

## Milán Mosonyi - Curriculum Vitae

**Personal information:** Born: 1976, Budapest, Hungary; Nationality: Hungarian

**Education:** 2005: PhD in Physics, Catholic University of Leuven  
 Supervisors: Prof. Mark Fannes and Prof. Dénes Petz  
 Thesis: Entropy, Information and Structure of Composite Quantum States  
 2004: MSc in Physics, Budapest University of Technology and Economics (BME)  
 2000: MSc in Mathematics, Eötvös Loránd University of Sciences, Budapest (ELTE)

### Employment history

#### Faculty positions:

2012– Associate Professor at the Department of Analysis, BME  
 2005 – 2012 Assistant Professor at the Department of Analysis, BME

#### Research positions (on leave from BME):

2015 – 2016 Postdoctoral Research Fellow, Technische Universität München (TUM)  
 2013 – 2015 Postdoctoral Research Fellow, Universitat Autònoma de Barcelona  
 2011 – 2013 Marie Curie Research Fellow at the School of Mathematics, University of Bristol  
 2009 – 2011 Research Fellow at the Centre for Quantum Technologies, National University of Singapore  
 2009 Junior Research Fellow, Erwin Schrödinger Institute for Mathematical Physics (3 months)  
 2006 – 2008 JSPS Postdoctoral Research Fellow, Tohoku University, Sendai, Japan  
 2006 Junior Research Fellow, Erwin Schrödinger Institute for Mathematical Physics (3 months)

### Extended research visits

- Participant at the topical semester “Mathematical Challenges in Quantum Information”, Newton Institute, Cambridge, in 2013; 2 weeks
- Tohoku University, Sendai, Japan, in 2006, 2009, 2010, 2011; 1 month each; hosted by Prof. Fumio Hiai
- Invited participant at the topical semester on Quantum Information Theory, Mittag-Leffler Institute, Stockholm, in 2010; 1.5 months
- Visiting Postdoctoral Fellow at the Fields Institute, Toronto, in 2009; 1 month
- Mathematical Institute, University of Wrocław, in 2006, 1 month; hosted by Prof. Marek Bożejko
- Tufts University, Boston, in 2003; 2 weeks; hosted by Prof. Mary Beth Ruskai
- Visiting Scholar at the Institute for Theoretical Physics, Catholic University of Leuven in 2002; 3 months; hosted by Prof. Mark Fannes

### Awards, grants

#### Individual fellowships and grants

- Bolyai János Research Fellowship of the Hungarian Academy of Sciences; 2016–2019; 3 years.
- European Commission Marie Curie International Incoming Fellowship: “Quantum Information Theory and Statistics (QUANTSTAT)”; 2 years: 2011–2013
- Junior Research Fellowship of the Erwin Schrödinger Institute, Vienna; 3 months in 2009

- Postdoctoral Research Fellowship of the Japan Society for the Promotion of Science (JSPS) and Grant-in-Aid for JSPS Fellows 18·06916; 2 years: 2006–2008
- Junior Research Fellowship of the Erwin Schrödinger Institute, Vienna; 3 months in 2006
- Junior Research Fellowship of the Hungarian Academy of Sciences; 2006 (declined)
- State scholarship for PhD students, Hungary; 3 years: 2000–2003

### Participating researcher in grants

- Hungarian National Research Grant OTKA-104206: “Applications of Matrix Analysis”, 2016–2017
- Generalitat de Catalunya CIRIT Project No. 2014 SGR 966; 2014–2016
- Spanish MINECO FIS2013-40627: “Resources and Restrictions in Quantum Information Processing (RaR-QIP)”; 2015–2017
- Joint project of the Hungarian Academy of Sciences and the Japan Society for the Promotion of Science: “New Developments in Quantum Information Theory and Quantum Probability Theory”, 2008–2010
- Hungarian National Research Grant OTKA-68258: “Inequalities in Information Theory”, 2007–2011
- Hungarian National Research Grant OTKA-49835: “Random Events in Space and Time”, 2005–2008
- Hungarian National Research Grant OTKA-46599: “Linear Analysis and its Applications”, 2004–2007
- Joint project of the Hungarian Academy of Sciences and the Japan Society for the Promotion of Science: “Free Probability Theory and Random Matrices – Towards New Information Mathematics”, 2004–2006

**Research field:** Quantum information theory, quantum statistics, quantum statistical physics.

**Publications:** [http://www.math.bme.hu/~mosonyi/cv/publist\\_mosonyi.pdf](http://www.math.bme.hu/~mosonyi/cv/publist_mosonyi.pdf)  
<https://scholar.google.hu/citations?user=SPY52NIAAAAJ&hl=hu&oi=ao>

### Invited conference talks

- Beyond I.I.D. in Information Theory, 2015, Banff, Canada
- High-Dimensional Problems and Quantum Physics, 2015, Paris
- Beyond I.I.D. in Information Theory, 2014, Singapore
- Beyond I.I.D. in Information Theory, 2013, Cambridge, UK
- Third COQUIT Conference, Collective Quantum Operations: Mean field, Control, Estimation, 2012, Turin
- International Symposium on Quantum Information and Quantum Logic, 2012, Hangzhou, China
- Nagoya Winter Workshop, 2011, Nagoya, Japan
- Mathematical Physics Days, 2010, Leuven, Belgium
- Workshop on Operator Structures in Quantum Information, 2009, Fields Institute, Toronto

### Other conference presentations and invited seminar talks

- Leibniz University of Hanover, 2015; *invited seminar talk*
- AQIS 2014, Kyoto; *talk*
- TQC 2014, Singapore; *talk*
- QIP 2014, Barcelona; *poster + coauthor of a contributed talk*

