. VII, 267 pages. 2004.
- Vol. 2943: J. Chen, J. Reif (Eds.), *DNA Computing*. X, 225 pages. 2004.
- Vol. 2941: M. Wirsing, A. Knapp, S. Balsamo (Eds.), *Radical Innovations of Software and Systems Engineering in the Future*. X, 359 pages. 2004.
- Vol. 2940: C. Lucena, A. Garcia, A. Romanovsky, J. Castro, P.S. Alencar (Eds.), *Software Engineering for Multi-Agent Systems II*. XII, 279 pages. 2004.
- Vol. 2939: T. Kalker, I. Cox, Y.M. Ro (Eds.), *Digital Watermarking*. XII, 602 pages. 2004.
- Vol. 2937: B. Steffen, G. Levi (Eds.), *Verification, Model Checking, and Abstract Interpretation*. XI, 325 pages. 2004.
- Vol. 2934: G. Lindemann, D. Moldt, M. Paolucci (Eds.), *Regulated Agent-Based Social Systems*. X, 301 pages. 2004. (Subseries LNAI).
- Vol. 2930: F. Winkler (Ed.), *Automated Deduction in Geometry*. VII, 231 pages. 2004. (Subseries LNAI).
- Vol. 2926: L. van Elst, V. Dignum, A. Abecker, *Agent-Mediated Knowledge Management*. XI, 428 pages. 2004. (Subseries LNAI).
- Vol. 2923: V. Lifschitz, I. Niemelä (Eds.), *Logic Programming and Nonmonotonic Reasoning*. IX, 365 pages. 2004. (Subseries LNAI).
- Vol. 2919: E. Giunchiglia, A. Tacchella (Eds.), *Theory and Applications of Satisfiability Testing*. XI, 530 pages. 2004.
- Vol. 2917: E. Quintarelli, *Model-Checking Based Data Retrieval*. XVI, 134 pages. 2004.
- Vol. 2916: C. Palamidessi (Ed.), *Logic Programming*. XII, 520 pages. 2003.
- Vol. 2915: A. Camurri, G. Volpe (Eds.), *Gesture-Based Communication in Human-Computer Interaction*. XIII, 558 pages. 2004. (Subseries LNAI).
- Vol. 2914: P.K. Pandya, J. Radhakrishnan (Eds.), *FST TCS 2003: Foundations of Software Technology and Theoretical Computer Science*. XIII, 446 pages. 2003.
- Vol. 2913: T.M. Pinkston, V.K. Prasanna (Eds.), *High Performance Computing - HiPC 2003*. XX, 512 pages. 2003. (Subseries LNAI).
- Vol. 2911: T.M.T. Sembok, H.B. Zaman, H. Chen, S.R. Urs, S.H. Myaeng (Eds.), *Digital Libraries: Technology and Management of Indigenous Knowledge for Global Access*. XX, 703 pages. 2003.
- Vol. 2910: M.E. Orlowska, S. Weerawarana, M.M.P. Papazoglou, J. Yang (Eds.), *Service-Oriented Computing - ICSC 2003*. XIV, 576 pages. 2003.
- Vol. 2909: K. Jansen, R. Solis-Oba (Eds.), *Approximation and Online Algorithms*. VIII, 269 pages. 2004.
- Vol. 2909: R. Solis-Oba, K. Jansen (Eds.), *Approximation and Online Algorithms*. VIII, 269 pages. 2004.

