

Curriculum Vitae

Milán Mosonyi

Personal information

Born: 1976, Budapest, Hungary

Nationality: Hungarian

Address: Centre for Quantum Technologies (CQT)
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and

Department of Mathematical Analysis, Budapest
University of Technology and Economics (BUTE)
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Employment

2009. May - Research Fellow at the Centre for Quantum Technologies, National University of Singapore (on temporary leave from BUTE)

2006. Dec.-2008. Nov: JSPS Postdoctoral Research Fellow at the Graduate School of Information Sciences, Tohoku University, Sendai, Japan (on temporary leave from BUTE)

Assistant Professor at the Department of Mathematical Analysis, BUTE, from June, 2005.

Short term research visits and positions

2010: Invited participant for the topical semester on Quantum Information Theory, Mittag-Leffler Institute, Stockholm; 1.5 months

2010: Visiting Scholar at Tohoku University, Sendai, Japan; 1 month; invited by Prof. Fumio Hiai

2009: Visiting Scholar at Tohoku University, Sendai, Japan; 1 month; invited by Prof. Fumio Hiai

2009: Visiting Postdoctoral Fellow at the Fields Institute, Toronto; 1 month

- 2009: Junior Research Fellow at the Erwin Schrödinger Institute, Vienna;
3 months; collaborating with Prof. Frank Verstraete
- 2006: Junior Research Fellow at the Erwin Schrödinger Institute, Vienna;
3 months; collaborating with Prof. Heide Narnhofer
- 2006: Visiting Scholar at the Mathematical Institute, University of Wrocław;
1 month; invited by Prof. Marek Bożejko
- 2006: Visiting Scholar at Tohoku University, Sendai, Japan; 1 month;
invited by Prof. Fumio Hiai
- 2003: Visiting Scholar at Tufts University, Boston; 2 weeks;
invited by Prof. Mary Beth Ruskai
- 2002: Visiting Scholar at the Institute for Theoretical Physics, Catholic University of Leuven; 3 months; invited by Prof. Mark Fannes

Education

- 2005: PhD in Theoretical Physics, Institute for Theoretical Physics,
Catholic University of Leuven (K.U.Leuven)
Supervisors: Prof. Mark Fannes and Prof. Dénes Petz
Thesis title: Entropy, Information and Structure of Composite
Quantum States;
<https://repository.cc.kuleuven.be/dspace/handle/1979/41>
- 2004: MSc in Physics, BUTE
Supervisor: Prof. Dénes Petz
Thesis title: Entanglement asymptotics of quasi-free states on
the spin chain
- 2000: MSc in Mathematics at the Eötvös Loránd University of Sciences
(ELTE), Budapest
Supervisor: Prof. Zoltán Sebestyén
Thesis title: L^p -spaces in noncommutative integration theory

Awards, grants

- JSPS postdoctoral fellowship (2 years);
- Grant-in-Aid for JSPS Fellows 18·06916;
- Junior Research Fellowship of the Erwin Schrödinger Institute, Vienna (2 x 3 months);
- State scholarship for PhD students, Hungary (3 years).
- Participating researcher in the Hungarian research grants OTKA-46599, OTKA-49835 and OTKA-68258.

Publications

preprints

1. F. Hiai, M. Mosonyi, D. Petz, C. Bény: *Quantum f -divergences and error correction*; arXiv:1008.2529

journals

2. M. Mosonyi, F. Hiai: *On the quantum Rényi relative entropies and related capacity formulas*; arXiv:0912.1286; to appear in IEEE Trans. Inform. Theory
3. G. Kimura, H. Ohno, M. Mosonyi: *Relation between the Dynamics of the Reduced Purity and Correlations*; Open Systems and Information Dynamics **17**, 233–243, (2010)
4. F. Hiai, M. Mosonyi, M. Hayashi: *Quantum hypothesis testing with group symmetry*; J. Math. Phys. **50** 103304 (2009)
5. M. Mosonyi, N. Datta: *Generalized relative entropies and the capacity of classical-quantum channels*; J. Math. Phys. **50**, 072104 (2009)
6. M. Mosonyi: *Hypothesis testing for Gaussian states on bosonic lattices*; J. Math. Phys. **50**, 032105, (2009)
7. M. Mosonyi, F. Hiai, T. Ogawa, M. Fannes: *Asymptotic distinguishability measures for shift-invariant quasi-free states of fermionic lattice systems*; J. Math. Phys. **49**, 072104, (2008)
8. F. Hiai, M. Mosonyi, T. Ogawa: *Error exponents in hypothesis testing for correlated states on a spin chain*; J. Math. Phys. **49**, 032112, (2008)
9. F. Hiai, M. Mosonyi, H. Ohno, D. Petz: *Free energy density for mean field perturbation of states of a one-dimensional spin chain*; Rev. Math. Phys. **20**, 335–365, (2008)
10. F. Hiai, M. Mosonyi, T. Ogawa: *Large deviations and Chernoff bound for certain correlated states on a spin chain*; J. Math. Phys. **48**, 123301, (2007)
11. M. Mosonyi, D. Petz: *Structure of Sufficient Quantum Coarse Grainings*; Letters in Mathematical Physics **68**, 19–30, (2004)
12. M. Fannes, B. Haegeman, M. Mosonyi: *Entropy growth of shift-invariant states on a quantum spin chain*; J. Math. Phys. **44**, 6005–6019, (2003)
13. D. Petz, M. Mosonyi: *Stationary quantum source coding*; J. Math. Phys. **42**, 4857–4864, (2001)

preprints

14. M. Fannes, B. Haegeman, M. Mosonyi, D. Vanpeteghem: *Additivity of minimal entropy output for a class of covariant channels*; quant-ph/0410195

Conference presentations

- Mathematical Physics Days, 2010, Leuven; *invited talk*
- QIP 2010, Zürich; *poster*
- XVI International Congress on Mathematical Physics, 2009, Prague; *talk*
- Operator Structures in Quantum Information, 2009, Fields Institute, Toronto; *invited talk*
- Mini-Workshop on Quantum Statistics, 2008, Budapest; *talk*
- GSIS & DEX-SMI Workshop on Quantum statistical inference and entanglement, 2008, Sendai; *talk*
- GSIS Workshop on Quantum Information Theory, 2008, Sendai; *talk*
- AQIS 2007, Kyoto; *poster*
- IDAQP Workshop, Sendai, 2007; *talk*
- Operator Structures in Quantum Information Theory, Banff, 2007; *talk*
- IDAQP Workshop, Sendai, 2006; *talk*
- Mathematical Physics Days, 2004, Leuven; *talk*
- Von Neumann Centennial Conference, 2003, Budapest; *poster*

Teaching experience

Exercise courses for undergraduate students since 4th grade at university (from 1998), regular teaching during PhD, one year full-time lecturer after PhD (until 2006); a total of 8 years teaching experience at university level. Courses taught in Calculus, Analysis and Functional Analysis on undergraduate and graduate level for students in Mathematics, Physics and Engineering and project seminars in Theoretical Physics at three different universities (BUTE, ELTE and K.U.Leuven). Mini-courses on Quantum Information Theory for graduate students and senior staff at Tohoku University, Japan, in 2006 and 2009.

Referee work

Communications in Mathematical Physics; Journal of Mathematical Physics; IEEE Transactions on Information Theory; Journal of Physics A.

Languages

Hungarian (native), English (fluent), Japanese (intermediate)