

Curriculum Vitae

1. Personal Information

Name: Mihaly Kovacs

2. Qualifications

(a) Qualifications: Ph.D. in Mathematics, Louisiana State University, 2004
M.Sc. in Mathematics, Louisiana State University, 2002
M.Sc. in Meteorology, Eotvos Lorand University, 2000
M.Sc. in German Technical Translation, Eotvos Lorand University, 2000

(b) Are you **currently enrolled** in a higher degree qualification: No

3. Professional Affiliations/Memberships (List)

ANZIAM (since 2009)

New Zealand Mathematical Society (since 2008)

4. Languages (List and indicate your proficiency)

Hungarian (native tongue)

English (working professional knowledge)

German (working professional knowledge)

5. Employment History

(a) Present Position: Senior Lecturer

(b) Employment History:

Senior Lecturer, Department of Mathematics and Statistics, University of Otago, New Zealand, 2010 – present

Lecturer, Department of Mathematics and Statistics, University of Otago, New Zealand, 2006 – 2009

Postdoctoral Fellow funded by the Swedish Research Council, Chalmers/Goteborg University, Sweden, parts of the period 2006 - 2008

Postdoctoral Fellow, Department of Mathematics and Statistics, University of Otago, New Zealand, 2005 - 2006

Adjunct Professor, Mathematics Institute, University of Miskolc, Hungary, 2005 - 2006

Assistant Professor, Mathematics Institute, University of Miskolc, Hungary, 2004 – 2005

Teaching assistant, Louisiana State University, USA, 2001 - 2004

6. Other Relevant Experience

(b) National/International Collaboration

Ongoing research with:

Prof. Arnaud Debussche, ENS Cachan, Rennes, France
Prof. Stig Larsson, Chalmers/Goteborg University, Sweden
Prof. Mark Meerschaert, Michigan State University, USA
Dr. Boris Baeumer, University of Otago, New Zealand
Dr. Matthias Geissert, TU Darmstadt, Germany
Dr. Omar Lakkis, University of Sussex, UK

Past research with:

Prof. Frank Neubrander, Louisiana State University, USA
Dr. Markus Haase, TU Delft, Netherlands
Dr. Istvan Farago, Eotvos Lorand University, Hungary
Prof. Katalin Hangos, Computer and Automation Institute, Hungarian Academy of Sciences
Dr. Gabor Szederkeny, Computer and Automation Institute, Hungarian Academy of Sciences
Dr. Gabor Vattay, Eotvos Lorand University, Hungary
Dr. Ferenc Acs, Eotvos Lorand University, Hungary

7. Research Activities

(a) Research Expertise: Applied Mathematics (Stochastic PDEs, fractional PDEs and PDEs with numerical methods, approximation theory of semigroups, qualitative properties of time-discretization schemes for semigroups, functional calculi for closed operators)

(c) Research Grants (significant grants only)

(1) Please list below any research grants you have received where you are the first named principal or joint principal investigator.

University of Otago Research Grant entitled “Numerical methods for stochastic partial differential equations”, January 2010- March 2011.

Postdoctoral grant No. 623-2005-5078 of the Swedish Research Council, 2006 - 2008

- (2) Please list below any research grant on which you are a named contributing researcher.

Research grant CZN-14/2005 of the Czech Science and Technology Foundation 2006 - 2007

- (d) Supervision of Postgraduate Students (list all supervisors with the name of the primary supervisor in **bold**, the enrolment date and the completion date)

PhD, Harish Sankaranarayanan, Fractional backward and boundary value problems, University of Otago, enrolled: **2010**, completion target: **2013** (joint supervision with Dr. Boris Baueumer)

PhD, Fredrik Lindgren, Numerical Methods for Stochastic PDEs, Chalmers/Goteborg University, Sweden, enrolled: **2007**, completion target: **2012** (joint supervision with Prof. Stig Larsson)

MSc, Aishajiang Abuding, Finite Element Simulations of Stochastic Partial Differential Equations, Chalmers/Goteborg University, Sweden, **2006**, completed: **2007** (joint supervision with Prof. Stig Larsson)

MSc, Fredrik Lindgren, On Numerical Simulation of Stochastic Partial Differential Equations, Chalmers/Goteborg University, Sweden, **2006**, completed: **2007** (joint supervision with Prof. Stig Larsson)

8. Distinctions

Recipient of the *2010 Early Career Award for Mathematical Research* of the New Zealand Mathematical Society

Invited plenary speaker at “The First Conference of PhD Students in Mathematics”, 29 June – 2 July 2010, Bolyai Institute, University of Szeged, Hungary

Invited participant at the workshop on “Stochastic Partial Differential Equations: Approximation, Asymptotics and Computation”, 28 June - 2 July 2010, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK

Invited reviewer for the Mathematical Reviews of the American Mathematical Society, 2009-

Invited lecturer to deliver a mini course on “The semigroup approach for stochastic evolution equations and their finite element approximation”, November 2009, International Graduate College, University of Bielefeld, Germany

Invited plenary speaker at the “Third Workshop on Random Dynamical Systems”, November 18-20, 2009, University of Bielefeld, Germany

Invited keynote speaker at “Workshop on Stochastic Partial Differential Equations”, August 24-28, 2009, TU Darmstadt, Germany

Scientific Award of the Miskolc Regional Mathematics and Physics Committee of the Hungarian Academy of Sciences, Hungary, November 2004

9. Teaching Activities

(a) Range and level of teaching (Last three years only)

Lecturer for MATH160/102 (Calculus)

Lecturer for MATH361 (Real Analysis)

Lecturer for MATH405 (Analysis II)

Supervisor for the MATH480 Honours project for Padarn Wilson, completed at the end of Semester 1 2010.

