8th Workshop on Algorithmic Approaches for Transportation Modeling, Optimization, and Systems

ATMOS 2008, September 18, 2008, Karlsruhe, Germany

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ATMOS 2008 Preface: Algorithmic Approaches for Transportation Modeling, Optimization, and Systems

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The 8th ATMOS workshop was held in Karlsruhe, September 18, 2008, within ALGO, a set of meetings related to algorithms. The series of ATMOS workshops, starting in Heraklion in 2001, continuing in Malaga in 2002, Budapest in 2003, Bergen in 2004, Palma de Mallorca in 2005, Zürich in 2006, and Sevilla in 2007 is by now an established series of meetings between algorithms researchers dealing with transportation problems, and practitioners, mainly from railways. The focus of ATMOS is on complex and large-scale network optimization problems that require new solution techniques and ideas from mathematical optimization and theoretical computer science. Tools and concepts are rooted in graph and network algorithms, combinatorial optimization, approximation and online algorithms, stochastic and robust optimization. Of particular interest are

- Infrastructure Planning
- Line Planning
- Timetable Generation
- Routing and Platform Assignment
- Vehicle Scheduling
- Crew and Duty Scheduling
- Rostering
- Demand Forecasting
- Design of Tariff Systems
- Maintenance and Shunting of Rolling Stock
- Delay Management
- Rolling Stock Rescheduling
- Simulation Tools for Railway Operations
- Timetable Information

More generally, ATMOS aims at the successful integration of several of these subproblems or planning stages, algorithms operating in an

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online/realtime or stochastic setting and heuristic or approximate algorithms for real-world instances.

We received 15 submissions, out of which 12 were selected for presentation and inclusion in this volume, in a thorough reviewing process guided by the program committee consisting of

- Cynthia Barnhart, MIT
- Ralf Borndörfer, Zuse Institute Berlin
- Alberto Caprara, University of Bologna
- Jens Clausen, Technical University of Denmark
- Guy Desaulniers, GERAD, Ecole Polytechnique Montréal
- Matteo Fischetti, University of Padova (Co-Chair)
- Leo Kroon RSM Erasmus University and Netherlands Railways
- Marc Nunkesser, ETH Zürich
- Anita Schöbel, University of Göttingen
- Dorothea Wagner, University of Karlsruhe
- Peter Widmayer, ETH Zürich (Co-Chair)

In addition, Rolf Möhring gave an invited talk on "Timetabling and Robustness: Computing Good and Delay-Resistant Timetables".

We sincerely thank the program committee for the competent work in selecting the best papers and the external referees for their help, the organizer Marc Nunkesser for taking care of all arrangements, the ALGO organizing committee for embedding ATMOS so smoothly into the ALGO programme, the editors of the Dagstuhl Seminar Proceedings for accepting the publication of this volume within DROPS, and, last but not least, the participants for the lively interaction that is the ultimate goal of the meeting.

Padova and Zürich, October 2008

Matteo Fischetti and Peter Widmayer