Lecture Notes in Computer Science

3330

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

University of Dortmund, Germany

Madhu Sudan

Massachusetts Institute of Technology, MA, USA

Demetri Terzopoulos

New York University, NY, USA

Doug Tygar

University of California, Berkeley, CA, USA

Moshe Y. Vardi

Rice University, Houston, TX, USA

Gerhard Weikum

Max-Planck Institute of Computer Science, Saarbruecken, Germany

Jin Akiyama Edy Tri Baskoro Mikio Kano (Eds.)

Combinatorial Geometry and Graph Theory

Indonesia-Japan Joint Conference, IJCCGGT 2003 Bandung, Indonesia, September 13-16, 2003 Revised Selected Papers



Volume Editors

Jin Akiyama

Tokai University, Research Institute of Educational Development

Tokyo, 151-8677, Japan

E-mail: fwjb5117@infoweb.ne.jp

Edy Tri Baskoro

Institut Teknologi Bandung, Department of Mathematics

Jalan Ganesa 10, Bandung 40132, Indonesia

E-mail: ebaskoro@dns.math.itb.ac.id

Mikio Kano

Ibaraki University, Department of Computer and Information Sciences

Hitachi, Ibaraki, 316-8511, Japan E-mail: kano@cis.ibaraki.ac.jp

Library of Congress Control Number: 2004117731

CR Subject Classification (1998): I.3.5, G.2, F.2.2, E.1

ISSN 0302-9743

ISBN 3-540-24401-8 Springer 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. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springeronline.com

© Springer-Verlag Berlin Heidelberg 2005 Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India Printed on acid-free paper SPIN: 11378242 06/3142 5 4 3 2 1 0

Preface

This volume consists of the refereed papers presented at the Indonesia-Japan Joint Conference on Combinatorial Geometry and Graph Theory (IJCCGGT 2003), held on September 13–16, 2003 at ITB, Bandung, Indonesia. This conference can also be considered as a series of the Japan Conference on Discrete and Computational Geometry (JCDCG), which has been held annually since 1997. The first five conferences of the series were held in Tokyo, Japan, the sixth in Manila, the Philippines, in 2001, and the seventh in Tokyo, Japan in 2002.

The proceedings of JCDCG 1998, JCDCG 2000 and JCDCG 2002 were published by Springer as part of the series Lecture Notes in Computer Science: LNCS volumes 1763, 2098 and 2866, respectively. The proceedings of JCDCG 2001 were also published by Springer as a special issue of the journal *Graphs and Combinatorics*, Vol. 18, No. 4, 2002.

The organizers are grateful to the Department of Mathematics, Institut Teknologi Bandung (ITB) and Tokai University for sponsoring the conference. We also thank all program committee members and referees for their excellent work. Our big thanks to the principal speakers: Hajo Broersma, Mikio Kano, Janos Pach and Jorge Urrutia. Finally, our thanks also goes to all our colleagues who worked hard to make the conference enjoyable and successful.

August 2004

Jin Akiyama Edy Tri Baskoro Mikio Kano

Organization

The Indonesia-Japan Joint Conference on Combinatorial Geometry and Graph Theory (IJCCGGT) 2003 was organized by the Department of Mathematics, Institut Teknologi Bandung (ITB) Indonesia and RIED, Tokai University, Japan.

Program and Organizing Committee

Co-chairs: Edy Tri Baskoro, Jin Akiyama

Members: Hilda Assiyatun, Yus M. Cholily, Mikio Kano, Mirka Miller, Chie Nara, Mari-Jo P. Ruiz, Rinovia Simanjuntak, Surahmat, Masatsugu Urabe, and

Saladin Uttunggadewa

Referees

Hiroshi Maehara Jin Akiyama Haruhide Matsuda Hilda Assiyatun Mirka Miller Edy Tri Baskoro Chie Nara Jav Boland Laurence Boxer Joseph O'Rourke Rainer Burkard Toshinori Sakai William Duckworth Gelasio Salazar P.L. Hammer Rinovia Simanjuntak

Koichi Hirata Slamin

Ferran Hurtado Ichiro Suzuki
Hiro Ito Masatsugu Urabe
Mikio Kano Nick Wormald
Petr Kolman Toshinori Yamada

Sponsoring Institutions

Department of Mathematics, ITB, Indonesia RIED, Tokai University, Japan UNESCO, Jakarta Indonesian Mathematical Society (IndoMS)

Table of Contents

Jin Akiyama, Koichi Hirata	1
Flat 2-Foldings of Convex Polygons Jin Akiyama, Koichi Hirata, Mari-Jo P. Ruiz, Jorge Urrutia	14
Uniform Coverings of 2-Paths with 6-Paths in the Complete Graph Jin Akiyama, Midori Kobayashi, Gisaku Nakamura	25
Foldings of Regular Polygons to Convex Polyhedra I: Equilateral Triangles Jin Akiyama, Gisaku Nakamura	34
Maximum Induced Matchings of Random Regular Graphs	94
Hilda Assiyatun	44
Antimagic Valuations for the Special Class of Plane Graphs Martin Bača, Edy Tri Baskoro, Mirka Miller	58
A General Framework for Coloring Problems: Old Results, New Results, and Open Problems Hajo Broersma	65
Crossing Numbers and Skewness of Some Generalized Petersen Graphs G.L. Chia, C.L. Lee	80
Some Conditions for the Existence of (d, k) -Digraphs Yus Mochamad Cholily, Edy Tri Baskoro, Saladin Uttunggadewa	87
Subdivision Number of Large Complete Graphs and Large Complete Multipartite Graphs Severino V. Gervacio	94
On a Triangle with the Maximum Area in a Planar Point Set Kiyoshi Hosono, Ferran Hurtado, Masatsugu Urabe, Jorge Urrutia	102
A Balanced Interval of Two Sets of Points on a Line Atsushi Kaneko, M. Kano	108

VIII Table of Contents

Spanning Trees of Multicoloured Point Sets with Few Intersections J. Leaños, C. Merino, G. Salazar, J. Urrutia	113
Regular Factors Containing a Given Hamiltonian Cycle Haruhide Matsuda	123
Disjoint Edges in Topological Graphs János Pach, Géza Tóth	133
The Decycling Number of Cubic Graphs Narong Punnim	141
Equal Area Polygons in Convex Bodies T. Sakai, C. Nara, J. Urrutia	146
Maximum Order of Planar Digraphs Rinovia Simanjuntak, Mirka Miller	159
(a,d) -Edge-Antimagic Total Labelings of Caterpillars $K.A.\ Sugeng,\ M.\ Miller,\ Slamin,\ M.\ Bača$	169
An Upper Bound for the Ramsey Number of a Cycle of Length Four Versus Wheels Surahmat, Edy Tri Baskoro, Saladin Uttunggadewa, Hajo Broersma	181
Constructions for Nonhamiltonian Burkard-Hammer Graphs Ngo Dac Tan, Chawalit Iamjaroen	185
A Characterization of Polygonal Regions Searchable from the Boundary Xuehou Tan	200
Δ-Optimum Exclusive Sum Labeling of Certain Graphs with Radius One Mauritsius Tuga, Mirka Miller	216
Author Index	227