- Vol. 2908: K. Chae, M. Yung (Eds.), *Information Security Applications*. XII, 506 pages. 2004.
- Vol. 2907: I. Lirkov, S. Margenov, J. Wasniewski, P. Yalamov (Eds.), *Large-Scale Scientific Computing*. XI, 490 pages. 2004.
- Vol. 2906: T. Ibaraki, N. Katoh, H. Ono (Eds.), *Algorithms and Computation*. XVII, 748 pages. 2003.
- Vol. 2905: A. Sanfeliu, J. Ruiz-Shulcloper (Eds.), *Progress in Pattern Recognition, Speech and Image Analysis*. XVII, 693 pages. 2003.
- Vol. 2904: T. Johansson, S. Maitra (Eds.), *Progress in Cryptology - INDOCRYPT 2003*. XI, 431 pages. 2003.
- Vol. 2903: T.D. Gedeon, L.C.C. Fung (Eds.), *AI 2003: Advances in Artificial Intelligence*. XVI, 1075 pages. 2003. (Subseries LNAI).
- Vol. 2902: F.M. Pires, S.P. Abreu (Eds.), *Progress in Artificial Intelligence*. XV, 504 pages. 2003. (Subseries LNAI).
- Vol. 2901: F. Bry, N. Henze, J. Ma luszynski (Eds.), *Principles and Practice of Semantic Web Reasoning*. X, 209 pages. 2003.
- Vol. 2900: M. Bidoit, P.D. Mosses (Eds.), *CasI User Manual*. XIII, 240 pages. 2004.
- Vol. 2899: G. Ventre, R. Canonico (Eds.), *Interactive Multimedia on Next Generation Networks*. XIV, 420 pages. 2003.
- Vol. 2898: K.G. Paterson (Ed.), *Cryptography and Coding*. IX, 385 pages. 2003.
- Vol. 2897: O. Balet, G. Subsol, P. Torguet (Eds.), *Virtual Storytelling*. XI, 240 pages. 2003.
- Vol. 2896: V.A. Saraswat (Ed.), *Advances in Computing Science - ASIAN 2003*. VIII, 305 pages. 2003.
- Vol. 2895: A. Ohori (Ed.), *Programming Languages and Systems*. XIII, 427 pages. 2003.
- Vol. 2894: C.S. Lai (Ed.), *Advances in Cryptology - ASIACRYPT 2003*. XIII, 543 pages. 2003.
- Vol. 2893: J.-B. Stefani, I. Demeure, D. Hagimont (Eds.), *Distributed Applications and Interoperable Systems*. XIII, 311 pages. 2003.
- Vol. 2892: F. Dau, *The Logic System of Concept Graphs with Negation*. XI, 213 pages. 2003. (Subseries LNAI).
- Vol. 2891: J. Lee, M. Barley (Eds.), *Intelligent Agents and Multi-Agent Systems*. X, 215 pages. 2003. (Subseries LNAI).
- Vol. 2890: M. Broy, A.V. Zamulin (Eds.), *Perspectives of System Informatics*. XV, 572 pages. 2003.
- Vol. 2889: R. Meersman, Z. Tari (Eds.), *On The Move to Meaningful Internet Systems 2003: OTM 2003 Workshops*. XIX, 1071 pages. 2003.
- Vol. 2888: R. Meersman, Z. Tari, D.C. Schmidt (Eds.), *On The Move to Meaningful Internet Systems 2003: CoopIS, DOA, and ODBASE*. XXI, 1546 pages. 2003.
- Vol. 2887: T. Johansson (Ed.), *Fast Software Encryption*. IX, 397 pages. 2003.
- Vol. 2886: I. Nyström, G. Sanniti di Baja, S. Svensson (Eds.), *Discrete Geometry for Computer Imagery*. XII, 556 pages. 2003.
- Vol. 2885: J.S. Dong, J. Woodcock (Eds.), *Formal Methods and Software Engineering*. XI, 683 pages. 2003.
