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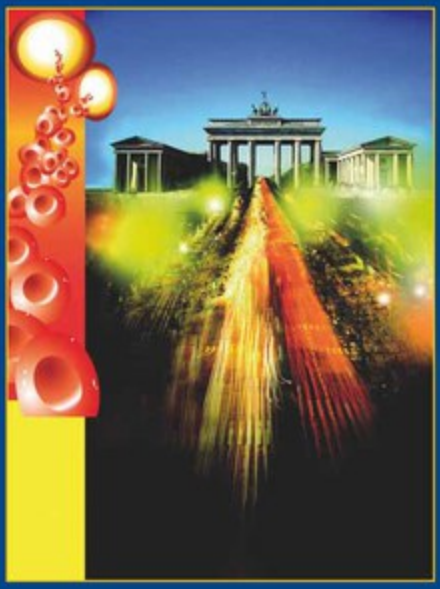
M. Schreckenberg D. E. Wolf
Editors

TRAFFIC AND GRANULAR FLOW '05



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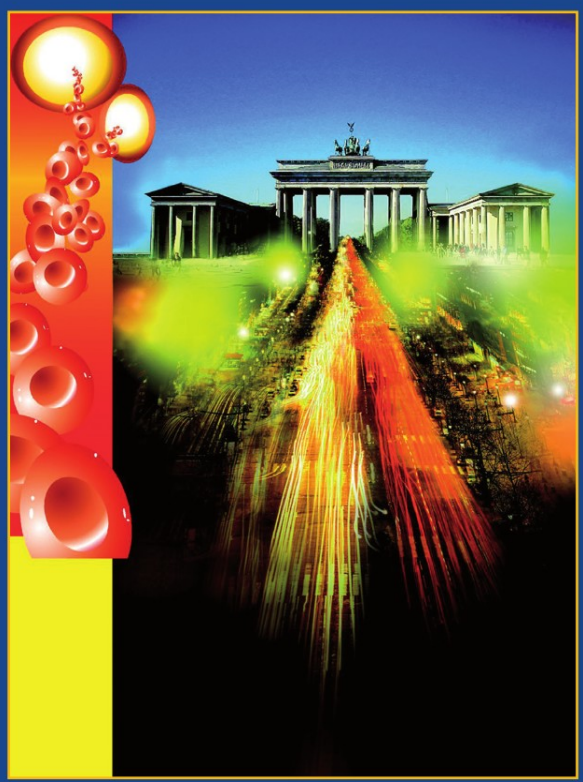

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With 402 Figures, 159 in Colour, and 15 Tables

Springer

Editors

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Preface

The conference series *Traffic and Granular Flow* has been established in 1995 and has since then been held biannually. At that time, the investigation of granular materials and traffic was still somewhat exotic and was just starting to become popular among physicists.

Originally the idea behind this conference series was to facilitate the convergence of the two fields, inspired by the similarities of certain phenomena and the use of similar theoretical methods. However, in recent years it has become clear that probably the differences between the two systems are much more interesting than the similarities. Nevertheless, the importance of various interrelations among these fields is still growing. The workshop continues to offer an opportunity to stimulate this interdisciplinary research.

Over the years the spectrum of topics has become much broader and has included also problems related to topics ranging from social dynamics to biology. The conference manages to bring together people with rather different background, ranging from engineering to physics, mathematics and computer science. Also the full range of scientific tools is represented with presentations of empirical, experimental, theoretical and mathematical work.

The workshop on *Traffic and Granular Flow '05* was the sixth in this series. Previous conferences were held in Jülich (1995), Duisburg (1997), Stuttgart (1999), Nagoya (2001), and Delft (2003). For its 10th anniversary, Berlin was chosen as location, the largest city and capital of Germany. Berlin is also one of the centers for transport related research and hosts many research institutes that have a long history in the fields covered by the workshop.

The *TGF '05* took place from October 10-12, 2005 at the Humboldt University. World-renowned scientists worked here and read famous lectures, such as Max Born, Albert Einstein, Peter Debye, James Franck, Fritz Haber, Otto Hahn, Werner Heisenberg, Gustav Hertz, Jacob van't Hoff, Robert Koch, Max v. Laue, Walter Nernst, Max Planck, Erwin Schroedinger, and Wilhelm Wien, to name only few of the 29 Nobel price laureates of the Humboldt University.

It is one of the most famous venues in the heart of Berlin with locations touching the high-lights and low-lights of German-European and World History. It is located vis-à-vis of the Bebel square where 1933 the Nazi burned books of such famous authors like Karl Marx, Heinrich Heine, Sigmund Freud, Bertolt Brecht, Kurt Tucholsky, and Carl von Ossietzky. The German Reichs-

tag, the house of the parliament, close to the Humboldt University was burned in the same year which was the occasion for the prosecution of dissenters and ended with millions of murdered people in the concentration camps and World War 2.

But also very close to the Humboldt University, at the Brandenburg gate, in November 1989 people were sitting on the Berlin wall celebrating the end of cold war. These pictures went all over the world. They shaped the image of a new, young, open and optimistic Berlin.

We hope that this spirit of openness could also be felt at the conference. Experts from physics, engineering, computer sciences and mathematics experienced a unique forum where current problems and solutions were presented and discussed to deepen the understanding and knowledge of the physics of traffic and the physics of granular media. Both areas have many important applications in society and industry. "Free Flow" is an indispensable prerequisite for acceptable traffic but it is also an existential precondition for mixing powder for production of tablets or packaging in bags and exactly closing. The main goal of the conference was to encourage theorists and practitioners of both areas to a common view on the dynamics of transportation processes for mutual benefit. It attracted nearly 100 participants from all over the world, from almost 20 countries.

The papers presented show the current progress in modelling, computer simulation, experiments and phenomena description as well as the prospectives for application. The importance of the interregulations between both research areas is growing. The conference pays tribute to this development and opens new possibilities for interdisciplinary research. The topics covered are, beside others, vehicular traffic, pedestrian traffic, granular flow, traffic in urban road networks and computer networks and collective phenomena in biological systems.

The conference ignited a broad public interest and the organizers gratefully acknowledge financial support from the German Research Society (Deutsche Forschungsgemeinschaft), from the Technology Foundation Berlin (Technologiestiftung Berlin) and from the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt, DLR).

This conference would not have been possible without many people helping behind the scenes. In particular we like to thank Roberto Aoki, Ute Böttger, Petra Hänssgen, Steffi Lehmann from the DLR and Alireza Namazi from the University of Cologne.

Köln, Berlin, Duisburg
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