

## Curriculum Vitae

**Ing. Václav Zatloukal, Ph.D.**

*Research assistant at the*  
Department of Physics  
Faculty of Nuclear Sciences and Physical Engineering  
Czech Technical University in Prague

*Address:*  
Břehová 7, 115 19 Praha 1, Czech Republic

*Email:* [zatlovac@gmail.com](mailto:zatlovac@gmail.com)  
*Homepage:* <http://www.zatlovac.eu>

*Born:* 31 March 1987 in Opočno, Czech Republic

### 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,* Adv. Appl. Clifford Algebras **28**: 48 (2018), arXiv:1611.02906.
- 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.

### 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)

### 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”

### **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
- Summer Student Practice (2008), June 29-July 20, JINR Dubna, Russia

**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