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Nota di contenuto	Part I: Roadway Vehicular Flow: Data Collection, Modeling and Simulation -- Exact Formula of Time-Headway Distribution for TASEP with Random-Sequential Update -- Impact of Next-Nearest Leading Vehicles on Followers' Driving Behaviours in Mixed Traffic -- Higher-Order Continuum Model and Its Numerical Solutions for Heterogeneous Traffic Flow with Non-lane Discipline -- Static Traffic Assignment on Ensembles of Synthetic Road Networks -- The Effect of Traffic Signals on the Macroscopic Fundamental Diagram -- Braess Paradox in Networks of Stochastic Microscopic Traffic Models -- Dynamical Universality Class of the Nagel–Schreckenberg and Related Models -- Prediction of Moving Bottleneck and Associated Traffic Phenomena for Automated Driving -- FSF Transitions in Vehicle Probe Data -- Microscopic Jam Tail Warning for Automated Driving -- Study of Vehicle-Following Behavior Under Heterogeneous Traffic Conditions -- Development of a Decision-Making Model for Merging Maneuvers: AGame Theoretical Approach -- Macroscopic Fundamental Diagram Validation for Collision Formation on Freeway Networks -- Towards a

More Stable Traffic Flow Performance: Applying and Calibrating the Intelligent Driver Model -- Numerical Comparison Between Traffic Flow Models with and Without Adaptation Behavior -- A Game-Theoretic Approach for Minimizing Delays in Autonomous Intersections -- Part II: Pedestrian Traffic: Analytical and Empirical Studies -- Empirical Evaluation of Crowds Using Automated Methods -- Micro and Macro Pedestrian Dynamics in Counterflow: The Impact of Social Groups -- Pedestrian Flow Through Complex Infrastructure, Experiments, and Mass-Transport Processes -- Mining the Social Media Data for a Bottom-Up Evaluation of Walkability -- Experimental Investigation of Pedestrian Queuing Behaviour -- Safety Training Through Educational Online Computer Games on Crowd Evacuations? -- Hybrid Tracking System for Pedestrians in Dense Crowds -- Investigating the Effect of Social Groups in Uni-directional Pedestrian Flow -- Towards Microscopic Calibration of Pedestrian Simulation Models Using Open Trajectory Datasets: The Case Study of the Edinburgh Informatics Forum -- Influence of Gender on the Fundamental Diagram and Gait Characteristics -- Evaluation of Pedestrian Density Distribution with Respect to the Velocity Response -- Using Raspberry Pi for Measuring Pedestrian Visiting Patterns via WiFi-Signals in Uncontrolled Field Studies -- Group Parameters for Social Groups in Evacuation Scenarios -- Simulating Assisted Evacuation Using Unity3D -- An Application of New Pedestrian Tracking Sensors for Evaluating Platform Safety Risks at Swiss and Dutch Train Stations -- Influence of Pedestrian Density on the Use of the Danger Zone at Platforms of Train Stations -- Detecting Competitive Behaviors in Conflicts -- Towards Faster Navigation Algorithms on Floor Fields -- Automated Quality Assessment of Space-Continuous Models for Pedestrian Dynamics -- Prediction of Pedestrian Speedwith Artificial Neural Networks -- Noise-Induced Stop-and-Go Dynamics -- Evacuation Simulation and Experiment Without Exit Information -- Fluctuations in Pedestrian Evacuation Times: Going One Step Beyond the Exit Capacity Paradigm for Bottlenecks -- Macroscopic Fundamental Diagram for Train Platforms -- Towards Safer Pedestrian Traffic: Investigation of the Impact of Social Field Characteristic on Crowd Dynamics -- Defining the Pedestrian Fundamental Diagram -- Part III From Individual Interactions to Complex Systems: Airplanes, Bicycles, Mixed Flow, Particles and Traveler Behavior -- Simulating Ground Traffic on Airports Using Cellular Automata: The CAMAT-Model -- Investigating Passengers' Seating Behavior in Suburban Trains -- How Long Does It Take to Board an Airplane? -- Assessment of Pedestrian Fatality Risk at Unsignalized Crosswalks by Means of Simulation -- Algebraic and Geometric Aspects of Flow Modeling and Prospects of Natural Science Applications -- Crossing Behaviour of SocialGroups: Insights from Observations at Non-signalised Intersection -- Modeling and Solving of Multiple Conflict Situations in Shared Spaces -- Vibration Driven Vehicles Flowing Through Bottlenecks -- Conflict Model of Evacuees and Vehicles on Pedestrian Crossing in the Aftermath of Disaster -- Social Force Model Describing Pedestrian and Cyclist Behaviour in Shared Spaces -- Multi-Attribute, Multi-Class, Trip-Based, Multi-Modal Traffic Network Equilibrium Model: Application to Large-Scale Network -- Microscopic Cycling Behavior Model Using Differential Game Theory -- Simulating Bicycle Traffic by the Intelligent-Driver Model: Reproducing the Traffic-Wave Characteristics Observed in a Bicycle-Following Experiment -- Large-Scale Modeling of VANET and Transportation Systems -- Activity Location Recommendation Using a Decentralized Proportional Feedback Mechanism. .

Sommario/riassunto

This book presents 57 peer-reviewed papers from the 12th Conference

on Traffic and Granular Flow (TGF) held in Washington, DC, in July 2017. It offers a unique synthesis of the latest scientific findings made by researchers from different countries, institutions and disciplines. The research fields covered range from physics, computer science and engineering and they may be all grouped under the topic of "Traffic and Granular Flow". The main theme of the Conference was: "From Molecular Interactions to Internet of Things and Smart Cities: The Role of Technology in the Understanding and the Evolution of Particle Dynamics".