**Curriculum Vitae**



**Personal information**

First name / Surname: **Michal Hnatič**

**Address:** Obchodná 4, 040 11, Košice, Slovakia

**Phone:** +421 55 7922226 (Slovakia), +7 496 2162473 (Russia)

**Email:** hnatic@saske.sk

**Date, place of birth**: 28.01.1958, Medzilaborce, Czechoslovakia

**Citizenship:** Slovak Republic

**Marital status**: widowed

**WORK EXPERIENCE**

Dates: **2012- present**

**Occupation or position held:** Deputy Director of Bogoliubov Laboratory of Theoretical Physics

**Name and address of employer:** Bogoliubov Laboratory of Theoretical Physics, Joint Institute of Experimental Physics, Dubna, Moscow region, Russia

**Type of business or sector:**  research, education and management

Dates: **1998- present**

**Occupation or position held:** Lead Scientist, Head of Department

**Main activities and responsibilities:** theoretical study of stochastic systems and phase transitions by the methods of quantum field theory and statistical physics: kinetic reactions, theory of developed (magneto)hydrodynamic turbulence, diffusion processes and transport phenomena, scaling laws. Principal investigator of seven projects of Slovak Academy of Sciences (VEGA), one project of Goverment Agency of Slovak Republic (APVV) and two Slovak-Italian projects (CNR-SAS). Head of department of theoretical physics (until 2011).

**Name and address of employer:** Institute of Experimental Physics Slovak Academy of Sciences (IEP SAS), Watsonova 47, Košice, Slovakia

**Type of business or sector:**  research and education

Dates: **2008- present**

**Occupation or position held:** Professor

**Main activities and responsibilities:** responsible person for master and doctoral studies, supervisor of PhD. students, lecturer

**Name and address of employer:** Faculty of Science P.J. Safarik University, Park Angelinum 9, Košice, Slovakia

**Type of business or sector:**  research and education

Dates: **1993-1998**

**Occupation or position held:** Senior Research Scientist

**Main activities and responsibilities:** theoretical study of stochastic systems by the methods of quantum field theory: theory of developed (magneto)hydrodynamic turbulence, diffusion processes, scaling laws. Head of research group and principal investigator of two projects of Slovak Academy of Sciences (VEGA)

**Name and address of employer:** IEP SAS, Watsonova 47, Košice, Slovakia

**Type of business or sector:**  research and education

Dates: **1987- 1993**

**Occupation or position held:** Research Scientist

**Main activities and responsibilities:** theoretical study of stochastic systems by the methods of quantum field theory: theory of developed (magneto)hydrodynamic turbulence, diffusion processes, scaling laws. Principal investigator of 2 projects of Slovak Academy of Sciences (VEGA)

**Name and address of employer** IEP SAS, Watsonova 47, Košice, Slovakia

**Type of business or sector:**  research and education

Dates: **1983-1987**

**Occupation or position held:** Scientific Assistant

**Main activities and responsibilities:** research of methods of quantum field theory in developed turbulence

**Name and address of employer:** IEP SAS, Watsonova 47, Košice, Slovakia

**Type of business or sector:**  research and education

**EDUCATION AND TRAINING**

Dates:  **2014**

**Title of qualification awarded:** Professor of Physics, prof. , Title and diploma awarded by the

President of Slovak Republic

**Principal subjects/occupational skills covered:** theoretical and mathematical physics.

**Name and type of organisation providing education and training:** P.J. Safarik University, Kosice,

**Level in national or international classification:** prof.

Dates:  **2007**

**Title of qualification awarded:** Doctor of Physico-mathematical Sciences, DrSc.

**Principal subjects/occupational skills covered:** theoretical and mathematical physics.

Thesis title: Field theoretic methods in the stochastic models of developed turbulence.

**Name and type of organisation providing education and training:** Comenius University, Bratislava, Slovakia

**Level in national or international classification:** Dr.Sc.

Dates: **1998**

**Title of qualification awarded:** Docent

**Principal subjects/occupational skills covered:** physics.

Thesis title: Universality, symmetries and dimensionality in theory of developed turbulence.

**Name and type of organisation providing education and training:** Faculty of Physics, Mathematics and Informatics, Comenius University, Bratislava, Slovakia

**Level in national or international classification:** Associate professor (doc.)

Dates: **1984-1987**

**Title of qualification awarded:** Candidate of Physico-mathematical Sciences, CSc. (PhD.)

Principal subjects/occupational skills covered: theoretical and mathematical physics.

