

Lecture Notes in Mathematics

Edited by A. Dold and B. Eckmann

1073

Graph Theory Singapore 1983

Proceedings

Edited by K. M. Koh and H. P. Yap



Springer-Verlag
Berlin Heidelberg New York Tokyo

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Proceedings of the First Southeast Asian
Graph Theory Colloquium, held in Singapore
May 10–28, 1983

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Springer-Verlag
Berlin Heidelberg New York Tokyo 1984

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AMS Subject Classification (1980): 03E05, 04A20, 05-02, 05A17, 05A20, 05B35, 05B50, 05C10, 05C15, 05C20, 05C25, 05C35, 05C38, 05C40, 05C45, 05C60, 05C65, 05C70, 05C75, 05C99, 68E10, 94C15

ISBN 3-540-13368-2 Springer-Verlag Berlin Heidelberg New York Tokyo

ISBN 0-387-13368-2 Springer-Verlag New York Heidelberg Berlin Tokyo

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© by Springer-Verlag Berlin Heidelberg 1984
Printed in Germany

Printing and binding: Beltz Offsetdruck, Hemsbach / Bergstr.
2146 / 3140-543210

Lecture Notes in Mathematics

For information about Vols. 1-872, please contact your book-seller or Springer-Verlag.

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PREFACE

The First Southeast Asian Colloquium on Graph Theory was held at the National University of Singapore from 10th May to 28th May, 1983. It was jointly organized by the Southeast Asian Mathematical Society and the Department of Mathematics, National University of Singapore. The objective of this Colloquium is to promote mathematical research in Southeast Asia and to help mathematicians in this region to keep abreast of recent advances in Graph Theory.

Altogether sixty participants from thirteen countries took part in this Colloquium. Their names are given in a separate list. We are very glad to have so many distinguished mathematicians from outside this region attending this Colloquium and we thank them for their support.

During the Conference, many participants from this region felt that the time is ripe to have a journal on Combinatorics edited in Asia. After consulting various renowned combinatorists, we are very happy to announce that a new journal, to be called *Graphs and Combinatorics* - an Asian journal, is expected to have its first issue published in 1985. The advisory editors of this journal include Claude Berge, Paul Erdős, Ronald L. Graham, Frank Harary, Sin Hitotumatu, Hua Loo Keng, C.L. Liu, Richard Rado and William T. Tutte. Springer Verlag has agreed to publish this journal.

This Colloquium consisted of two parts : (1) a Workshop (May 23-28); and (2) a General Conference (May 23-28). Twenty eight one-hour lectures were given at the Workshop and thirty two half-hour talks were presented at the General Conference. The present volume contains the Proceedings of this Colloquium. B. D. Acharya and Fang Wei-Wu had planned to be present at this Colloquium, but due to unforeseen circumstances, they were unable to do so. However, their papers are also included in this volume. Manuscripts of the remaining talks which are not included here will appear elsewhere.

We would like to express our deep gratitude to UNESCO and to the Lee Kong Chain Centre for Mathematics Research for sponsoring this Colloquium. We would also like to thank B. Bollobás, H. Crapo, C. Thomassen and many participants of this Colloquium for refereeing the papers, Springer-Verlag for their assistance with the publication of these Proceedings.

H.H. Teh
H.P. Yap
for the organizing committee

Organizing Committee

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S. K. Tan

T. S. Tay

S. K. Teo

SCIENTIFIC PROGRAMME

WORKSHOP, MAY 10 - 20, 1983 (1-HOUR LECTURES)

Tuesday, May 10

- P. J. Slater : Centrality and facility location (I) and (II)
S. C. Shee : On universal graphs (I)
H. H. Teh : On universal graphs (II)

Wednesday, May 11

- M. Pouzet : Sperner property for groups and relations (I) and (II)
K. M. Koh : On the Berge-Sauer conjecture and its related problems
T. S. Tay : Rigidity of graphs

Thursday, May 12

- R. B. Eggleton : Chain decomposition of graphs (I)
D. Skilton : Chain decomposition of graphs (II)

Friday, May 13

- E. C. Milner : The marriage problem (I) and (II)
C. K. Lim : On graphs with unique clique generator
J. E. Dawson : Some matroids which can be defined on a graph

Saturday, May 14

- R. J. Wilson : On edge-colourings of graphs (I) and (II)

Monday, May 16

- K. B. Reid : The score set conjecture (I) and (II)

Tuesday, May 17

- F. Harary : Achievement and avoidance games for bipartite graphs (I) and (II)
H. P. Yap : Computational complexity of graph properties (I) and (II)

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H. P. Yap : Computational complexity of graph properties (I) and (II)

Wednesday, May 18

- M. Satyanarayana : Applications of graph theory in algebraic and ordered structures (I) and (II)

Thursday, May 19

- B. Alspach : On Hamilton cycles in Cayley graphs and digraphs (I) and (II)
- J. Akiyama : A new approach to graph factorization (I) and (II)

Friday, May 20

Open problem session

GENERAL CONFERENCE, MAY 23 - 28, 1983 (30-MINUTE PRESENTATIONS)

Monday, May 23

- F. Harary : General connectivity
- M. Pouzet : A partition theorem of Dushnik-Miller
- M. Kano : Graph factors with given properties
- D. Skilton : Eulerian chains and segment reversals
- R. B. Eggleton : Difference graphs and linear algebra
- C. C. Chen : Cycles in abelian Cayley graphs with a proscribed vertex
- H. H. Teh : Generic graphs with applications

Tuesday, May 24

- H. P. Yap : On uniquely r-pancyclic graphs
- K. Thulasiraman : A problem in the analysis of a graph algorithm
- L. V. Quintas : Random subgraphs of regular graphs
- C. Berge : How to make a digraph strongly connected?
- S. K. Gupta : Reconstruction conjecture for the square of a tree
- Dong Chun-Fei : On the reconstruction of almost p-graphs
- S. V. Gervacio : Cycle-derivative and cycle-antiderivative of graphs
- S. K. Teo : Packing a tree with a graph of the same size

Wednesday, May 25

- P. J. Slater : On the minimean facility location problem
- R. J. Wilson : Mobility of a graph
- E. J. Cockayne : Rotation numbers for union of circuits
- F. Buckley : Equality of certain graphical distributions
- Chia Gek-Ling : Some results on the edge nucleus of supercompact graphs
- V. Boonyasombat : Degree sequences of connected hypergraphs and hypertrees
- J. E. Dawson : Sets related to the Tutte polynomial of a matroid
- K. S. Poh : On the closed-set-lattice of a graph

Thursday, May 26

- C. J. Colbourn : The computational complexity of recognizing critical sets
- K. Heinrich : Some cyclic block designs
- K. B. Reid : Three recent developments in tournament theory
- B. Srinivasan : Significance of central points in systems analysis
- O. Chan : On graphs representable by lists
- A. A. Lewis : On the combinatorial equivalence of ω -selectivity
- Wang Jian-Fang : Isomorphic factorizations of complete n -partite graphs

Saturday, May 28

- S. C. Shee : Graphical colour-representation of an inverse semigroup
- C. Berge : How to partition a digraph into paths?

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