- Vol. 2884: E. Najm, U. Nestmann, P. Stevens (Eds.), *Formal Methods for Open Object-Based Distributed Systems*. X, 293 pages. 2003.
- Vol. 2883: J. Schaeffer, M. Müller, Y. Björnsson (Eds.), *Computers and Games*. XI, 431 pages. 2003.
- Vol. 2882: D. Veit, *Matchmaking in Electronic Markets*. XV, 180 pages. 2003. (Subseries LNAI).
- Vol. 2881: E. Horlait, T. Magedanz, R.H. Glioth (Eds.), *Mobile Agents for Telecommunication Applications*. IX, 297 pages. 2003.
- Vol. 2880: H.L. Bodlaender (Ed.), *Graph-Theoretic Concepts in Computer Science*. XI, 386 pages. 2003.
- Vol. 2879: R.E. Ellis, T.M. Peters (Eds.), *Medical Image Computing and Computer-Assisted Intervention - MICCAI 2003*. XXXIV, 1003 pages. 2003.
- Vol. 2878: R.E. Ellis, T.M. Peters (Eds.), *Medical Image Computing and Computer-Assisted Intervention - MICCAI 2003*. XXXIII, 819 pages. 2003.
- Vol. 2877: T. Böhme, G. Heyer, H. Unger (Eds.), *Innovative Internet Community Systems*. VIII, 263 pages. 2003.
- Vol. 2876: M. Schroeder, G. Wagner (Eds.), *Rules and Rule Markup Languages for the Semantic Web*. VII, 173 pages. 2003.
- Vol. 2875: E. Aarts, R. Collier, E.v. Loenen, B.d. Ruyter (Eds.), *Ambient Intelligence*. XI, 432 pages. 2003.
- Vol. 2874: C. Priami (Ed.), *Global Computing*. XIX, 255 pages. 2003.
- Vol. 2871: N. Zhong, Z.W. Raś, S. Tsumoto, E. Suzuki (Eds.), *Foundations of Intelligent Systems*. XV, 697 pages. 2003. (Subseries LNAI).
- Vol. 2870: D. Fensel, K.P. Sycara, J. Mylopoulos (Eds.), *The Semantic Web - ISWC 2003*. XV, 931 pages. 2003.
- Vol. 2869: A. Yazici, C. Şener (Eds.), *Computer and Information Sciences - ISCIS 2003*. XIX, 1110 pages. 2003.
- Vol. 2868: P. Perner, R. Brause, H.-G. Holzhütter (Eds.), *Medical Data Analysis*. VIII, 127 pages. 2003.
- Vol. 2866: J. Akiyama, M. Kano (Eds.), *Discrete and Computational Geometry*. VIII, 285 pages. 2003.
- Vol. 2865: S. Pierre, M. Barbeau, E. Kranakis (Eds.), *Ad-Hoc, Mobile, and Wireless Networks*. X, 293 pages. 2003.
- Vol. 2864: A.K. Dey, A. Schmidt, J.F. McCarthy (Eds.), *UbiComp 2003: Ubiquitous Computing*. XVII, 368 pages. 2003.
- Vol. 2863: P. Stevens, J. Whittle, G. Booch (Eds.), *"UML" 2003 - The Unified Modeling Language*. XIV, 415 pages. 2003.
- Vol. 2860: D. Geist, E. Tronci (Eds.), *Correct Hardware Design and Verification Methods*. XII, 426 pages. 2003.
- Vol. 2859: B. Apolloni, M. Marinaro, R. Tagliaferri (Eds.), *Neural Nets*. X, 376 pages. 2003.
- Vol. 2857: M.A. Nascimento, E.S. de Moura, A.L. Oliveira (Eds.), *String Processing and Information Retrieval*. XI, 379 pages. 2003.
- Vol. 2856: M. Smirnov (Ed.), *Quality of Future Internet Services*. IX, 293 pages. 2003.
- Vol. 2855: R. Alur, I. Lee (Eds.), *Embedded Software*. X, 373 pages. 2003.

