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# COMBINATORICS AND GRAPH THEORY

*Editors of the Volume*

ZDZISŁAW SKUPIEŃ  
MIECZYŚLAW BOROWIECKI



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## PREFACE

This volume constitutes the Proceedings of the 30th Semester held at the Stefan Banach International Mathematical Center for Raising Research Qualifications, Warsaw, from September 15 till December 17, 1987. Primary aim of the Banach Center is to create an opportunity for young mathematicians to attend lectures of invited specialists from all over the world. Naturally, this gives a chance that specialists meet, discuss their results and problems, and start (possibly joint) research work.

The international Scientific Council of the Banach Center fixed the theme "Combinatorics and Graph Theory" and appointed the following Professors to the Organizing Committee of the 30th Semester: Juraj Bosák, CS; Stefan Dodunekov, BG; Miroslav Fiedler, CS; László Lovász (vice-chairman), H; Oleg B. Lupanov (chairman), SU; Horst Sachs, DDR; Zdzisław Skupień, PL; Vera T. Sós, H; Ioan Tomescu, RO. The Organizing Committee fixed the following topics:

1. Algebraic and logical methods, the theory of discrete functions;
2. Enumeration, block designs, codes;
3. Structural and extremal problems of graph theory, polyhedral combinatorics;
4. Probabilistic methods, random graphs, Ramsey theory;
5. Combinatorial algorithms, complexity;
6. The theory of matroids and related systems, topological graph theory.

Altogether, 23 countries from three continents were represented by 183 registered participants, among them 97 invited speakers. Invited speakers stayed at the Center a few days, two weeks, or three weeks at the most, a number of remaining participants stayed longer. Altogether, 109 participants, among which 95 invited speakers, delivered more than 250 lectures of 45' each in general. Most of the papers in this volume were presented to the Semester.

We are very grateful to all authors and speakers, and to all participants for their cooperation. We thank the Director of the Banach Center, Professor Czesław Olech, as well as Mrs. Grażyna Pieścik, the secretary. We are very grateful to Dr. habil. Michał Karoński and Dr. Andrzej Ruciński for their organizational work during three weeks on topic 4 in November. We gratefully

acknowledge the help of some participants to organize informal afternoon meetings. Special thanks are due to all members of the Organizing Committee, including the late Professor J. Bosák.

All submitted papers have been refereed. The editors thank the following referees: H. Bielak, J. Florek, R. Kalinowski, M. Karoński, W. Kordecki, M. Kwaśnik, A. Marczyk, D. Michalak, K. Przesławski, A. Rycerz, S. Serafin, M. Skowrońska, M. M. Sysło, A. P. Wojda, M. Wojtas, M. Woźniak, and J. Topp. The editors gratefully acknowledge the excellent editorial work of Jerzy Trzeciak of PWN—Polish Scientific Publishers.

