

Curriculum Vitae

Personal information

Name: László Gábor Ruppert
Date of birth: 12 March 1985
Place of birth: Pécs, Hungary
Nationality: Hungarian
Phone: +420-605-751-906
Address: 17. listopadu 1192/12, 77900 Olomouc, Czech Republic
E-mail: ruppert@optics.upol.cz

Education

2008-2012: Budapest University of Technology and Economics (BME)
Ph.D. in Mathematics, *Efficient State Estimation for Quantum Systems*
Supervisor: Prof. Dénes Petz

2003-2008: Budapest University of Technology and Economics (BME)
M.Sc. In Mathematics, Specialization in Stochastics and Operations research,
State estimations for 2-level quantum systems
Supervisors: Prof. Katalin Hangos, Prof. Dénes Petz

Work experience

2013-: Palacky University of Olomouc, Department of Optics, post-doc researcher

2012: Hungarian Academy of Sciences, Computer Science and Control, System and Control Lab, mathematician

2010: Morgan Stanley, Strats & Modeling, intern

2007-2008, 2011: Hungarian Academy of Sciences, Computer Science and Control, Process Control Research Group, mathematician

Teaching experience

since 2005: different courses at Budapest University of Technology and Economics:
Measure theory, complex analysis and functional analysis for undergraduate mathematics students. Higher mathematics (analysis, linear algebra, probability theory) for engineering students.

Research field

Quantum information theory, Quantum probability and statistics, Quantum control, Parameter estimation of quantum states and processes, Quantum key distribution

Publications

- László Ruppert, Dániel Virosztek, Katalin Hangos, *Pauli channels with unknown channel directions*, in preparation
- László Ruppert, Vladyslav Usenko, Radim Filip, *Long-distance continuous-variable quantum key distribution with efficient channel estimation*, Physical Review A **90**, 062310, 2014
- Vladyslav Usenko, László Ruppert, Radim Filip, *Entanglement-based continuous-variable quantum key distribution with multimode states and detectors*, Physical Review A **90**, 062326, 2014
- Dénes Petz, László Ruppert, András Szántó, *Conditional SIC-POVMs*, IEEE Transactions on Information Theory, **60**, 351-356, 2014
- László Ruppert, *Efficient State Estimations for Quantum Systems*, PhD thesis, 2012
- László Ruppert, Dániel Virosztek, Katalin Hangos, *Optimal parameter estimation of Pauli channels*, J. Phys. A: Math. Theor. **45**, 265305, 2012
- Dénes Petz, László Ruppert, *Optimal quantum-state tomography with known parameters*, J. Phys. A: Math. Theor. **45**, 085306, 2012
- Dénes Petz, László Ruppert, *Efficient quantum tomography needs complementarity and symmetric measurements*, Reports on Math. Phys., **69**, p. 161-177, 2012
- Katalin Hangos, László Ruppert, *State estimation methods using indirect measurements*, Quantum Probability and Related Topics, World Scientific, p. 163-180, 2011
- László Ruppert, Katalin Hangos, *Martingale approach in quantum state estimation using indirect measurements*, Proceedings of the 19th International Symposium on Mathematical Theory of Networks and Systems, p. 2049-2054, 2010
- László Ruppert, Katalin Hangos, *State estimation methods using indirect measurements*, Technical report of the Systems and Control Laboratory SCL-001/2010. Budapest, MTA SZTAKI, 2010
- László Ruppert, Attila Magyar, Katalin Hangos, Dénes Petz, *Towards optimal quantum state estimation of a qubit by using indirect measurements*, Technical report of the Systems and Control Laboratory SCL-002/2008, Budapest, MTA SZTAKI, 2008
- László Ruppert, *State estimations for 2-level quantum systems*, MSc thesis, 2008
- László Ruppert, Attila Magyar, Katalin Hangos, *Compromising non-demolition and information gaining for qubit state estimation*, Quantum Probability and Related Topics, World Scientific, p. 212-224, 2008
- László Ruppert, Attila Magyar, *Quantum Process Tomography of a Generalized Pauli Channel*, Proceedings of the 9th international Ph.D. workshop: young generation viewpoint. Izola, 2008
- Dénes Petz, Katalin Hangos, László Ruppert, *Quantum state tomography with finite sample size*, Quantum Bio-Informatics, From Quantum Information to Bio-Informatics, World Scientific, p. 247-257, 2008
- László Ruppert, *Adaptive estimation schemes for 2-level quantum systems*, Proceedings of the 8th international PhD workshop: young generation viewpoint. Balatonfüred, p. 55-60., 2007
- Dénes Petz, Katalin Hangos, Attila Magyar, László Ruppert, *State estimation of N-level quantum systems*, Technical report of the Systems and Control Laboratory SCL-007/2006, Budapest, MTA SZTAKI, 2006
- László Ruppert, Attila Magyar, *The effect of constraints on LS state estimators for a qubit*, Proceedings of the 7th international Ph.D. workshop: young generation viewpoint. Hrubá Skála, p. 107-114., 2006.

