

CURRICULUM VITAE

last update: 24/5/2017

- Name and Degree:** doc. Mgr. Milan Krbálek, Ph.D.
- Birth:** 13th April 1971, Hlinsko, Czech Republic
- Grade:** Associate Professor
- Contact:** Private address: Pardubice – Labský Palouk, Czech Republic
Email: milan.krbalek@jfifi.cvut.cz
Web pages: www.krbalek.cz
Phone: (+420)224358550
- Affiliation:** Department of Mathematics
Faculty of Nuclear Sciences and Physical Engineering
Czech Technical University, Prague, Czech Republic
- Education:**
- | | |
|-------------|--|
| 1994 – 1999 | University of Hradec Králové, Master Degree |
| 1999 – 2003 | Faculty of Nuclear Sciences and Physical Engineering, Doctoral Degree |
| 2011 | Faculty of Nuclear Sciences and Physical Engineering, Associated Professor |
- Scientific Status:**
- | | |
|----------------|---|
| 2011 – present | Country Representative of World Center of Traffic Research (WCTR) |
|----------------|---|
- Scientific Group:**
- | | |
|----------------|---|
| 2010 – present | GAMS — Group of Applied Mathematics and Stochastics |
|----------------|---|
- Scientific Fellowships:**
- | | |
|----------------|--|
| 1999 – 2003 | Institute of Economy and Traffic, Technical University of Dresden, Germany |
| 1999 – present | Max Planck Institute for Physics of Complex Systems, Dresden, Germany |
| 2001 – present | Joint Institute of Nuclear Research, Dubna, Russia |
| 1999 – 2003 | Institute of Physics, Czech Academy of Science, Czech Republic |
| 1999 – present | University of Hradec Králové, Czech Republic |
| 2008 – present | Université Paris-Sud 11, Paris, France |

2005 – present

Brno University of Technology, Faculty of Civil Engineering, Czech Republic

2013 – present

Institute of Information Theory and Automation, Czech Republic

Research Topics:

Mathematical Modeling of Socio-Physical Dynamics

Spectral Analysis of Freeway Traffic Data

Analytical Computations for Physics of Traffic

Numerical Models of Traffic Flows

Asymmetric Simple Exclusion Model

Parking Cars Strategy (Analysis and Models)

Models for Pedestrian Flows

Models for Crowd Under the Panic Conditions

Theory of Statistical Co-Rigidity

Random Matrix Theory

Theory of Balanced Distributions

Citation Indexes:

ISI Web of Knowledge

175 (with self-citations, last update: 24/5/2017)

ISI Web of Knowledge

133 (without self-citations, last update: 24/5/2017)

H-index (ISI Web of Knowledge)

08 (with self-citations, last update: 24/5/2017)

Current Top Project:

2015 – 2017

Detection of stochastic universalities in non-equilibrium states of socio-physical systems by means of Random Matrix Theory (supported by Czech Science Foundation GA ČR)

Scientific Collaborators:

Prof. RNDr. Petr Šeba, DrSc.

Random Matrix Theory, Theory of Chaos, Parking Problems,
New Aspects in Physics of Traffic

Prof. Cecile Appert-Rolland

Advanced Statistical Analysis of Traffic Data

Mgr. Jiří Apeltauer

Advanced Statistical Analysis of Traffic Data

Prof. Dr. Dirk Helbing

Quantitative Sociodynamics, Physics of Traffic
Local Thermodynamical Gases

Prof. Vyaceslav Borisovic Priezhev

Generalizations of Asymmetric Simple Exclusion Model

Prof. Ingrid Rotter

Classical and Quantum Chaos

Dr. Peter Wagner

Physics of Traffic, Cellular Models

Pavel Hrabák

TASEP & Models for Pedestrian Flows

Teaching Activities:

FNSPE, CTU Prague

Mathematical Analysis (Calculus), Equations of Mathematical Physics,
Seminar on Calculus, Mathematical Modeling of Vehicular Systems,
Random Matrix Theory in Applications

University of Hradec Králové

Theoretical Physics, Theory of Electricity and Magnetism,
Theory of Relativity, Mathematics for Physicists

Reviewed Articles in the Impacted Scientific Periodicals:

2015

Milan Krbálek and Jiří Šleis

Vehicular headways on signalized intersections:

