

Giuseppe Visconti

Curriculum Vitae

RWTH Aachen University

Institut für Geometrie
und Praktische Mathematik

Templergraben 55, D-52062 Aachen, Germany

+39 349.45.81.445

✉ visconti@igpm.rwth-aachen.de



General Information

Name Surname Giuseppe Visconti

Nationality Italian

Date of birth 01 January 1988

Place of birth Naples, Italy

Academic Positions

Current

Jan17-present PostDoc

RWTH Aachen University (Aachen, Germany)

Group Michael Herty's Group on Continuous Optimization

Scientific Activity

Applied Math. Vehicular traffic modeling and kinetic modeling

Num. Analysis Numerical schemes for ODEs and PDEs

Education

Studies

2016 - PhD Computer Science and Computational Mathematics (University of Insubria, Como, Italy)

Research topics: (a) thesis on mathematical models for traffic flow; (b) high-order finite volume schemes for hyperbolic PDEs

Supervisors Gabriella Puppo, Matteo Semplice, Andrea Tosin

2013 - MSc Mathematics (University of Turin, Turin, Italy)

Thesis on multirate Runge-Kutta methods for separably stiff problems

Grade 110/110 cum laude

Supervisors Matteo Semplice, Isabella Cravero

2010 - BSc Mathematics (University of Turin, Turin, Italy)

Grade 105/110

Supervisor Pier Mario Gandini

Awards

2013-2016 PhD Fellowship - Department of Science and High Technology, University of Insubria (Italy)

2012 Scholarship Art.13 - Department of Mathematics, University of Turin (Italy)

2009 Scholarship Art.13 - Department of Mathematics, University of Turin (Italy)

Abilities

Languages Italian (Mothertongue), English (Intermediate), German (Beginner)

Computer skills Matlab, C and C++ programming, Maple

Publications

Submitted

Papers

- [10] M. Herty, A. Tosin, G. Visconti, M. Zanella. Hybrid stochastic kinetic description of two-dimensional traffic dynamics. *SIAM J. Appl. Math.* Accepted. (Preprint: arXiv:1711.02424).
- [9] M. Herty, S. Moutari, G. Visconti. Macroscopic modeling of multi-lane motorways using a two-dimensional second-order model of traffic flow. *SIAM J. Appl. Math.*, 78(4):2252-2278, 2018.
- [8] M. Herty, G. Visconti. Analysis of risk levels for traffic on a multi-lane highway. *IFAC-PapersOnLine*, 51(9):43-48, 2018.
- [7] M. Herty, A. Fazekas, G. Visconti. A two-dimensional data-driven model for traffic flow on highways. *Netw. Heterog. Media*, 13(2):217-240, 2018. doi: 10.3934/nhm.2018010
- [6] I. Cravero, G. Puppo, M. Semplice, G. Visconti. Cool WENO Schemes. *Comput. Fluids*. 169:71-86, 2018. doi: 10.1016/j.compfluid.2017.07.022
- [5] I. Cravero, G. Puppo, M. Semplice, G. Visconti. CWENO: uniformly accurate reconstructions for balance laws. *Math. Comp.*, 87(312):1689-1719, 2018. doi: doi.org/10.1090/mcom/3273
IF 1.569, 5yrs IF 1.604, quartile: Q1, percentile: p=82
- [4] G. Visconti, M. Herty, G. Puppo, A. Tosin. Multivalued fundamental diagrams of traffic flow in the kinetic Fokker-Planck limit. *Multiscale Model. Simul.* 15:1267-1293, 2017.
IF 1.865, 5yrs IF 2.154, quartile: Q1, percentile: p=76
- [3] G. Puppo, M. Semplice, A. Tosin, G. Visconti. Kinetic models for traffic flow resulting in a reduced space of microscopic velocities. *Kinet. Relat. Models*. 10(3):823-854, 2017. doi: 10.3934/krm.2017033
(Highly quoted paper on WOS). IF 1.261, 5yrs IF 1.507, quartile: Q1, p=80