Preface

This volume contains the proceedings of the Latin American Theoretical Informatics (LATIN) conference that was held in Buenos Aires, Argentina, April 5–8, 2004.

The LATIN series of symposia was launched in 1992 to foster interactions between the Latin American community and computer scientists around the world. This was the sixth event in the series, following São Paulo, Brazil (1992), Valparaiso, Chile (1995), Campinas, Brazil (1998), Punta del Este, Uruguay (2000), and Cancun, Mexico (2002). The proceedings of these conferences were also published by Springer-Verlag in the Lecture Notes in Computer Science series: Volumes 583, 911, 1380, 1776, and 2286, respectively. Also, as before, we published a selection of the papers in a special issue of a prestigious journal.

We received 178 submissions. Each paper was assigned to four program committee members, and 59 papers were selected. This was 80% more than the previous record for the number of submissions. We feel lucky to have been able to build on the solid foundation provided by the increasingly successful previous LATINs. And we are very grateful for the tireless work of Pablo Martínez López, the Local Arrangements Chair. Finally, we thank Springer-Verlag for publishing these proceedings in its LNCS series.

December 2003

Martin Farach-Colton

Invited Presentations

Cynthia Dwork, Microsoft Research, USA

Mike Paterson, University of Warwick, UK

Yoshiharu Kohayakawa, Universidade de São Paulo, Brazil

Jean-Eric Pin, CNRS/Université Paris VII, France

Dexter Kozen, Cornell University, NY, USA

Organization

Program Chair	Martin Farach-Colton, Rutgers University, USA
Local Arrangments Chair	Pablo Martínez López, Univ. Nacional de La Plata, Argentina
Steering Committee	Ricardo Baeza Yates, Univ. de Chile, Chile Gaston Gonnet, ETH Zurich, Switzerland Claudio Lucchesi, Univ. de Campinas, Brazil Imre Simon, Univ. de São Paulo, Brazil

Program Committee

Michael Bender, SUNY Stony Brook, USA
Gerth Brodal, University of Aarhus, Denmark
Fabian Chudak, ETH, Switzerland
Mary Cryan, University of Leeds, UK
Pedro D'Argenio, UNC, Argentina
Martin Farach-Colton (Chair), Rutgers University, USA
David Fernández-Baca, Iowa State University, USA
Paolo Ferragina, Università di Pisa, Italy
Juan Garay, Bell Labs, USA
Claudio Gutiérrez, Universidad de Chile, Chile
John Iacono, Polytechnic University, USA
Bruce Kapron, University of Victoria, Canada
Valerie King, University of Victoria, Canada
Marcos Kiwi, Universidad de Chile, Chile
Sulamita Klein, Univ. Federal do Rio de Janeiro, Brazil
Stefan Langerman, Université Libre de Bruxelles, Belgium
Moshe Lewenstein, Bar Ilan University, Israel
Alex López-Ortiz, University of Waterloo, Canada
Eduardo Sany Laber, PUC-Rio, Brazil
Pablo E. Martínez López, UNLP, Argentina
S. Muthukrishnan, Rutgers Univ. and AT&T Labs, USA
Sergio Rajsbaum, Univ. Nacional Autónoma de México, Mexico
Andrea Richa, Arizona State University, USA
Gadiel Seroussi, HP Labs, USA
Alistair Sinclair, UC Berkeley, USA
Danny Sleator, Carnegie Mellon University, USA

Local Arrangements Committee

Eduardo Bonelli, Universidad Nacional de La Plata

Carlos “Greg” Diuk, Universidad de Buenos Aires

Santiago Figueira, Universidad de Buenos Aires

Carlos López Pombo, Universidad de Buenos Aires

Matías Menni, Universidad Nacional de La Plata

Pablo E. Martínez López (Chair), Univ. de La Plata

Alejandro Russo, Universidad de Buenos Aires

Marcos Urbaneja Sánchez, Universidad Nacional de La Plata

Hugo Zaccheo, Universidad Nacional de La Plata

Referees

Dimitris Achlioptas

Ali Akhavi

David Aldous

Jorge Almeida

Greg Aloupis

Andris Ambainis

Eric Bach

Pablo Barcelo

Alexander Barg

Elad Barkan

Paulo Barreto

Tomas Barros

Cecilia Bastarrica

Gabriel Baum

Amir Ben-Amram

Julien Bernet

Javier Blanco

Paulo Blauth

Hans Bodlaender

Philip Bohannon

Eduardo Bonelli

Prosenjit Bose

Hervé Brönnimann

Veronique Bruyere

John Brzozowski

Ayelet Butman

Ying Cai

Carlile Campos Lavor

Héctor Cancela

Jean Cardinal

Olivier Carton

Moses Charikar

Chandra Chekuri

Koen Claessen

Don Coppersmith

Massimo Coppola

Ricardo Corin

Peter Csorba

Ricardo Dahab

Ivan Damgaard

Gianna Del Corso

Erik Demaine

Vinay Deolalikar

Vania Maria F. Dias

Irit Dinur

Shlomi Dolev

Dan Dougherty

Vida Dujmovic

Dannie Durand

Jerome Durand-Lose

Nadav Efraty

John Ellis

Hazel Everett

Luerbio Faria

Sándor P. Fekete

Claudson Ferreira

Bornstein

Santiago Figueira

Celina M. H.