theory, models, and reality

J. Phys. A: Math. Theor. **48** (2015), 015101

2014

M. Bukáček, P. Hrabák, and M. Krbálek

Experimental Study of Phase Transition in Pedestrian Flows

Transportation Research Procedia **2** (2014), 105

2014

M. Bukáček, P. Hrabák, and M. Krbálek

Cellular Model of Pedestrian Dynamics with Adaptive Time Span

Lecture Notes in Computer Science **7385** (2014), 669

2013

P. Hrabák, M. Bukáček, and M. Krbálek

Cellular Model of Room Evacuation Based on Occupancy and

Movement Prediction: Comparison with Experimental Study

Journal of Cellular Automata **8** (2013), 383

2013

Milan Krbálek

Theoretical predictions for vehicular headways and their clusters

J. Phys. A: Math. Theor. **46** (2013), 4451011

2012

P. Hrabák, M. Bukáček, and M. Krbálek

Cellular Model of Room Evacuation Based on

Occupancy and Movement Prediction

Lecture Notes in Computer Science **7495** (2012), 709

- 2011 Milan Krbálek and Pavel Hrabák
Inter-particle gap distribution and spectral rigidity of totally asymmetric simple exclusion process with open boundaries
J. Phys. A: Math. Theor. **44** (2011), 175203
- 2011 Milan Krbálek and Katarína Kittanová
Lattice thermodynamic model for vehicular congestions
Procedia Social and Behavioral Sciences **20** (2011), 398
- 2011 Milan Krbálek and Pavel Hrabák
Distance- and time-headway distribution for totally asymmetric simple exclusion process
Procedia Social and Behavioral Sciences **20** (2011), 406
- 2010 Milan Krbálek
Analytical derivation of time spectral rigidity for thermodynamic traffic gas
Kybernetika **46-6** (2010), 1108
- 2009 Milan Krbálek and Petr Šeba
Spectral rigidity of vehicular streams (Random Matrix Theory approach)
J. Phys. A: Math. Theor. **42** (2009), 345001
- 2008 Milan Krbálek
Inter-vehicle gap statistics on signal-controlled crossroads
J. Phys. A: Math. Theor. **41** (2008), 205004
- 2007 Milan Krbálek
Equilibrium distributions in a thermodynamical traffic gas
J. Phys. A: Math. Theor. **40** (2008), 5813
- 2005 Milan Krbálek
Dopravní systémy jako termodynamické plyny
Československý časopis pro fyziku **5** (2005), 432
- 2004 Milan Krbálek and Dirk Helbing
Determination of interaction potentials in freeway traffic from steady-state statistics
Physica A **333** (2004), 370
- 2003 Milan Krbálek and Petr Šeba
Headway statistics of public transport in Mexican cities
J. Phys. A: Math. Gen. **36** (2003), L1

- 2001 Milan Krbálek, Petr Šeba, and Peter Wagner
Headways in the traffic flow - remarks from a physical perspective
Phys. Rev. E **64** (2001), 066119
- 2000 Milan Krbálek and Petr Šeba
Statistical properties of the city transport in Cuernavaca (Mexico) and random matrix ensembles
J. Phys. A: Math. Gen. **33** (2000), L229

Other Articles and Works:

- 2015 Milan Krbálek
Matematický siloměr na detekci sociálních interakcí
Rozhledy matematicko-fyzikální
Jednota českých matematiků a fyziků, 90/1-2 (2015), 30-38
- 2010 Milan Krbálek
Discrete thermodynamical modelling of traffic streams
Proceedings of World Conference on Transport Research 2010
Lisbon, Portugal
- 2010 Milan Krbálek
Time clearance distribution and associated spectral rigidity of thermodynamic traffic gas
Proceedings of Conference SPMS 2010, Děčín, Czech Republic
- 2007 Milan Krbálek
Dopravní systémy jako termodynamické plyny
Československý časopis pro fyziku **55** (2005), 432-435
- 2003 Milan Krbálek
Traffic systems - particle gases in thermal equilibrium (Random Matrix Theory approach), Ph.D. Thesis
FNSPE, Czech Technical University
- 2000 Milan Krbálek and Petr Šeba
Description of the traffic systems by the random matrix theory
Proceedings of the Nostradamus 2000 Conference, Zlín, Czech Republic

Textbooks:

- 2014 Milan Krbálek
Teorie míry a Lebesgueova integrálu
Česká technika - nakladatelství ČVUT, Praha 2014
- 2012 Milan Krbálek
Úlohy matematické fyziky
Česká technika - nakladatelství ČVUT, Praha 2012
- 2011 Milan Krbálek
Matematická analýza III (třetí rozšířené vydání)
Česká technika - nakladatelství ČVUT, Praha 2011
- 2010 Milan Krbálek
Matematická analýza IV – cvičení
Česká technika - nakladatelství ČVUT, Praha 2010
- 2009 Milan Krbálek
Matematická analýza IV (druhé rozšířené vydání)
Česká technika - nakladatelství ČVUT, Praha 2009
- 2008 Milan Krbálek
Úlohy matematické fyziky - cvičení
Česká technika - nakladatelství ČVUT, Praha 2008

Popular Articles:

The Times (London), Discovery (USA), Science News (Washington), MF Dnes (Czech Republic), Quanta Magazine (New York)

Personal Interests:

Running, Hiking, Cycling, Photography Taking, and Music, Caribbean Rums, Graphical Design, and Takamine – Santa Fè & Shure 55 SH-II & TC Helicon VoiceTone Create XT, Canon 6D, Objectiv Canon EF 50*mm* f/1.2 L USM, Objectiv Canon EF 100*mm* f/2.8L Macro IS USM, Objectiv Canon EF 24–70*mm* f/2.8 L USM II, Polarizing Filters HOYA 67*mm*/72*mm*/82*mm* HD, Polarizing Filter B+W ND 1000× F-Pro MRC 67*mm*