- [2] G. Puppo, M. Semplice, A. Tosin, G. Visconti. Analysis of a multi-population kinetic model for traffic flow. *Commun. Math. Sci.*, 15(2):379-412, 2017.
IF 1.425, 5yrs IF 1.367, quartile: Q1, percentile: p=76
- [1] G. Puppo, M. Semplice, A. Tosin, G. Visconti. Fundamental diagrams in traffic flow: the case of heterogeneous kinetic models. *Commun. Math. Sci.*, 14(3):643-669, 2016. doi: 10.4310/CMS.2016.v14.n3.a3
IF 1.424, 5yrs IF 1.367, quartile: Q1, percentile: p=76

Book Chapters

- [1] E. Venturino, G. Visconti et al. Models of symbiotic associations in food chains. In Alejandro F. Camis o and Celio C. Pedroso, editors, *Symbiosis: Evolution, Biology and Ecological Effects*. Nova Science Publishers, Hauppauge, NY, 189-234, 2012

Projects

2018-2022 RWTH Aachen University and FZ J lich

Title Learning-to-learn: Hyperparameter optimization of spiking neuronal networks using HPC resources - Prof. Michael Herty and Dr. Alexander Peyser

Role Participant

2017-2019 RWTH Aachen University

Title Multiscale modeling for simulation-based accident risk assessments - Prof. Markus Oeser and Prof. Michael Herty

Role Participant

2018 INdAM-GNCS

Title Metodi numerici per problemi di controllo multiscala e applicazioni - Prof. Giacomo Albi

Role Participant

2016 INdAM-GNCS

Title Metodi numerici per la quantificazione dell'incertezza - Prof. Lorenzo Pareschi

Role Participant

2015 INdAM-GNCS

Title Semi-implicit and semi-Lagrangian numerical methods for hyperbolic systems of balance laws - Prof. Luca Bonaventura

Role Participant

2014 INdAM-GNCS

Title High resolution methods for strongly non linear evolutive problems - Prof. Roberto Ferretti

Role Participant

Groups

2014-2017 Member of the SIMAI Activity Group on Complex Systems (SisCo-SIMAI, <http://sisco.simai.eu>)

Visiting

- May 18** KIT (Karlsruhe, Germany)
Prof. Martin Frank
- Mar 18** Oak Ridge National Laboratory (Oak Ridge, TN, USA)
Prof. Cory Hauck
- Jul and Sep 17** Politecnico of Turin (Turin, Italy)
Prof. Andrea Tosin
- Jan 16** Politecnico of Turin (Turin, Italy)
Prof. Andrea Tosin
- Oct-Dec 15** RWTH Aachen University (Aachen, Germany)
Prof. Michael Herty

Seminars as Invited Speaker

- Nov 18** Rencontres Normandes sur les aspects théoriques et numériques des EDP (Rouen, France)
Lecture on “Unstable waves in kinetic traffic models”
- Oct 18** Problems in discrete dynamics: from biochemical systems to rare events, networks, clustering and related topics - IV Edition (Arcidosso, Italy)
Lecture on “Two-dimensional macroscopic models for traffic flow on highways”
- Sep 18** Joint meeting of UMI, SIMAI and PTM (Wroclaw, Poland)
Invited speaker at the Session “Advances in kinetic theory”
Lecture on “Kinetic formulation of the Ensemble Kalman Filter for parameter estimation problems”
- Sep 18** Interactive workshop on hyperbolic equations (Ferrara, Italy)
Lecture on “Qualitative Properties of a Continuous Model for Data Flow in Large Computer Systems”
- Jun 18** 15th IFAC Symposium on Control in Transportation Systems (CTS 2018) (Savona, Italy)
Invited speaker at the Session “Road Traffic Modelling”
Lecture on “Analysis of risk levels for traffic on a multi-lane highway”
- May 18** Kinetic Theory for Control, Games and Uncertainty (Aachen, Germany)
Lecture on “Kinetic models for data clustering problems”
- Mar 18** CAM Seminar at the Oak Ridge National Laboratory (Oak Ridge, USA)
Lecture on “The CWENO reconstruction procedure and applications”
- Jul 17** Seminar at Politecnico of Turin (Turin, Italy)
Lecture on “Traffic flow models based on the kinetic theory”