de Figueiredo

Philippe Flajolet

Paola Flocchini

Gudmund S. Frandsen

Antonio Frangioni

Ari Freund

Daniel Fridlender

Alan Frieze

Fabio Gadducci

Naveen Garg

Leszek Gasieniec

Vincenzo Gervasi

Jovan Golic

Roberto Grossi

Antonio Gulli

Hermann Haeusler

Petr Hajek

Angele Hamel

Darrel Hankerson

Carmit Harel

Amir Herzberg

Alejandro Hevia

Steve Homer

Carlos Hurtado

Ferran Hurtado

Lucian Ilie

Neil Immerman

Andre Inacio Reis

Gabriel Infante Lopez

Achim Jung

Charanjit Jutla

Mehmet Hakan Karaata

Hakan Karaata

Makino Kazuhisa

Carmel Kent
 Claire Kenyon
 Tien Kieu
 Tomi Klein
 Jon Kleinberg
 Lars R. Knudsen
 Cetin Koc
 Ulrich Kohlenbach
 Goran Konjevod
 Peter Kornerup
 Margarita Korovina
 Guy Kortsarz
 Natalio Krasnogor
 Danny Krizanc
 Marcos Kurban
 Alair Lago
 Leema Lallmamode
 Orlando Lee
 Noa Lewenstein
 Yehuda Lindell
 Ricardo Linden
 Claudia Linhares
 Marina Lipshtein
 Errol Lloyd
 Martin Loeb1
 John Longley
 Fabrizio Luccio
 Alejandro Maass
 Guido Macchi
 Phil MacKenzie
 Nelson Maculan
 Francesco Maffioli
 Greg Malewicz
 Arnaldo Mandel
 Giovanni Manzini
 Alvaro Martín
 Demetrio Martin Vilela
 Carlos Alberto
 Martinhon
 Brian Mayoh
 Robert W. McGrail
 Candido F.X.
 de Mendonca
 Matías Menni
 Andrea Mennucci
 Peter Merz

Fatma Mili
 Ruy Milidui
 Peter Bro Miltersen
 Manuela Montangero
 Pat Morin
 Rémi Morin
 Sergio Muñoz
 Seffi Naor
 Gonzalo Navarro
 Alantha Newman
 Stefan Nickel
 Peter Niebert
 Rolf Niedermeier
 Soohyun Oh
 Alfredo Olivero
 Nicolas Ollinger
 Melih Onus
 Erik Ordentlich
 Friedrich Otto
 Daniel Panario
 Alessandro Panconesi
 Luis Pardo
 Rodrigo Paredes
 Ojas Parekh
 Michal Parnas
 Mike Paterson
 Boaz Patt-Shamir
 David Peleg
 Marco Pellegrini
 David Pelta
 Daniel Penazzi
 Pino Persiano
 Raúl Piaggio
 Benny Pinkas
 Nadia Pisanti
 Ely Porat
 Daniele Pretolani
 Corrado Priami
 Cristophe Prieur
 Kirk Pruhs
 Geppino Pucci
 Claude-Guy Quimper
 Rajmohan Rajaraman
 Desh Ranjan
 Matt Robshaw
 Ricardo Rodríguez

Alexander Russell
 Andrei Sabelfeld
 Kai Salomaa
 Louis Salvail
 Luigi Santocanale
 Eric Schost
 Matthias Schröder
 Marinella Sciortino
 Michael Segal
 Arun Sen
 Rahul Shah
 Jeff Shallit
 Scott Shenker
 David Shmoys
 Amin Shokrollahi
 Igor Shparlinski
 Riccardo Silvestri
 Guillermo Simari
 Imre Simon
 Bjarke Skjerna
 Dan Spielman
 Jessica Staddon
 Mike Steele
 William Steiger
 Bernd Sturmfels
 Subhash Suri
 Maxim Sviridenko
 Wojciech Szpankowski
 Shang-Hua Teng
 Siegbert Tiga
 Loana Tito Nogueira
 Yaroslav Usenko
 Santosh Vempala
 Newton Vieira
 Narayan Vikas
 Jorge Villavicencio
 Alfredo Viola
 Elisa Viso
 Marcelo Weinberger
 Nicolas Wolovick
 David Wood
 Jinyun Yuan
 Michal Ziv-Ukelson