Thesis title: Quantum-field renormalization group in theory of turbulence and magnetohydrodynamics (supervisor: professor Alexander Nikolajevich Vasiliev)

**Name and type of organisation providing education and training:** Leningrad State University, Leningrad (St Petersburg), Soviet Union

**Level in national or international classification:** PhD.

Dates: **1977-1983**

**Title of qualification awarded:** Physicist, RNDr.

**Principal subjects/occupational skills covered:** theoretical and mathematical physics.

**Name and type of organisation providing education and training:** University diploma received from the Leningrad State University, Leningrad (St Petersburg), Soviet Union, and the title „RNDr“ awarded by the Comenius University in Bratislava.

**Level in national or international classification:** RNDr.

Dates: **1973-1977**

**Title of qualification awarded:** High School Diploma

**Principal subjects/occupational skills covered:** High School leaving exams – mathematics, physics, Slovak and Russian languages

**Name and type of organisation providing education and training:** Gymnázium, Banská Štiavnica, Slovakia

**Level in national or international classification:** High School Diploma

**PERSONAL SKILLS AND COMPETENCES**

**Social skills and competences:**

Ability to work in a research team. Ability to adapt to multicultural environments. Considerable experience of university teaching at all levels. Supervisor of nine defended PhD students and three present-day PhD. Students.

Short-time visits to Bogolyubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research (3-months annual visits from.1994 to 2012), Helsinki univerzity (1-month and 2-weeks annual visits from 1995 to 2017), Sankt Petersburg State University (regular two-weeks visits from 1993 to 2016), ICTP Trieste (two-weeks visits, 1992, 2003), University of Genova (2-weeks annual visits 2001 – 2006), short-time visits to CERN Geneva (2008, 2009, 2011), Linz University (2002), Uzhgorod National University (regular visits from 1998 to 2017).

**Organizational skills and competences:**

Experience in coordinating work of informal research teams. Long-time experience in managing projects (principal investigator of 13 projects). Experience in organization of scientific conferences

(chairman of 6 international conferences and 19 international workshops).

[1998-2000] Chairman of Scientific Council of IEP SAS , Košice

[1995-1999] Vice-head of Department of Subnuclear Physics IEP SAS, Kosice

[1999-2011] Head of Department of Theoretical Physics IEP SAS, Kosice

[2009-2011] Deputy Director for research and foreign relations of Institute of Physics, Faculty of

Science, P.J.Safarik University , Kosice

[2002 - date] Member of common Slovak committees for defence of PhD. theses in nuclear and

subnuclear physics, and general and mathematical physics

[2002 - 2008] Member of Commission for physical sciences of grant agency VEGA of Slovak

Academy of Sciences and Ministry of Education of Slovak Republic

[2009 - 2014] Member of Working group for natural sciences of goverment grant agency of Slovak

republic (APVV)

[1993 - 2013] Member of Committee for collaboration of Slovak republic with JINR Dubna

[2002] Chairman of organizing committee of international conference „Renormalization

group“, (RG2002) , march 2002, Tatranska Strba, Slovakia

[2002] Guest editor of journal Acta physica Slovaca for publication of contributions from

international conference „Renormalization group 2002“ (High Tatras, Slovakia)

[2006] Chairman of organizing committee of international conference „Mathematical

Modeling and Computational Physics 2006“, (MMCP2006) , August 2006,

Tatranska Strba, Slovakia

[2009] Member of advisory committee of international conference „Mathematical modeling

and Computational Physics 2009“, (MMCP2009) , July 2009, Dubna, Russsia

[2010] Member of advisory committee of international conference „Models of Quantum

field theory 2010“, (MQFT 2010) , October 2010,  Sankt Peterburg, Russia

[2011] Chairman of organizing committee of international conference „Mathematical

Modeling and Computational Physics 2011“, (MMCP2011) , July 2011, Stara Lesna,

Slovakia

[2011-2012] Guest editor of Journal Lecture Notes of Computational Science (Heidelberg) for

publication of contributions from international conference „Mathematical Modeling

and Computational Physics 2011“, (High Tatras, Slovakia)

[2012] Chairman of advisory committee of international conference „Precision Physics and

