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Curriculum Vitae

Václav Zatloukal

Address:
Faculty of Nuclear Sciences and Physical Engineering
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Born: 31 March 1987 in Opočno, Czech Republic

Higher education
in the field of Mathematical Physics
at the Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Czech Republic (2006 – 2016):

- Modules taken (selected): Quantum Mechanics, Quantum Field Theory, Electroweak Theory, General Relativity, Nuclear Physics, Statistical Physics, Functional Analysis, Lie Groups and Algebras, Differential Geometry, Cohomological Methods, Path Integral Methods

- Bachelor degree in 2009 (graduated with honour), thesis "Applications of Supersymmetric Quantum Mechanics", supervised by Ing. Petr Jizba, PhD.

- Master degree in 2011 (graduated with honour), thesis "Anyons and Their Significance in Quantum Mechanics and Statistical Physics", supervised by Ing. Petr Jizba, PhD.

- Doctoral degree in 2016, thesis "Applications of Path Integrals in Quantum Theory and Statistical Physics", supervised by Ing. Petr Jizba, PhD.

Schools attended

- Quantum Structure of Spacetime and Gravity (2016), August 21-28, Belgrade, Serbia

- International School of Subnuclear Physics (2016), June 14-23, Erice, Italy

- Tri-Institute Summer School on Elementary Particles (2015), July 6-17, Perimeter Institute, Waterloo, ON, Canada

- International School of Subnuclear Physics (2015), June 24-July 3, Erice, Italy

- ATHENS Programme: Quantum Information and Communication (2009), November 14-21, TELECOM ParisTech, Paris, France

Scientific stays

Freie Universitaet and Max Planck Institute for the History of Science, Berlin, Germany (2012-2016), 4 years

- Fractional Fokker-Planck equation, Applications of path integrals (supervised by Prof. Hagen Kleinert)

ENS Lyon, France (2012), 2 months

- Low-temperature approximations of the equilibrium density matrix using path- and functional integrals (supervised by Dr. Angel Alastuey)

Quantum information group, University of Leeds, United Kingdom (2011), 1 month

- spectral graph theory: Energy gaps of Hamiltonians from graph Laplacians using the Cheeger bound (supervised by Dr. Jiannis Pachos)

Quantum information group, University of Leeds, United Kingdom (2010), 5 months

- research fellowship, applications of anyons in quantum information processing, specifically: Statistical dynamics of a non-Abelian anyonic quantum walk (supervised by Dr. Jiannis Pachos)

Publications

- V. Zatloukal
  Local time of Levy random walks: a path integral approach,
  Phys. Rev. E **95**, 052136 (2017), arXiv:1702.02488.

- V. Zatloukal
  Classical field theories from Hamiltonian constraint: Local symmetries and static gauge fields, preprint, arXiv:1611.02906 (2016).

- P. Jizba, J. Korbel and V. Zatloukal,
  Tsallis thermostatics as a statistical physics of random chains,
  Phys. Rev. E **95**, 022103 (2017), arXiv:1610.07110.

- V. Zatloukal,
  Classical field theories from Hamiltonian constraint: Symmetries and conservation laws, preprint, arXiv:1604.03974 (2016).

- V. Zatloukal,
  Hamiltonian constraint formulation of classical field theories, Adv. Appl. Clifford Algebras **27**, 829-851 (2017), arXiv:1602.00468.

- P. Jizba and V. Zatloukal,
  Local-time representation of path integrals,
  Phys. Rev. E **92**, 062137 (2015), arXiv:1506.00888.

- V. Zatloukal,
  Classical field theories from Hamiltonian constraint: Canonical equations of motion and local Hamilton-Jacobi theory, Int. J. Geom. Methods Mod. Phys. **13**, 1650072

(2016), arXiv:1504.08344.

- V. Zatloukal, L. Lehman, S. Singh, J. K. Pachos, and G. K. Brennen, *Transport properties of anyons in random topological environments*, Phys. Rev. B **90**, 134201 (2014), arXiv:1207.5000.

- P. Jizba and V. Zatloukal, *Path-integral approach to the Wigner-Kirkwood expansion*, Phys. Rev. E **89**, 012135 (2014), arXiv:1309.0206.

- H. Kleinert and V. Zatloukal, *Green function of the double-fractional Fokker-Planck equation: Path integral and stochastic differential equations*, Phys. Rev. E **88**, 052106 (2013), arXiv:1503.01667.

- L. J. Lehman, V. Zatloukal, J. K. Pachos, G. K. Brennen, *Braiding Interactions in Anyonic Quantum Walks*, Quantum Computers and Computing (2012) **12** (1), pp. 51-62, arXiv:1210.3446.

- L. Lehman, V. Zatloukal, G. K. Brennen, J. K. Pachos, and Z. Wang, *Quantum walks with non-Abelian anyons*, Phys. Rev. Lett. **106** 230404 (2011), arXiv:1009.0813.

Conference talks

Path Integration in Complex Dynamical Systems, Leiden (2017)
- "Local time path integrals and their application to Levy random walks"

16. Zimányi Winter School on Heavy Ion Physics, Budapest (2016)
- "Green function of the double-fractional Fokker-Planck equation"

IARD, Ljubljana (2016)
- "Hamiltonian constraint formulation of classical field theories"

International School of Subnuclear Physics, Erice (2016)
- "Hamiltonian constraint formulation of classical field theories"

Rethinking Foundations of Physics, Dorfgastein (2016)
- "Classical and Quantum Field Theories from Hamiltonian Constraint"

AGACSE, Barcelona (2015)
- "Classical field theories from Hamiltonian constraint: Canonical equations of motion and local Hamilton-Jacobi theory"

SigmaPhi International Conference on Statistical Physics, Rhodes (2014)
- "Local-time representation of one-dimensional Feynman path integral"

International School on Anyon Physics of Ultracold Atomic Gases, Berlin (2013)
- "Basic properties of anyons" (2 lectures)

Topological Quantum Information Symposium (TQI2012), Oxford (2012)

- “Transport properties of anyons in random topological environments”

Activities and interests

- music (guitarist and singer of Vekaband and CHKO Luisenthal)
- sports (football, tennis, squash, table tennis, frisbee, orienteering)
- chess (two-fold youth chess champion of the Czech Republic)

Additional information

- very good level of written and spoken English, basics of French and German
- driving licence B