

Contents

Welcome Address	V
Preface	VII
Contents	IX
List of Participants	XV

Traffic Models: Theory

Euler and Lagrange Representation of Traffic Models	3
<i>K. Nishinari</i>	
Three-Phase Traffic Theory	13
<i>B.S. Kerner</i>	
Spacing-Oriented Analytical Approach to a Middle Traffic Flow CA Model Between FI-Type and NS-Type	51
<i>B.-H. Wang, D. Mao, L. Wang, and P.M. Hui</i>	
Continuum Traffic Equations from Microscopic Car-Following Models	65
<i>H.-W. Lee, H.K. Lee, H.Y. Lee, and D. Kim</i>	
Metastable Flows in an Extended Burgers Cellular Automaton Traffic Model	79
<i>M. Fukui, K. Nishinari, D. Takahashi, and Y. Ishibashi</i>	
Existence and Classification of Travelling Wave Solutions to Second Order Highway Traffic Models	85
<i>R.E. Wilson and P. Berg</i>	
Improved Optimal Velocity Model for Traffic	91
<i>A. Shibata</i>	
Microscopic Modeling of Synchronized Traffic	97
<i>W. Knospe, L. Santen, A. Schadschneider, and M. Schreckenberg</i>	
Limit Sets and the Rate of Convergence for One-Dimensional Cellular Automata Traffic Models	103
<i>T. Namiki</i>	
Localized Defects in a Cellular Automaton Model for Traffic Flow with Phase Separation	109
<i>A. Pottmeier, R. Barlovic, W. Knospe, A. Schadschneider, and M. Schreckenberg</i>	
Asymmetric Optimal Velocity Model	115
<i>A. Okumura and S. Tadaki</i>	

Chaos and Multifractality in a Time-Delay Car-Following Traffic Model.....	119
<i>L.A. Safonov, E. Tomer, V.V. Strygin, Y. Ashkenazy, and S. Havlin</i>	

Traffic Models: Application

Optimal Velocity Model and its Applications.....	127
<i>A. Nakayama, K. Hasebe, and Y. Sugiyama</i>	
Breakdown and Recovery in Traffic Flow Models	141
<i>K. Nagel, C. Kayatz, and P. Wagner</i>	
Kinetic Theory of Traffic Flows.....	155
<i>E. Ben-Naim and P.L. Krapivsky</i>	
The Generalized Fundamental Diagram of Traffic and Possible Applications	169
<i>E. Tomer, L.A. Safonov, and S. Havlin</i>	
Stochastic Resonance Towards Traffic Models	187
<i>T. Ohira</i>	
An Interpretation of a Traffic Engineer on Vehicular Traffic Flow.....	199
<i>M. Koshi</i>	
Congestion Induced by Bottlenecks in Two-Lane Optimal Velocity Traffic Flow Model.....	211
<i>S. Tadaki, M. Kikuchi, K. Nishinari, Y. Sugiyama, and S. Yukawa</i>	
Widely Extended Optimal Velocity Model of Traffic Flow and their Linear Stability	221
<i>K. Hasebe, A. Nakayama, and Y. Sugiyama</i>	
Stability of Multi-Lane Traffic Flow	227
<i>A. Sasoh</i>	
8-Figured Hysteresis Loop of OV Model	235
<i>T. Nishi and D. Takahashi</i>	

Empirical Traffic Data

Observational Aspects of Japanese Highway Traffic	243
<i>S. Yukawa, M. Kikuchi, A. Nakayama, K. Nishinari, Y. Sugiyama, and S. Tadaki</i>	
Long-Term Traffic Data from Japanese Expressway.....	257
<i>M. Kikuchi, A. Nakayama, K. Nishinari, Y. Sugiyama, S. Tadaki, and S. Yukawa</i>	
The Local Occupation Probability Method for Evaluating Traffic Flows	263
<i>Y. Ishibashi and M. Fukui</i>	

Telematics and Drivers' Behaviour

Cooperative Driving: Taking Telematics to the Next Level.....	271
<i>R.G. Herrtwich and G. Noecker</i>	
Modeling of Vehicular Behavior from Road Traffic Engineering Perspectives.....	281
<i>H. Ozaki</i>	
ITS and the Revolution of Automobiles.....	293
<i>Y. Noguchi</i>	
Modelling the Impact of ACC-Systems on the Traffic Flow at Macroscopic Modelling Level.....	305
<i>C. Demir</i>	
A Cellular Automaton Model for Dynamic Route Choice Behavior in Urban Roads.....	319
<i>M. Fukui, T. Yosida, and H. Oikawa</i>	
Experimental Investigation of Day-to-Day Route Choice Behaviour.....	325
<i>R. Selten, M. Schreckenberg, T. Pitz, T. Chmura, and J. Wahle</i>	
Optimal Traffic States in a Cellular Automaton Model for City Traffic.....	331
<i>R. Barlovic, E. Brockfeld, A. Schadschneider, and M. Schreckenberg</i>	
Traffic Flow Analysis Based on Multiagent.....	337
<i>H. Tsunashima, Y. Nishi, T. Honjyo, and T. Sakai</i>	
Traffic Forecast Using a Combination of On-Line Simulation and Traffic Data.....	345
<i>R. Chrobok, A. Pottmeier, J. Wahle, and M. Schreckenberg</i>	
On-Ramp Control.....	351
<i>D. Huang</i>	
The Influence of Tollbooths on Highway Traffic.....	357
<i>D. Huang and W. Huang</i>	