Fundamental Physical Constants 2012“, (FFK 2012) , September 2012,  Stara

Lesna, Slovakia

[2013-present] Member of Scientific council of JINR Dubna, Russia

[2013-present] Member of Scientific-technical committee of JINR Dubna, Russia

[2013-present] Member of Scientific-technical committee of BLPT JINR Dubna, Russia

[2015] Chairman of organizing committee of international conference „Mathematical

Modeling and Computational Physics 2015“, (MMCP2015) , July 2015, Stara Lesna,

Slovakia

[2015, 2017] Guest editor of European Physical Journal: WEB of Conferences, for

publication of contributions from international conference „Mathematical Modeling

and Computational Physics 2015“, (High Tatras, Slovakia)

[2015-present] Member of Commission for physical sciences of grant agency VEGA of Slovak

Academy of Sciences and Ministry of Education of Slovak Republic

Teaching:

Quantum field theory – lectures for master students, Faculty of Science, P.J. Safarik University, Kosice, continuously from 1991, winter and summer terms

Non-equilibrium statistical physics - lectures for master students, Faculty of Science, P.J. Safarik University, Kosice, continuously from 2010, winter term

Introduction to Standard model – lectures for PhD students, Faculty of Science, P.J. Safarik University, Kosice, continuously from 2010, summer term

Quantum field theory – lectures for PhD students, Faculty of Science, P.J. Safarik University, Kosice, continuously from 2010, winter term

**Technical skills and competences:**

Referee in national scientific agencies, referee in international physical journals

(APS journals Phys. Rev. E, B, Phys.Rev.Lett. ,  Journal of Physics A)

**Computer skills and competences:**

Windows, text processing in LaTeX, mathematical software (Mathematica).

**Other skills and competences:**

category B driving licence

**Additional information:**

148 scientific publications: 81 papers in international journals (68 in CC journals), 42 contributions to conference proceedings, 25 preprints, textbooks “Chaos” and “Foundations of non-equilibrium statistical physics” (in Slovak), monograph “Stochastic models of developed turbulence” (in Slovak), more than 15 oral presentations at international conferences, “Doctor Honoris Causa (Dr.H.C.)” awarded by the Uzhhorod National University, Ukraine in 2012

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**List of publications in 2013-2017**

[1] **M. Hnatič**, G. Kalagov, M. Nalimov

Turbulent mixing of a critical fluid: The non-perturbative renormalization,

**Nuclear Physics B** (2018)

[2] Viktor M. Khmara, **Michal Hnatič**, Volodymyr Yu. Lazur, and Oleksandr K. Reity

Quasicrossings of potential curves in the two-Coulomb-center problem,

**Eur. Phys. J. D** (2018) Vol: No DOI: 10.1140/epjd/e2017-80227-2

[3] V. M. Khmara, **M. Hnatič**, V. Yu. Lazur, and O. K. Reity

The WKB Method for the Quantum Mechanical Two-Coulomb-Center Problem,

**Theoretical and Mathematical Physics,** 190(3): 354–367 (2017)

[4] N. V. Antonov,**M. Hnatich**,A. S. Kapustin,T. Lucivjansky,and L. Mizisin

Directed-Bond Percolation subjected to Synthetic Compressible Velocity Fluctuations:

Renormalization Group Approach,

**Theoretical and Mathematical Physics,** 190(3): 323–334 (2017)

[5] N. V. Antonov,**M. Hnatich**,A. S. Kapustin,T. Lucivjansky,and L. Mizisin

Active-to-Absorbing Phase Transition Subjected to the Velocity Fluctuations in the

Frozen Limit Case,

**Physics of Particles and Nuclei Letters**, 2017, Vol. 14, No. 6, pp. 944–952. © Pleiades

Publishing, Ltd., ISSN 1547-4771, (2017)

[6] M. Dančo, **M. Hnatič**, M. V. Komarova, T. Lučivjanský, M. Yu. Nalimov

Renormalization Group Calculation of Dynamic Exponent in the Models E and F with

Hydrodynamic Fluctuations, **Acta Physica Polonica A** Vol. 131, No. 4 (2017)

[7] M. Dančo, **M. Hnatič**, M. V. Komarova, T. Lučivjanský, M. Yu. Nalimov

Superfluid Phase Transition with Activated Velocity Fluctuations: Renormalization

Group Approach, **Phys. Rev. E** **93**, 012109 (2016)