Lectured half of the PhD level course: Introduction to Stochastic Partial Differential Equations at Chalmers/Goteborg University, Sweden

11. Publications

(b) Book Chapters

1. *Subordinated multiparameter groups of linear operators: Properties via the transference principle*, (with Boris Baeumer and Mark Meerschaert), *Functional Analysis and Evolution Equations: Dedicated to Gunter Lumer* (2008), 35–50.

(c) Refereed Journal Articles

1. *Finite element approximation of the linear stochastic wave equation with additive noise* (with S. Larsson, and F. Saedpanah), *SIAM J. Numer. Anal.* 48(2) (2010), 408-427.
2. *Strong convergence of the finite element method with truncated noise for semilinear parabolic stochastic equations with additive noise*, (with Stig Larsson and Fredrik Lindgren), *Numer. Alg.* 53(20) (2010), 309–320.

3. *Rate of weak convergence of the finite element method for the stochastic heat equation with additive noise*, (with Stig Larsson and Matthias Geissert), B.I.T. 49(2) (2009), 343–356.
4. *Unbounded functional calculus for bounded groups with applications*, (with Boris Baeumer and Markus Haase), J. Evol. Eq. 9 (2009), 171–195.
5. *Numerical solutions for fractional reaction-diffusion equations*, (with Boris Baeumer and Mark Meerschaert) Comp. Math. Appl. 55 (2008), 2212–2226.
6. *On the inverse Laplace-Stieltjes transform of A -stable rational functions*, (with Frank Neubrander), New Zealand J. Math. 6 (2007), 41–56.
7. *Fractional reproduction-dispersal equations and heavy tail dispersal kernels*, (with Boris Baeumer and Mark Meerschaert), Bull. Math. Biol. 69(7) (2007), 2281–2297.
8. *On the convergence of rational approximations of semigroups on intermediate spaces*, Math. Comp. 76 (2007), 273–286.
9. *Ultrafast subordinators and their hitting times*, (with Mark Meerschaert) Publications de l'Institut Mathématique 80(94) (2006), 193–206.
10. *A remark on the norm of integer order Favard spaces*, Semigroup Forum 71 (2005), 462–470.
11. *On the maximum norm of the restricted denominator approximations*, Comp. Math. Appl. 50 (2005), 1115–1123.
12. *On positivity, shape and norm-bound preservation for time-stepping methods for semigroups*, J. Math. Anal. Appl. 304 (2005), 115–136.
13. *On the maximum norm contractivity of second order single step methods*, (with I. Farago) Calcolo 40 (2002), 91–108.
14. *Reachability of nonlinear fed-batch fermentation processes*, (with G. Szederkeny and K. M. Hangos) Int. J. Robust Nonlin. Control 20 (2002), 1109–1124.
15. *The surface aerodynamic transfer parameterization method SAPA: description and performance analyses*, (with F. Acs) Idojaras (Quarterly Journal of the Hungarian Meteorological Service) 105 (2001), 165–182.
16. *Stochastic Regular Splitting and its application to iterative methods*, (with I. Farago) Pure Math. Appl. 11 (2000), 219–230.
17. *Ergodic Markov chains and their applications* (in Hungarian), (with I. Farago) Alkalmazott Matematikai Lapok (Applied Mathematics Letters) 20 (2000), 149–164.

(d) Non-refereed Journal Articles and Reports not included elsewhere

1. Finite element approximation of the Cahn-Hilliard-Cook equation (with S. Larsson, and A. Mesfoursh) *Preprint 2010:18, Department of Mathematical Sciences, Chalmers University of Technology*.
2. Spatial approximation of stochastic convolutions (with S. Larsson, and F. Lindgren) *Preprint 2009:21, Department of Mathematical Sciences, Chalmers University of Technology*.
3. Weak convergence of finite element approximations of linear stochastic evolution equations with additive noise (with S. Larsson, and F. Lindgren) *Preprint 2009:37, Department of Mathematical Sciences, Chalmers University of Technology*.

4. *Introduction to stochastic partial differential equations*, (with S. Larsson) lecture notes, 2008, to appear in the proceedings of "New Directions in the Mathematical and Computer Sciences", National Universities Commission, Abuja, Nigeria, October 8-12, 2007.

