

## Curriculum Vitae: Dr. rer. nat. **Martin Treiber** (\*30.08.1981)

### Scientific Background

Since 2000	Senior Research Scientist. Permanent position at the Institute for Transport and Economics, Dresden University of Technology
1996.2000	Research Scientist, University of Stuttgart
1997	Dissertation
1993.1995	Visiting Scientist, University of California Santa Barbara and University of Arizona Tucson
1992-1996	Research Assistant (PhD student), University of Bayreuth
1986-1992	Study of Physics, University of Bayreuth
1982-1986	Study of High Precision Mechanics and Optics, Technical University of Nuremberg

### Research Projects (Selected)

SANDY - Verkehrsanwendungen der Nichtlinearen Physik (BMBF, together with Daimler-Chrysler, Volkswagen, Siemens and other automotive-related companies)

Stauvermeidung durch intelligentes Fahrzeugverhalten (VW AG)

VASIS - Modellbasierte Verkehrszustandsschätzung unter Berücksichtigung verschiedener Datenquellen (ddg GmbH),

INVENT - Intelligenter Verkehr und nutzergerechte Technik (BMBF, together with Volkswagen, Daimler-Chrysler, BMW, and other automotive-related companies)

AKTIV – Adaptive and Cooperative Technologies for intelligent Traffic (BMBF, together with Volkswagen, MAN, and other automotive-related companies)

KOLINE – a Volkswagen project on eco-routing

### Consultancy

Various projects for Volkswagen, TomTom, Teledyne Inc. and others related to intelligent traffic, adaptive cruise control, trajectories, and eco-routing

### Awards and Prizes

"Emil-Warburg-Forschungspreis" (Research Prize) for the best dissertation in Physics at the University of Bayreuth, 1996.

### Selected publications

(from about 100, see <http://scholar.google.de/citations?user=WCLdpbMAAAAJ>)

*M. Treiber, A. Kesting*, Traffic Flow Dynamics, Springer Textbook XIII+503 pages (2013)

*M. Treiber and A. Kesting*, Validation of traffic flow models with respect to the spatiotemporal evolution of congested traffic patterns, Transportation Research Part C: Emerging Technologies 21, 31-41 (2012)

*M. Treiber, and A. Kesting*, Evidence of Convective Instability in Congested Traffic Flow: A Systematic Empirical and Theoretical Investigation. Transportation Research Part B: Methodological 45, Issue 9, 1362-1377 (2011).

- M. Treiber, A. Kesting, R.E. Wilson*, Reconstructing the traffic state by fusion of heterogeneous data, *Comp. Aid. Civ. Infrastr. Eng.* 26, 408-419 (2011)
- M. Treiber, A. Kesting*, Verkehrsdynamik und -simulation: Daten, Modelle und Anwendungen der Verkehrsflussdynamik. Springer textbook (2010)
- M. Treiber, A. Kesting, D. Helbing*, Three-phase traffic theory and two-phase models with a fundamental diagram in the light of empirical stylized facts. *Transp. Res. B* 44, 983-1000 (2010)
- A. Kesting, *M. Treiber*, D. Helbing, Enhanced Intelligent Driver Model to Assess the Impact of Driving Strategies on Traffic Capacity, *Phil. Trans. R. Soc. A* 368, 4585-4605 (2010)
- A. Kesting, *M. Treiber*, D. Helbing, Connectivity statistics of store-and-forward inter-vehicle communication, *IEEE Trans. Int. Transp. Syst.* 11, 172-181 (2010)
- A. Kesting, *M. Treiber*, Datengestützte Analyse der Stauentstehung und -ausbreitung auf Autobahnen, *Straßenverkehrstechnik* 01/2010, 5-11 (2010)
- F. Kranke, H. Poppe, A. Kesting, *M. Treiber*, Der Baustellenlotse - ein stauvermeidendes Fahrerassistenzsystem auf Grundlage von Fahrzeugsensordaten und Fahrzeug-Infrastruktur-Kommunikation, *Straßenverkehrstechnik* 01/2010, 12-19 (2010)
- D. Helbing, *M. Treiber*, A. Kesting, M. Schönhof, Theoretical vs. Empirical Classification and Prediction of Congested Traffic States, *Eur. Phys. J. B* 69, 583-598 (2009)
- C. Thiemann, *M. Treiber*, A. Kesting, Longitudinal hopping in intervehicle communication: Theory and simulations on modeled and empirical trajectory data, *Phys. Rev. E* 78, 036102 (2008)
- A. Kesting, *M. Treiber*, M. Schönhof, D. Helbing, Adaptive Cruise Control Design for Active Congestion Avoidance, *Transp. Res. C* 16, 668-683 (2008)
- B.A. Zielke, R.L. Bertini, *M. Treiber*, Empirical Measurement of Freeway Oscillation Characteristics: An International Comparison, *Transp. Res. Rec.* 2088, 57-67 (2008)
- A. Kesting, *M. Treiber*, Calibrating Car-Following Models using Trajectory Data: Methodological Study, *Transp. Res. Rec.* 2088, 148-156 (2008)
- C. Thiemann, *M. Treiber*, A. Kesting, Estimating Acceleration and Lane-Changing Dynamics Based on NGSIM Trajectory Data, *Transp. Res. Rec.* 2088, 90-101 (2008)
- S. Hamdar, *M. Treiber*, H. Mahmassani, A. Kesting, Modeling Driver Behavior as a Sequential Risk-Taking Task, *Transp. Res. Rec.* 2088, 208-217 (2008)
- A. Kesting, *M. Treiber*, How reaction time, update time and adaptation time influence the stability of traffic flow, *Comp. Aid. Civ. Infrastr. Eng.* 23, 125-137 (2008)
- A. Kesting, *M. Treiber*, M. Schönhof, D. Helbing, Extending adaptive cruise control to adaptive driving strategies, *Transp. Res. Rec.* 2000, 16-24 (2007)
- A. Kesting, *M. Treiber*, D. Helbing, General lane-changing model MOBIL for car-following models, *Transp. Res. Rec.* 1999, 86-94 (2007)
- M. Treiber*, A. Kesting, D. Helbing, Influence of reaction times and anticipation on stability of vehicular traffic flow, *Transp. Res. Rec.* 1999, 23-29 (2007)
- M. Schönhof, A. Kesting, *M. Treiber*, D. Helbing, Coupled vehicle and information flows: message transport on a dynamic vehicle network, *Physica A* 363, Pages 73-81 (2006)
- M. Treiber*, A. Kesting, D. Helbing, Delays, inaccuracies, and anticipation in microscopic traffic models, *Physica A* 360, 71-88 (2006)
- M. Treiber, A. Hennecke, and D. Helbing*. Congested Traffic States in Empirical Observations and Microscopic Simulation. *Phys. Rev. E* 62, 1805-1824 (2000)
- D. Helbing and M. Treiber*. Jams, waves, and clusters. *Science* 282, 2001-2003 (1998)