Sponsoring Institutions

sponsored by



El Ojo del Huracán

[comunicación visual

+ ilustración]

Table of Contents

Invited Speakers

Analysis of Scheduling Algorithms for Proportionate Fairness	1
<i>Mike Paterson</i>	
Advances in the Regularity Method	2
<i>Yoshiharu Kohayakawa</i>	
Fighting Spam: The Science	3
<i>Cynthia Dwork</i>	
The Consequences of Imre Simon's Work in the Theory of Automata, Languages, and Semigroups	5
<i>Jean-Eric Pin</i>	

Contributions

Querying Priced Information in Databases: The Conjunctive Case	6
<i>Sany Laber, Renato Carmo, Yoshiharu Kohayakawa</i>	
Sublinear Methods for Detecting Periodic Trends in Data Streams	16
<i>Funda Ergun, S. Muthukrishnan, S. Cenk Sahinalp</i>	
An Improved Data Stream Summary: The Count-Min Sketch and Its Applications	29
<i>Graham Cormode, S. Muthukrishnan</i>	
Rotation and Lighting Invariant Template Matching	39
<i>Kimmo Fredriksson, Veli Mäkinen, Gonzalo Navarro</i>	
Computation of the Bisection Width for Random d -Regular Graphs	49
<i>Josep Díaz, Maria J. Serna, Nicholas C. Wormald</i>	
Constrained Integer Partitions	59
<i>Christian Borgs, Jennifer T. Chayes, Stephan Mertens, Boris Pittel</i>	
Embracing the Giant Component	69
<i>Abraham Flaxman, David Gamarnik, Gregory B. Sorkin</i>	
Sampling Grid Colorings with Fewer Colors	80
<i>Dimitris Achlioptas, Mike Molloy, Cristopher Moore, Frank Van Bussel</i>	

The Complexity of Finding Top-Toda-Equivalence-Class Members	90
<i>Lane A. Hemaspaandra, Mitsunori Ogiwara, Mohammed J. Zaki, Marius Zimand</i>	
List Partitions of Chordal Graphs	100
<i>Tomás Feder, Pavol Hell, Sulamita Klein, Loana Tito Nogueira, Fábio Protti</i>	
Bidimensional Parameters and Local Treewidth	109
<i>Erik D. Demaine, Fedor V. Fomin, Mohammad Taghi Hajiaghayi, Dimitrios M. Thilikos</i>	
Vertex Disjoint Paths on Clique-Width Bounded Graphs	119
<i>Frank Gurski, Egon Wanke</i>	
On Partitioning Interval and Circular-Arc Graphs into Proper Interval Subgraphs with Applications	129
<i>Frédéric Gardi</i>	
Collective Tree Exploration	141
<i>Pierre Fraignaud, Leszek Gąsieniec, Dariusz R. Kowalski, Andrzej Pelc</i>	
Off-Centers: A New Type of Steiner Points for Computing Size-Optimal Quality-Guaranteed Delaunay Triangulations	152
<i>Alper Üngör</i>	
Space-Efficient Algorithms for Computing the Convex Hull of a Simple Polygonal Line in Linear Time	162
<i>Hervé Brönnimann, Timothy M. Chan</i>	
A Geometric Approach to the Bisection Method	172
<i>Claudio Gutierrez, Flavio Gutierrez, Maria-Cecilia Rivara</i>	
Improved Linear Expected-Time Algorithms for Computing Maxima	181
<i>H.K. Dai, X.W. Zhang</i>	
A Constant Approximation Algorithm for Sorting Buffers	193
<i>Jens S. Kohrt, Kirk Pruhs</i>	
Approximation Schemes for a Class of Subset Selection Problems	203
<i>Kirk Pruhs, Gerhard J. Woeginger</i>	
Finding k -Connected Subgraphs with Minimum Average Weight	212
<i>Prabhakar Gubbala, Balaji Raghavachari</i>	
On the (Im)possibility of Non-interactive Correlation Distillation	222
<i>Ke Yang</i>	