Networks / Internet

Packet Transport and Load Distribution in Scale-Free Networks.....	365
<i>K.-I. Goh, B. Kahng, and D. Kim</i>	
Phase Transition of Three-Directional Traffic-Flow in 2D Network.....	377
<i>Y. Honda</i>	
Analysis of Minimal Model of Internet Traffic.....	389
<i>K. Fukuda, M. Takayasu, and H. Takayasu</i>	
Microscopic Modeling of Packet Transport in the Internet.....	401
<i>T. Huisinga, R. Barlovic, W. Knospe, A. Schadschneider, and M. Schreckenberg</i>	

Granular

Avalanches and Flow Dynamics of a Collapsing Granular Pile409
L.C. Jia, P.-Y. Lai, and C.K. Chan

Note on a Micropolar Gas-Kinetic Theory421
H. Hayakawa

Dynamics and Structure of Granular Flow Through a Vertical Pipe437
*O. Moriyama, N. Kuroiwa, T. Isoda, T. Arai, S. Tateda,
 Y. Yamazaki, and M. Matsushita*

Asymmetric Random Average Process: Aggregation and Fragmentation
 on Continuous State Space449
F. Zielen and A. Schadschneider

Shape Segregation for Bidisperse Mixtures of Ellipses
 in Two Dimensions.....455
H.-G. Matuttis, N. Ito, and H. Watanabe

Bifurcations of a Driven Granular System under Gravity.....461
M. Isobe

Simulation of the Impact of an Elastic Disk.....467
H. Kuninaka and H. Hayakawa

Granular Flow in Vertical Pipes: Transition from Dilute to Dense.....473
M. Hou, W. Chen, T. Zhang, and K. Lu

Spatial Structure of 1/f Noise in Granular Flow Through a Pipe.....479
A. Nakahara and M. Nakahara

Collisional Granular Flow on a Rough Slope and its Instability485
N. Mitarai, H. Nakanishi, and H. Hayakawa

The Nature of Occurrence of Queued Flow at Capacity Bottleneck
 of Ordinary Section.....491
T. Oguchi

Pedestrian Dynamics

Bionics-Inspired Cellular Automaton Model for Pedestrian Dynamics499
A. Schadschneider

Critical Discussion of “Synchronized Flow”, Simulation of Pedestrian
 Evacuation, and Optimization of Production Processes511
D. Helbing, I.J. Farkas, D. Fasold, M. Treiber, and T. Vicsek

Cellular Automaton Simulations of Pedestrian Dynamics
 and Evacuation Processes531
A. Kirchner and A. Schadschneider

Modeling Pedestrians and Granular Flow in 2-Dimensional
 Optimal Velocity Models.....537
Y. Sugiyama, A. Nakayama, and K. Hasebe

Evacuation Analysis of Ship by Multi-Agent Simulation Using Model of Group Psychology.....	543
<i>M. Katuhara, H. Matsukura, and S. Ota</i>	
Comparison of an Evacuation Exercise in a Primary School to Simulation Results.....	549
<i>H. Klüpfel, T. Meyer-König, and M. Schreckenberg</i>	
Simulations of Evacuation Using Small World Network.....	555
<i>N. Ohi, M. Ikai, and K. Nishinari</i>	

Biology

Oscillation Patterns in Cytoplasmic Networks of the <i>Physarum</i> Plasmodium.....	563
<i>H. Yamada and T. Nakagaki</i>	
Jamming Bacterial Traffic: Bioconvection.....	569
<i>I.M. Jánosi, A. Czirók, D. Silhavy, and A. Holczinger</i>	
Molecular Dynamics Simulation of Lubricating Films	575
<i>T. Murakami, S. Yukawa, and N. Ito</i>	



<http://www.springer.com/978-3-540-40255-8>

Traffic and Granular Flow '01

Fukui, M.; Sugiyama, Y.; Schreckenberg, M.; Wolf, D.
(Eds.)

2003, XIX, 580 p. 312 illus., 63 illus. in color., Hardcover
ISBN: 978-3-540-40255-8