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## CONTENTS

Preface . . . . .	5–6
Participants . . . . .	8–10
V. BATAGELJ, An improved inductive definition of two restricted classes of triangulations of the plane . . . . .	11–18
R. BODENDIEK* and K. WAGNER, On the minimal basis of the spindle-surface $\mathfrak{S}_1$ . . . . .	19–31
M. BOROWIECKI* and D. MICHALAK, On hallian digraphs and their binding numbers . . . . .	33–37
N. CHAKROUN, M. MANOUSSAKIS and Y. MANOUSSAKIS*, Directed and antidirected hamiltonian cycles and paths in bipartite digraphs . . . . .	39–46
D. Z. DU* and D. F. HSU, On Hamiltonian consecutive- $d$ digraphs . . . . .	47–55
M. FIEDLER, Laplacian of graphs and algebraic connectivity . . . . .	57–70
O. FRANK* and K. NOWICKI*, On entropies of occupancy distributions . . . . .	71–86
A. N. ISACHENKO, On the structure of the quadratic Boolean problem polytope . . . . .	87–92
S. JENDROL', E. JUCOVIČ* and M. TRENKLER, Vertex-vectors of quadrangular 3-polytopes with two types of edges . . . . .	93–111
S. KAGEYAMA, Two open problems on balanced block designs . . . . .	113–118
C. С. МАРЧЕНКОВ, Простые примеры базисов по суперпозиции в классе функций, элементарных по Кальмару (S. S. MARCHENKOV, Simple examples of superposition bases in the class of Kalmár elementary functions) . . . . .	119–126
T. D. PARSONS and T. PISANSKI*, Graphs which are locally paths . . . . .	127–135
Z. RYJÁČEK, Factors and circuits in $K_{1,3}$ -free graphs . . . . .	137–145
J. J. SEIDEL, Graphs and their spectra . . . . .	147–162
Z. SKUPIEŃ, Sharp sufficient conditions for Hamiltonian cycles in tough graphs . . . . .	163–175
M. M. SYSŁO, Independent face and vertex covers in plane graphs . . . . .	177–185
I. TOMESCU, Some extremal results concerning the number of graph and hypergraph colorings . . . . .	187–194
R. I. TYSHKEVICH*, O. P. URBANOVICH and I. E. ZVEROVICH, Matroidal decomposition of a graph . . . . .	195–205
W. WEI*, B. YANG and S. GAO, Distribution of values of permanent and standard forms of $(0, 1)$ -matrices . . . . .	207–231
D. DE WERRA, Packing independent sets and transversals . . . . .	233–240
J. C. WIERMAN, AB percolation: a brief survey . . . . .	241–251

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\* Indicates speaker on joint papers.

## PARTICIPANTS

{name (#L (lecture(s)), town of work, country)}

Peter Ablonczy (Budapest, H)  
Martin Aigner (2L, West Berlin)  