- QIP 2013, Beijing; *posters*
- AQIS 2012, Suzhou, China, *talk*
- Seefeld Quantum Information Workshop, 2012, Seefeld, Austria; *poster*
- New Directions in Quantum Statistics, 2012, Nottingham; *poster*
- University of Nottingham, 2012; *invited seminar talk*
- University of Cambridge, 2012; *invited seminar talk*
- QIP 2011, Singapore; *poster*
- QIP 2010, Zürich; *poster*
- XVI International Congress on Mathematical Physics, 2009, Prague; *talk*
- Yamagata University, Japan, 2009; *invited seminar talk*
- Shinshu University, Nagano, Japan, 2009; *invited seminar talk*
- Mini-Workshop on Quantum Statistics, 2008, Budapest; *talk*
- Information and Communication, 2008, Rényi Institute, Budapest; *talk*
- GSIS & DEX-SMI Workshop on Quantum Statistical Inference and Entanglement, 2008, Sendai, Japan; *talk*
- GSIS Workshop on Quantum Information Theory, 2008, Sendai, Japan; *talk*
- AQIS 2007, Kyoto; *poster*
- The 6th Sendai Workshop on Infinite Dimensional Analysis and Quantum Probability, Tohoku University, Sendai, Japan, 2007; *talk*
- Operator Structures in Quantum Information Theory, Banff, 2007; *talk*
- National Institute of Informatics, Tokyo, 2007; *invited seminar talk*
- Kyushu University, Fukuoka, 2007; *invited seminar talk*
- Wroclaw University, 2006; *invited seminar talk*
- The 5th Sendai Workshop on Infinite Dimensional Analysis and Quantum Probability, Sendai, 2006; *talk*
- Von Neumann Workshop, Budapest, 2006; *talk*
- Mathematical Physics Days, 2004, Leuven; *talk*
- Von Neumann Centennial Conference, 2003, Budapest; *poster*

### Community service

**Editorial work:** Journal of Mathematical Physics, member of the Editorial Advisory Board  
Editor for Quantum (<http://quantum-journal.org/about/people/>)

**Referee work:** Communications in Mathematical Physics; Journal of Mathematical Physics; IEEE Transactions on Information Theory; Journal of Physics A; Linear Algebra and its Applications; International Journal of Quantum Information Theory; Infinite Dimensional Analysis, Quantum Probability and Related Topics; Periodica Mathematica Hungarica

**Conference organizer:**

- Main organizer of the Quantum Information Theory and Mathematical Physics workshop, Budapest, 30 August–2 September, 2017 (upcoming)
- Main organizer of the Quantum Information Theory and Mathematical Physics workshop, Budapest, 16–19. September, 2016. (<http://www.renyi.hu/conferences/qinfo2016/>)
- Organizer of the poster session, Von Neumann Centennial Conference, Budapest, 15–20. October, 2003.

**Programme committee member:**

11th Central European Quantum Information Processing Workshop, 2014 (<http://ceqip.eu/2014/>)

**Doctoral training:**

- Opponent of the doctoral thesis of Tamás Kóí (<http://math.bme.hu/~koitomi/indexangol.html>); in progress.
- Opponent for the departmental defense of the doctoral thesis of Gábor Balló (<http://www.doktori.hu/index.php?menuid=193&lang=HU&vid=13256>).
- Examiner at the general doctoral exam of Mihály Csirik, ELTE, 5 April 2017.

**Student supervision**

**MSc** Tamás Borsos, Physics MSc, ELTE, expected graduation June 2018  
 Gergely Bunth, Physics MSc, BME, expected graduation June 2018  
 Máté Janecska, Physics MSc, BME, expected graduation June 2018

**BSc** Bendegúz Sulyok, Physics BSc, BME, expected graduation June 2017  
 Tamás Tossenberger, Mathematics BSc, expected graduation June 2017  
 Leonardo Cancissu Araujo, Mathematics BSc, TUM, graduation October 2016  
 (jointly supervised with Prof. Robert König)

**Teaching experience****Intensive graduate courses on Quantum Information Theory**

- Invited lecturer at “Stochastic Methods in Quantum Mechanics”, Summer School in Autrans July 11–22, 2016. Short course on quantum statistics. ([http://math.univ-lyon1.fr/~attal/Ecole\\_main.html](http://math.univ-lyon1.fr/~attal/Ecole_main.html))
- Tohoku University, Sendai, Japan, 2006 and 2009. Mini-courses on Quantum Information Theory.

**Regular university courses**

BME: 2000–2017

- Lecture course on Matrix Analysis and Quantum Information Theory (2017)
- Lecture course on Measure Theory and Complex Functions (2017)
- Lecture course on Quantum Information Theory (MSc and PhD course, 2015, 2016).
- Lecture course on Advanced Functional Analysis (MSc and PhD course; twice).
- Exercise classes in Functional Analysis (fifth semester course; four times)
- Exercise classes in Analysis for students in Mathematics (first and second semester course, once)
- Exercise classes in Analysis for Engineering students (first, second and third semester classes, several times)
- Calculus and Linear Algebra lectures and exercise classes for foreign students in Engineering (in English; first, second and third semester classes, several times)

Technical University of Munich: 2015, one semester

- Exercise class in Functional Analysis for Mathematics students (BSc and MSc).

University of Bristol: 2011–2013, two semesters

- Lecture course on Information Theory for final-year Mathematics and Engineering undergraduates.
- Calculus tutorials for students in Mathematics (first and second semester course).

ELTE: 1998–2000, four semesters

- Exercise classes in Analysis for teacher training students in Mathematics (four semesters course; once).
- Exercise class in Complex Function Theory for Physics students (third semester course; once).

### **Other**

Catholic University of Leuven: 2004–2005, two semesters

- Supervising independent research projects in Theoretical Physics for third-year Physics students (two projects).

### **Language skills**

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