Pure Future Local Temporal Logics Are Expressively Complete for Mazurkiewicz Traces	232
<i>Volker Diekert, Paul Gastin</i>	
How Expressions Can Code for Automata	242
<i>Sylvain Lombardy, Jacques Sakarovitch</i>	
Automata for Arithmetic Meyer Sets	252
<i>Shigeki Akiyama, Frédérique Bassino, Christiane Frougny</i>	
Efficiently Computing the Density of Regular Languages	262
<i>Manuel Bodirsky, Tobias Gärtner, Timo von Oertzen, Jan Schwinghammer</i>	
Longest Repeats with a Block of Don't Cares	271
<i>Maxime Crochemore, Costas S. Iliopoulos, Manal Mohamed, Marie-France Sagot</i>	
Join Irreducible Pseudovarieties, Group Mapping, and Kovács-Newman Semigroups	279
<i>John Rhodes, Benjamin Steinberg</i>	
Complementation of Rational Sets on Scattered Linear Orderings of Finite Rank	292
<i>Olivier Carton, Chloé Rispal</i>	
Expected Length of the Longest Common Subsequence for Large Alphabets	302
<i>Marcos Kiwi, Martin Loebl, Jiří Matoušek</i>	
Universal Types and Simulation of Individual Sequences	312
<i>Gadiel Seroussi</i>	
Separating Codes: Constructions and Bounds	322
<i>Gérard Cohen, Hans Georg Schaathun</i>	
Encoding Homotopy of Paths in the Plane	329
<i>Sergei Bespamyatnikh</i>	
A Unified Approach to Coding Labeled Trees	339
<i>Saverio Caminiti, Irene Finocchi, Rossella Petreschi</i>	
Cost-Optimal Trees for Ray Shooting	349
<i>Hervé Brönnimann, Marc Glisse</i>	
Packing Problems with Orthogonal Rotations	359
<i>Flavio Keidi Miyazawa, Yoshiko Wakabayashi</i>	

Combinatorial Problems on Strings with Applications
to Protein Folding 369
Alantha Newman, Matthias Ruhl

Measurement Errors Make the Partial Digest Problem NP-Hard..... 379
Mark Cieliebak, Stephan Eidenbenz

Designing Small Keyboards Is Hard 391
Jean Cardinal, Stefan Langerman

Metric Structures in L_1 : Dimension, Snowflakes, and
Average Distortion 401
James R. Lee, Manor Mendel, Assaf Naor

Nash Equilibria via Polynomial Equations..... 413
Richard J. Lipton, Evangelos Markakis

Minimum Latency Tours and the k -Traveling Repairmen Problem 423
Raja Jothi, Balaji Raghavachari

Server Scheduling in the Weighted ℓ_p Norm 434
Nikhil Bansal, Kirk Pruhs

An Improved Communication-Randomness Tradeoff 444
Martin Fürer

Distributed Games and Distributed Control
for Asynchronous Systems 455
Paul Gastin, Benjamin Lerman, Marc Zeitoun

A Simplified and Dynamic Unified Structure 466
Mihai Bădoiu, Erik D. Demaine

Another View of the Gaussian Algorithm 474
Ali Akhavi, Céline Moreira Dos Santos

Generating Maximal Independent Sets for Hypergraphs
with Bounded Edge-Intersections 488
*Endre Boros, Khaled Elbassioni, Vladimir Gurvich,
Leonid Khachiyan*

Rooted Maximum Agreement Supertrees 499
*Jesper Jansson, Joseph H.-K. Ng, Kunihiko Sadakane,
Wing-Kin Sung*

Complexity of Cycle Length Modularity Problems in Graphs 509
Edith Hemaspaandra, Holger Spakowski, Mayur Thakur