Valerii B. Alekseev (2L, Moscow, SU)  
Brian Alspach (4L, Burnaby, BC, CND)  
Krystyna Balińska (Poznań, PL)  
Thomas F. Banchoff (Providence, RI, USA)  
Vladimir Batagelj\* (3L, Ljubljana, YU)  
Jörg Beyer (Magdeburg, DDR)  
Halina Bielak (Lublin, PL)  
Günter Biess (Merseburg, DDR)  
Rainer H. Bodendiek\* (2L, Kiel, D)  
Oleg V. Borodin (4L, Novosibirsk, SU)  
Mieczysław Borowiecki\* (1L, Zielona Góra, PL)  
Rainer E. Burkard (1L, Graz, A)  
Stanisław Bylka (Warszawa, PL)  
Dietmar Cieslik (Greifswald, DDR)  
Kiril N. Čimev (2L, Blagoevgrad, BG)  
Gérard Cohen (2L, Paris, F)  
Derek G. Corneil (3L, Toronto, Ont., CND)  
Bruno Courcelle (2L, Bordeaux, F)  
Dragoš Cvetković (4L, Belgrade, YU)  
Reinhard Diestel (2L, Cambridge, GB)  
Stefan Dodunekov (2L, Sofia, BG)  
Vesselin Drensky (Sofia, BG)  
Ding-Zhu Du\* (2L, Beijing, RC)  
György Elekes (Budapest, H)  
Vladimir A. Emelichev (1L, Minsk, SU)  
Gergana Eneva (Sofia, BG)  
Pál Erdős (2L, Budapest, H)  
Aleksandr A. Evdokimov (3L, Novosibirsk, SU)  
Siemion Fajtlowicz (1L, Houston, TX, USA)  
Andras Faragó (1L, Budapest, H)  
Miroslav Fiedler\* (2L, Prague, CS)  
Ove Frank\* (2L, Stockholm, S)  
Nikolai I. Glebov (2L, Novosibirsk, SU)  
Claudia Gohlisch (Berlin, DDR)  
Valerii V. Gorlov (1L, Minsk, SU)  
Bernd Graw (1L, Berlin, DDR)  
Geoffrey R. Grimmett (2L, Bristol, GB)  
Hans-Dietrich Gronau (3L, Greifswald, DDR)  
Jacek Gruszka (Poznań, PL)  
Michel Habib (1L, Paris, F)  
Nikolai Hadžiivanov (3L, Sofia, BG)  
Walter Harnau (1L, Dresden, DDR)  
Ivan Havel (1L, Prague, CS)  
Ivan Haverlik (1L, Bratislava, CS)  
Katherine Heinrich (2L, Burnaby, BC, CND)  
Michael Höding (Magdeburg, DDR)  
Cornelis Hoede (2L, Enschede, NL)  
Frank Hoffman (Berlin, DDR)  
Ann Marie Högström (Stockholm, S)  
Mirko Horňák (2L, Košice, CS)  
Pavel Hrnčiar (Banská Bystrica, CS)  
Cvetan Ignatov (Sofia, BG)  
Mikhail A. Iordanskii (2L, Gor'kii, SU)  
Aleksandr N. Isachenko\* (1L, Minsk, SU)  
Tatsuro Ito (2L, Joetsu, J)  
Tatiana Ivanova (Sofia, BG)  
François Jaeger (3L, Grenoble, F)  
Jadwiga Jegier (Kraków, PL)  
Bernd Jeremin (1L, Dresden, DDR)  
Torsen Jeworrek (Magdeburg, DDR)  
Josef Jirašek (Košice, CS)  
Jolanta Jozczuk (Gdynia, PL)  
Ernest Jucovič\* (3L, Košice, CS)  
Heinz Adolf Jung (4L, West Berlin)  
Frieder Kaden (Berlin, DDR)  
Sanpei Kageyama\* (3L, Hiroshima, J)  
Rafał Kalinowski (Kraków, PL)  
Michał Karoński (4L, Poznań, PL)