- Oct 15** Seminar at RWTH Aachen University (Aachen, Germany)
Lecture on “Kinetic models for traffic flow resulting in a reduced space of microscopic velocities”
- Jul 14** SIMAI 2014 Congress (Taormina, Italy)
Invited speaker at the Mini-Symposium “Complex Systems (vehicular traffic, crowd dynamics, biological systems, social systems)”
Lecture on “A 2-population kinetic model for vehicular traffic”

Other Communications

Seminars

- May 18** 7th Workshop on Theory and Numerics for Kinetic Equations (Saarbrücken, Germany)
Seminar on “Traffic flow models derived from a kinetic approach”
- Sep 17** XVII Italian Meeting on Hyperbolic Equations (Pavia, Italy)
Seminar on “Two-dimensional macroscopic models for traffic flow on highways”
- Mar 17** VIII Workshop on the Mathematical Foundations of Traffic - INdAM Workshop: Transport Modeling and Management. Vehicles and Crowds (Rome, Italy)
Seminar on “Traffic flow models derived from a kinetic approach”
- Aug 16** HYP2016 Conference (Aachen, Germany)
Seminar on “Traffic flow models derived from a kinetic approach”
- May 16** SHARK-FV Conference (Sao Félix, Portugal)
Seminar on “Runge-Kutta Multirate Schemes for ODEs and Conservation Laws”
- Mar 16** INdAM-GNCS Workshop “Semi-implicit and semi-Lagrangian methods for hyperbolic problems” (Politecnico of Milan, Italy)
Seminar on “Kinetic models for traffic flow with multivalued diagrams”
- Oct 15** Workshop “Mathematical Models in Social Dynamics” (Politecnico of Turin, Italy)
Seminar on “Kinetic models for traffic flow resulting in a reduced space of microscopic velocities”
- Jun 15** INdAM-GNCS Congress “NumHyp2015” (Cortona, Italy)
Seminar on “An heterogeneous discrete-velocity kinetic model for traffic flow”
- Jan 15** INdAM-GNCS Workshop “Numerics for Nonlinear PDEs” (University of Rome 3, Italy)
Seminar on “An heterogeneous discrete-velocity kinetic model for traffic flow”
- Sept 13** INdAM-GNCS Workshop “Numerical Aspects of Hyperbolic Balance Laws and Related Problems” (Milan, Italy)
Seminar on “Runge-Kutta multirate schemes for ODE and conservation laws”

Poster presentation

- Jul 17** Aachen Conference on Computational Engineering Science (Aachen, Germany)
Poster presentation on “The CWENO reconstruction procedure and applications”

Awards

- 2016** Financial support - HYP2016 Conference (Aachen, Germany)

- 2015 Visiting at RWTH Aachen University (Aachen, Germany) partially financed by the funds of Prof. Herty
- 2015 Financial support - NumHyp2015 INdAM-GNCS Conference, (Cortona, Italy)

Teaching Activities

Teaching

- 2018-2019 Continuous Optimization, MSc Course, (RWTH Aachen University, Aachen, Germany)
- 2017-2018 Time-Integration Numerical Methods for Partial Differential Equations, MSc Course, (RWTH Aachen University, Aachen, Germany)
- 2017-2018 Continuous Optimization, MSc Course, (RWTH Aachen University, Aachen, Germany)

Teaching Assistant

- 2015-2016 Mathematical Analysis II, BSc Course, (University of Insubria, Como, Italy) - Prof. E. Casini

Thesis

- 2017-2018 Co-advisor of the Master's Thesis "Data-driven traffic road models based on Aw-Rascle differential equations". Candidate: Amira El Amouri (RWTH Aachen University, Germany)

Scientists for references

- Michael Herty, RWTH Aachen University (Germany). herty@igpm.rwth-aachen.de
- Gabriella Puppo, University of Insubria (Italy). gabriella.puppo@uninsubria.it
- Matteo Semplice, University of Turin (Italy). matteo.semplice@unito.it
- Andrea Tosin, Politecnico of Turin (Italy). andrea.tosin@polito.it