Conferences

- 4th International Conference on Quantum Cryptography, *Continuous-variable quantum key distribution with efficient channel estimation for long-distance applications*, Paris, 2014
- 23rd Annual International Laser Physics Workshop, *Long-distance continuous-variable quantum key distribution with efficient channel estimation*, Sofia, 2014
- 21st Central European Workshop on Quantum Optics, *Towards optimal long-distance continuous-variable quantum key distribution*, Brussels, 2014
- 11th Central European Quantum Information Processing Workshop, *Long-distance continuous-variable quantum key distribution with efficient channel estimation*, Znojmo, 2014
- Photons beyond qubits, Workshop on Information and Uncertainty, Olomouc, 2014
- Winter School on Quantum Physics and Quantum Information, Olomouc, 2014
- SPIE Security + Defence 2013, Dresden, 2013
- Summer School on Quantum Physics and Quantum Information, Olomouc, 2013
- 13th International Conference on Squeezed States and Uncertainty Relations, *Parameter estimation of a channel for CV-QKD*, Nuremberg, 2013
- 10th Central European Quantum Information Processing Workshop, *Conditional SIC-POVMs - The generalization of SIC-POVMs for arbitrary subspaces*, Valtice, 2013
- Photons beyond qubits, Workshop on Information and Uncertainty, Olomouc, 2013
- EuroNanoForum , *Efficient quantum state estimation*, Budapest, 2011
- 19th International Symposium on Mathematical Theory of Networks and Systems, *Martingale Approach in Quantum State Estimation Using Indirect Measurements*, Budapest, 2010
- Von Neumann Workshop, *Complementarity and state estimation* , Budapest, 2010
- 6th Central European Quantum Information Processing Workshop, Jindrichuv Hradec, 2009
- Mini-Workshop on Quantum Statistics, *Parameter estimation of the generalized Pauli channel*, Budapest, 2008
- 9th International PhD Workshop on Systems and Control, *Quantum Process Tomography of a Generalized Pauli Channel*, Izola, 2008
- Information and Communication, Budapest, 2008
- 8th International PhD Workshop on Systems and Control, *Adaptive estimation schemes for 2-level quantum systems*, Balatonfüred, 2007
- 7th International PhD Workshop, *The effect of constraints on LS state estimators for a qubit*, Hrubá Skála, 2006

Major achievements

2007	International Mathematics Competition for University Students, 2 nd prize
2005	International Mathematics Competition for University Students, 3 rd prize
2007	Competition in Mathematics at BME, 1 st prize
2007	Conference of Scientific Students' Associations at BME, 3 rd prize, Special Prize from the Institute of Mathematics For Applied Mathematics
2006, 2007	Scholarship of the Hungarian Republic

Supervision of Dániel Virosztek:

2012	Conference of Scientific Students' Associations at BME, 2 nd prize
2013	National Conference of Scientific Students' Associations, 1 st prize

Computer skills

Basic computer skills (MS Office, LaTeX, Unix systems), Mathematica, Maple, MATLAB, C++, PHP (main developer of site: <https://alfa.bme.hu/>)

Languages

Hungarian (native), English (fluent), German, Croatian

Hobbies

Long distance triathlon, cycling, hiking