---

\* Indicates contributor to this volume.

- Gyula O. H. Katona (2L, Budapest, H)  
 Lefteris M. Kirousis (1L, Patras, GR)  
 Martin Kochol (Bratislava, CS)  
 Manfred Koebe (Greifswald, DDR)  
 Jan Komar (Warszawa, PL)  
 Urszula Konieczna (Bydgoszcz, PL)  
 Aleksei D. Korshunov (4L, Novosibirsk, SU)  
 Aleksandr V. Kostochka (3L, Novosibirsk, SU)  
 Maria Králóvá (Bratislava, CS)  
 Miroslav I. Kratko (2L, Kiev, SU)  
 Dieter Kratsch (1L, Jena, DDR)  
 J. Krc-Jediny (Bratislava, CS)  
 Klaus Kriegel (Berlin, DDR)  
 Nikolai N. Kuzurin (2L, Moscow, SU)  
 Maria Kwaśnik (Zielona Góra, PL)  
 Roger Labahn (1L, Rostock, DDR)  
 Jean-Marie Laborde (2L, Grenoble, F)  
 Piroska Lakatos (Debrecen, H)  
 Ivan Landžev (Sofia, BG)  
 Anatolii I. Lanin (Leningrad, SU)  
 Manfred Lesch (1L, Dresden, DDR)  
 Pietr Liebl (Prague, CS)  
 Evgenii P. Lipatov (1L, Moscow, SU)  
 Antoine Lobstein (1L, Paris, F)  
 Čavdar Lozanov (Sofia, BG)  
 Oleg B. Lupanov (2L, Moscow, SU)  
 Wolfgang Mader (2L, Hannover, D)  
 Zofia Majcher (Opole, PL)  
 Krassimir Manev (Sofia, BG)  
 Nikolai Manev (Sofia, BG)  
 Yannis Manoussakis\* (4L, Paris, F)  
 Sergei S. Marchenkov\* (2L, Moscow, SU)  
 Antoni Marczyk (Kraków, PL)  
 Aleksandr A. Markov (3L, Gor'kii, SU)  
 Dragan Marušić (2L, Ljubljana, YU)  
 Leonid S. Mel'nikov (2L, Novosibirsk, SU)  
 Mikhail V. Men'shikov (2L, Moscow, SU)  
 Danuta Michalak\* (Zielona Góra, PL)  
 Dezső Miklós (Budapest, H)  
 Heiko Miller (Jena, DDR)  
 Eric C. Milner (4L, Calgary, Alta., CND)  
 Bojan Mohar (2L, Ljubljana, YU)  
 Rolf H. Möhring (1L, Bonn, D)  
 Burkhard Molzahn (Berlin, DDR)  
 Marian Mrozek (Kraków, PL)  
 Luben Mutařev (4L, Sofia, BG)  
 Roman Nedela (Banská Bystrica, CS)  
 Karol Nemoga (Bratislava, CS)  
 Nedyalko Nenov (3L, Sofia, BG)  
 Alexander Neumann (Berlin, DDR)  
 Krzysztof Nowicki\* (2L, Lund, S)  
 Anatolii P. Oskol'kov (Leningrad, SU)  
 Tomaž Pisanski\* (4L, Ljubljana, YU)  
 Jerzy Płonka (1L, Wrocław, PL)  
 Svatopluk Poljak (2L, Prague, CS)  
 Kiril F. Prisakar' (1L, Kishinev, SU)  
 Pavel Pudlák (1L, Prague, CS)  
 Andrea Rausche (Greifswald, DDR)  
 Aleksandr M. Revyakin (2L, Moscow, SU)  
 Michael Roth (Leipzig, DDR)  
 Andrzej Ruciński (5L, Poznań, PL)  
 Anna Rycerz (Kraków, PL)  
 Zdeněk Ryjáček\* (1L, Plzeň, CS)  
 Horst Sachs (8L, Ilmenau, DDR)  
 Attila Sali (1L, Budapest, H)  
 Günter Schaar (5L, Freiberg, DDR)  
 Petra Scheffler (Berlin, DDR)  
 Guntram Scheithauer (Dresden, DDR)  
 Wolfgang Schöne (2L, Karl-Marx-Stadt, DDR)  
 Dietmar Schweigert (1L, Kaiserslautern, D)  
 Detlef Seese (Berlin, DDR)  
 Johan J. Seidel\* (5L, Eindhoven, NL)  
 Aleksandr F. Sidorenko (2L, Moscow, SU)  
 Jose M. S. Simões-Pereira (2L, Coimbra, P)  
 Josef Širáň (2L, Bratislava, CS)  
 M. Skoviera (Bratislava, CS)  
 Zdzisław Skupień\* (4L, Kraków, PL)  
 Maciej Ślusarek (Kraków, PL)  
 Vera T. Sós (2L, Budapest, H)  
 Boris S. Stechkin (2L, Moscow, SU)  
 Andreas Strassburg (Rostock, DDR)  
 Oto Strauch (Bratislava, CS)  
 Viktor V. Strok (2L, Kiev, SU)  
 Maciej M. Sysło\* (Wrocław, PL)  
 Johannes Terno (Dresden, DDR)  
 Günter Teumer (Greifswald, DDR)  
 Bernhard Thalheim (2L, Dresden, DDR)  
 Le Cong Thanh (Hanoi, VN)  
 Michel Tkáč (Košice, CS)  
 Ioan Tomescu\* (1L, Bucharest, RO)  
 Vladimir D. Tončev (3L, Sofia, BG)  
 Jerzy Topp (Gdańsk, PL)  
 Aleksandar Torgařev (3L, Belgrade, YU)  
 Tomasz Traczyk (Warszawa, PL)  
 Małgorzata Twardowska (Warszawa, PL)  
 Regina I. Tyshkevich\* (2L, Minsk, SU)  
 Henk Jan Veldman (2L, Enschede, NL)  
 Evgenya Velikova (Sofia, BG)  
 Heinz-Jürgen Voss (5L, Dresden, DDR)  
 Stephan Waack (Berlin, DDR)  
 Hansjoachim Walther (3L, Ilmenau, DDR)  
 Karl F. E. Weber (6L, Warnemünde, DDR)

Wandi Wei* (3L, Chengdu, RC)	A. Paweł Wojda (1L, Kraków, PL)
Frank Werner (Magdeburg, DDR)	Shiquan Wu (2L, Changsha, RC)
Dominique de Werra* (2L, Lausanne, CH)	Tudor Zamfirescu (2L, Dortmund, D)
Walter Wessel (3L, Berlin, DDR)	A. K. Zdanskii (Moscow, SU)
John C. Wierman* (3L, Minneapolis, MN, USA)	Vladimir Železnik (Bratislava, CS)
Robin J. Wilson (3L, Milton Keynes, GB)	