(h) Other Significant Conference Involvement

Finite element approximation of the Cahn-Hilliard-Cook equation, NZMS Colloquium 2010, Dunedin, New Zealand, December 2010 conference abstract

An introduction to fractional calculus, (invited plenary speaker), The First Conference of PhD Students in Mathematics, Bolyai Institute, University of Szeged, Hungary, July 2010, conference abstract

Finite element approximation of the stochastic wave equation, (invited plenary speaker), Third Workshop on Random Dynamical Systems, University of Bielefeld, Germany, November 2009, conference abstract

Strong, weak and a posteriori error analysis of the finite element method for parabolic and hyperbolic stochastic equations, (invited keynote speaker), Workshop on Stochastic Partial Differential Equations, TU Darmstadt, Germany, August 2009, conference abstract

Unbounded functional calculus for bounded groups with applications, 7th Australia New Zealand Mathematics Convention, Christchurch, New Zealand, December 2008, conference abstract

Strong convergence estimates for the semi-discrete finite element method with truncated noise for parabolic stochastic equations, GLADE 2008 conference, Auckland, New Zealand, July 2008, conference abstract

Rate of weak convergence of the finite element method for the stochastic heat equation with additive noise, FoCM'08 conference, Hong Kong, China, June 2008, conference abstract

Strong and weak error of the finite element method for stochastic PDEs, Encounters between continuous and discrete mathematics, workshop, Heinrich-Fabri Institut, Blaubeuren, Germany, April 2008, conference abstract

Finite element solution of stochastic partial differential equations, Budapest-Tubingen workshop on Evolution Equations, Dobogoko, Hungary, March 2007, conference abstract

A fractional diffusion model for dispersal of airborne seeds and operator splitting, International Symposium on Fractional Calculus, University of Otago, Dunedin, New Zealand, January 2006, conference abstract

Hille-Phillips functional calculus and numerical methods, Mathematics Colloquium, Massey University, Palmerston North, New Zealand, December 2005, conference abstract

Qualitative Properties of time-discretization schemes for semigroups. Differential Equations Weekend, University of Memphis, September 2002, conference abstract

On the maximum norm of the restricted denominator approximations, Euro Conference on Numerical Methods and Computational Mechanics, Miskolc, Hungary, July 2002, conference abstract

Mixed method to the numerical solution of differential equations in Hilbert space, Fourth Joint Conference on Mathematics and Computer Science, Felix-Furdo, Romania, June 2001, conference abstract

A surface aerodynamic transfer parameterization method. Numerical studies for different stability regimes, (with F. Acs) Geophysical Research Abstracts 2 (2000)

Localization of pollutant distribution in random environment, (with G. Vattay) Geophysical Research Abstracts 1 No. 2 (1999), p. 274.

Numerical simulation of scalar fields in random environment, microCAD '99 Conference Proceedings, Section for Modern Numerical Methods (1999), 37–42.

(c) **University Service (not listed elsewhere)**

(a) Significant positions held within Department/School/Division

Director of studies 100-level Mathematics, Mathematics & Statistics Department, University of Otago, 2010-

Member of the Mathematics Curriculum Review Committee, Mathematics & Statistics Department, University of Otago, 2010

Organizer of the departmental mathematics seminar series, Mathematics & Statistics Department, University of Otago, 2008-2010

Member of the Hiring Committee for lecturer/senior lecturer in pure mathematics of the Mathematics & Statistics Department, University of Otago, 2009-2010 (A09/96)

Member of the Hiring Committee for postdoctoral fellow in pure mathematics of the Mathematics & Statistics Department, University of Otago, 2009-2010 (A09/178)

Member of the Hiring Committee for lecturer/senior lecturer in applied mathematics of the Mathematics & Statistics Department, University of Otago, 2008-2009 (A08/185)

Member of the Research Committee of the Mathematics & Statistics Department, University of Otago, 2008

Member of the Hiring Committee for postdoctoral fellows of the Mathematics & Statistics Department, University of Otago, 2008-2009

(d) **Professional Activities**

(b) Service to External Academic and Professional Activities

(i) Service to, or leadership in, academic discipline or professional associations

Member of the organizing committee for the 2010 New Zealand Mathematics Colloquium to be held in Dunedin, December 2010

Member of the organizing committee (treasurer) for the ANZIAM 2010 conference held in Queenstown, 1 February 2010- 4 February 2010

Reviewer for various scholarly journals and conference proceedings: J. Comp. Phys., J. Math. Anal. Appl., Comp. Math. Appl., Semigroup Forum, Appl. Num. Math., IFAC 2008, Numer. Algor., Gazette of the AustMS., J. Comput. Appl. Math., Physica A, J. Evol. Eq., Nonlin. Anal. Series A,

Reviewer for the Mathematical Reviews of the American Mathematical Society, 2009-

(e) **Community Service**

(a) Continuing Education, Community Debate and Community Development

(ii) Conferences, seminars, and workshops.

Service at the 2007 and 2008 Science Festival at the Mathematics display