[8] N. V. Antonov, **M. Hnatič**, A. S. Kapustin, T. Lučivjanský, L. Mižišin

Directed percolation process advected by the Navier-Stokes velocity ensemble: Effect

of compressibility, **Phys. Rev. E** **93**, 012151 (2016)

[9] **M. Hnatič** , P. Zalom

Helical turbulent Prandtl number in the A model of passive vector advection

**Phys. Rev. E 94,** 053113 (2016)

[10] **M. Hnatič**, J. Honkonen, T. Lučivjanský

Advanced field – theoretical methods in stochastic dynamics and theory of developed

Turbulence, **Acta Physica Slovaca 66**, No.2, 69 – 264 (2016) (195 pages) (review

article)

[11] **M. Hnatich,** J. Honkonen, T. Lučivjanský  
 Two-loop calculation of anomalous kinetics of the reaction A+A->0 in randomly stirred

fluid. **European Phys. J. 86** (5) (2013) 214 – 229

[12] L.Ts. Adzhemyan, **M. Hnatich**, M. V. Kompaniets

Principle of maximal randomness and parity violation in turbulence.

**Theor. Math. Phys. 176** (1) (2013) 835 – 842

[13] M. Danco, **M. Hnatich,** M.V. Komarova, D.M. Krasnov, T. Lucivjansky, L. Mizisin,

M. Nalimov

Influence of hydrodynamic fluctuations on the phase transition in the E and F models of

critical Dynamics. **Theor. Math. Phys. 176** (1**)** (2013) 888-897

[14] **M. Hnatich**, M. V. Komarova, M. Yu. Nalimov

Microscopic justification of the stochastic F-model of critical dynamics.

**Theor. Math. Phys. 175** (3) (2013) 779 – 787

[15] **M.Hnatič**, V.M.Khmara, V.Yu. Lazur and O.K.Reity Quasiclassical Two-Coulomb-

Centre Wave Functions in the Sphroidal Coordinate System. **Mathematical Modelling**

**and Geometry** **3** (2) ISSN 2311-1275, (2015) 8-21

[16] **M. Hnatich**, J. Honkonen, T. Lučivjanský

Field Theoretic Technique for Irreversible Reaction Processes.  **Physics of Particles and**

**Nuclei 44** (2) (2013) 316 – 348

[17] **M. Hnatich**, J. Honkonen, T. Lučivjanský  
 Effect of compressibility on the annihilation process.**Theor. Math. Phys. 176** (1) (2013)

873-880

[18] **M. Hnatič**, T. Lučivjanský

Stochastic models of developed turbulence. **Monograph** (in Slovak) , (2013), publisher:

P J Safarik university in Kosice, ISBN 978-80-8152-034-1, 250 pages

[19] L. Ts. Adzhemyan, **M. Hnatic**, M. Kompaniets, T. Lucivjansky, L. Mizisin

Numerical calculation of critical exponents of percolation process in the framework

renormalization group approach.

**European Physical Journal: Web of conferences** **108** (2016) 02004

DOI: <http://dx.doi.org/10.1051/epjconf/201610802004>

[20] L. Ts. Adzhemyan, M. Danco, **M. Hnatic**, E. V. Ivanova, M. V. Kompaniets

Multi-Loop Calculations of Anomalous Exponents in the Models of Critical Dynamics

**European Physical Journal: Web of conferences** **108** (2016) 02005

DOI: <http://dx.doi.org/10.1051/epjconf/201610802005>

[21] J. Busa, **M. Hnatic**, J. Honkonen, T. Lucivjansky

Numerical Solution of a Nonlinear Integro-Differential Equation

**European Physical Journal: Web of conferences** **108** (2016) 02017

DOI: <http://dx.doi.org/10.1051/epjconf/201610802017>

[22] **M. Hnatich**, E. G. Eferina, A. V. Korolkova. S. Kulyabov, L. A. Sevastyanov

Operator Approach to the Master Equation for the One-Step Process

**European Physical Journal: Web of conferences** **108** (2016) 02027

DOI: <http://dx.doi.org/10.1051/epjconf/201610802027>

[23] **M. Hnatic**, V. M. Khmara, V. Yu. Lazur, O. K. Reity

Quasiclassical study of the quantum mechanical two-Coulomb-centre problem.

European Physical Journal: Web of conferences **108** (2016) 02028

DOI: <http://dx.doi.org/10.1051/epjconf/201610802028>

**Conference Proceedings:** 10 contributions