Preface

This volume contains papers solicited from talks presented at the third European Conference on Combinatorics, Graph Theory and Applications (EuroComb05) held in Berlin, September 5–9, 2005. The contributions for the conference were selected by the Program Committee, consisting of the following colleagues:

- Graham Brightwell (London)
- Reinhard Diestel (Hamburg)
- Stefan Felsner (Berlin)
- András Frank (Budapest)
- Gil Kalai (Jerusalem)
- Christian Krattenthaler (Lyon)
- Monique Laurent (Amsterdam)
- Tomasz Łuczak (Posnan)
- Jaroslav Nešetřil (Prague)
- Alexander Pott (Magdeburg)
- Oriol Serra (Barcelona)
- Carsten Thomassen (Lyngby)
- Emo Welzl (Zürich)

Abstracts were published as volume AE in the proceedings series of the electronic journal Discrete Mathematics & Theoretical Computer Science (DMTCS). The contributions to this volume mostly consist of final versions of a selection of papers presented at EuroComb05. Some of the authors have submitted a follow-up to the work presented at the conference.

Most of the papers we collected in this volume have a distinct algorithmic flavor, and all of them are connected to graph theory in its broadest sense. Several articles relate to applications either in practice or in other areas of discrete mathematics. The papers by Kang, Mueller, and Sereni; by Gonçalves; and by Golumbic, Lipsteyn, and Stern are motivated by the design of communication networks. These applications usually deal with coloring problems, variants of which are also the topic of papers by Barjas and Serra and by Alon and Grytczuk, both in a more structural setting, and also by Bartnicki, Grytczuk, and Kierstead in a game theoretic interpretation. The active area of combinatorial optimization is represented in this volume via papers by Makai and Pap, who generalize and unify classical theorems, and by Zaragoza, who settles a graph theoretic conjecture. Approximation algorithms are treated by Manic and Wakabayashi. Lee and Streinu use algorithms (games) to obtain a graph theoretic characterization. Extremal combinatorics is treated in the paper by Tarui and in a hypergraph context in the paper by Frankl and Kantona.

We thank all members of the Program Committee and all our reviewers for their commitment and support, enabling us to see this volume completed for submission to the publisher close to one year after the conference. We also take the opportunity to thank the Organizing Committee and all the persons who have helped run the conference in a smooth and very pleasant way.

The conference and the publication of this volume was made possible by the support of the Deutsche Forschungsgemeinschaft (DFG) and the European Research and Training Network COMBSTRU.

Invited talks at EuroComb05 were given by

- Ron Aharoni (Technion, Haifa)
  Menger's theorem for infinite graphs
- Mireille Bousquet-Mélou (LaBRI, Bordeaux)
  On the shape of binary trees
- Hein van der Holst (TU Eindhoven)
  Some recent results in topological graph theory
- Nati Linial (Hebrew University, Jerusalem)
  Lifts of Graphs
- László Lovász (Microsoft Research and Eötvös Loránd University)
  Graph Algebras
- Bruce Reed (McGill, Montréal)
  The Evolution of The Mixing Time
- Alexander Schrijver (CWI, Amsterdam)
  New code bounds with noncommutative algebra and semidefinite programming
- Madhu Sudan (MIT, Cambridge)
  Modelling errors and recovery for communication
- Gábor Tardos (Rényi, Budapest)
  Toward an extremal theory of ordered graphs
- Günter M. Ziegler (TU Berlin)
  On the Complexity of Space Tilings
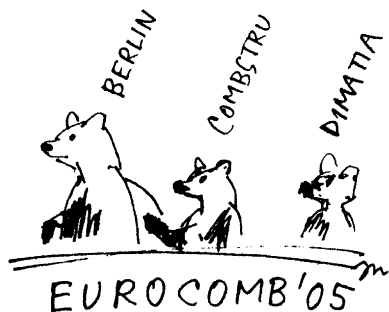
European Prize in Combinatorics awarded

The European Prize in Combinatorics was established by the European Research and Training Network COMBSTRU and by the center DIMATIA to recognize excellent contributions in combinatorics by young researchers, not older than 35. It is awarded biannually in conjunction with the EuroComb meeting. The prize was awarded for the second time at EuroComb05, carrying a monetary award of 2500 Euros. The prize was funded with contributions from DIMATIA and COMBSTRU.

The Prize Committee consisted of Martin Aigner (Berlin), Peter Cameron (London), and Jaroslav Nešetřil (Prague).

The prize was awarded to Dmitry Feichtner–Kozlov for deep combinatorial results obtained by algebraic topology and particularly for the solution of a conjecture of Lovász.

Stefan Felsner, Marco Lübbecke, Jarik Nešetřil
Berlin and Prague, December 2006