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PREFACE

Preface on CTW 2006

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The 5th Cologne-Twente Workshop on Graphs and Combinatorial Optimization (CTW 2006) was held in Lambrecht, Germany, 5–9 June 2006. After the workshop, contributions to a special proceedings volume were invited. The submissions were refereed according to the usual strict standards and collected into the present special issue by the guest editors below.

The CTW started as a series of biennial meetings at the Universities of Cologne in Germany and Twente in the Netherlands. Ever increasing interest has turned the CTW into a now annual event with the Politecnico di Milano, the University of Duisburg-Essen and the Università degli Studi di Milano as additional partners.

The scope of the workshop comprises graph theory, discrete algorithms (both deterministic and random), combinatorial optimization, and their applications in operations research and computer science in the wide sense. This spectrum is reflected by the 12 research articles in this issue.

The Hamiltonian circuit problem is studied in two papers for special classes of graphs. Feng investigates a claw-free graph G and shows the existence of a 2-dominating cycle (and hence a Hamiltonian cycle) if the maximal induced paths of G satisfy a certain node degree condition. Broersma and Vumar introduce a new

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class of graphs, the so-called P_3-dominated graphs, and provide sufficient conditions for Hamiltonicity in terms of connectedness and independence. Since this class includes all (quasi-)claw-free graphs, their results imply many previously in the literature obtained results.

Bonomo, Durán, Soulignac and Sueiro give a characterization via forbidden subgraphs of two classes of so-called coordinated graphs (which in turn form a class of perfect graphs). Meierling and Volkmann give a characterization of degree sequences of multigraphs similar to the one by Havel and Hakimi for graphs. Brenner, Fekete and van der Veen show that the directed subgraph homeomorphism problem remains NP-complete when restricted to a regular host graph and directed trees as patterns. Andres explores two variants of the graph coloring construction game, studies related notions of perfection, and determines graph classes meeting these perfection requirements. Sugihara and Ito deal with a variant of the classical source-location problem. For given p and k, they try to find a set of size at most p such that as many vertices as possible are connected by k edge-disjoint paths to this set.

Calamoneri, Fusco, Tan and Vocca present a link between graph theory and combinatorial optimization. They consider a radio frequency assignment problem which can be formulated as a labeling problem for graphs. Their contribution concentrates on the class of outerplanar graphs and demonstrates how $L(h, 1, 1)$-labelings that respect certain distance requirements can be algorithmically constructed. Amaldi, Liberti, Maffioli and Maculan develop algorithms and MIP-formulations to find a minimum weight fundamental cycle basis in undirected graphs. Bosio and Righini deal with a single-machine scheduling problem where processing times increase with the delay between ready times and start times. They present a dynamic programming algorithm to minimize the makespan.

Optimization problems with stochastic aspects are considered in two papers. Cremers, Klein Haneveld and van der Vlerk provide a non-standard stochastic integer program for dynamic planning of paratransit transportation and propose a genetic algorithm for its solution. Kuhn and Schultz incorporate the electric transmission network into mean-risk stochastic integer programs for power management and examine the impact of decomposition algorithms for this problem class.

Last but not least, we would like to thank Mathematical Methods of Operations Research for giving us the opportunity to document the proceedings of the CTW 2006 with this choice of articles. We hope the reader will find it interesting and stimulating.