CV

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Current workplace: Fachbereich Mathematik, AGF, Technical University Darmstadt, Schlossgartenstraße 7, 64289 Darmstadt.

1. Education:

1993-1997 Undergraduate studies at Uppsala University.
1998-2005 Graduate studies in mathematics at Uppsala University, Dept. of Math. with Prof. Dennis A. Hejhal (UU and University of Minnesota) as thesis supervisor.

2. Degrees:

1998-01-21 Master of Science in Mathematics (with Physics as secondary subject).
2000-06-02 Filosofie licentiate degree in Mathematics. Thesis title: "On the Zeros of Linear Combinations of K-Bessel Functions". Thesis supervisor: prof. Dennis Hejhal.
2005-03-22 PhD in Mathematics. Thesis title: "Computational Aspects of Maass Waveforms". Thesis supervisor: prof. Dennis Hejhal.

3. Current and previous positions

1106-1203 Research Assistant (wiss. Mitarbeiter), TU Darmstadt
1101-1105 Postdoctoral Fellow, MSRI, Berkeley.
0804-1012 Research Assistant (wiss. Mitarbeiter), TU Darmstadt
0506-0803 Research Assistant (wiss. Mitarbeiter), Inst. of Theor. Phys. TU-Clausthal.
0502-0505 Researcher (50%), Dept. of Math. Uppsala University.
0209-0412 Lecturer (50%), Dept. of Math. Uppsala University.
9901-0209 Graduate student position, Dept. of Math. Uppsala University.
9707-9812 Graduate student with stipend, Dept. of Math. Uppsala University.

4. Publications

4.1. **Publications.**

- On the Rankin convolution of Siegel Cusp Forms of degree two (joint with N.-P. Skoruppa and N. Ryan), 2009. Accepted for publication in Math. Comp., 2011.

- The Transfer Operator for the Hecke Triangle Groups, (j/w Dieter Mayer and Tobias Mühlenbruch), 2010. Accepted for publication in the Journal for Discrete and Continous dynamical systems.
- Symbolic Dynamics for the geodesic flow on Hecke surfaces (joint with Dieter Mayer), Journal of Modern Dynamics, Vol. 2, No. 4, 2008.
- Computation of Maass Waveforms with Non-trivial Multiplier Systems. Math. Comp, Vol. 77, 2008.
- Hecke Operators for Maass Waveforms on $\mathrm{PSL}(2,\mathbb{Z})$ with Integer Weight and Eta Multiplier, International Mathematics Research Notices, Vol. 2007. 2007:rnm062-25.
- Computational Aspects of Maass waveforms (PhD Thesis), Uppsala Dissertations in Mathematics 39.
(http://www.diva-portal.org/diva/getDocument?urn_nbn_se_uu_diva-4778__fulltext.pdf).
- Maass waveforms on $(\Gamma_0(N),\chi)$ (Computational aspects), Proceedings of the "International school on Mathematical Aspects of Quantum Chaos II", Lecture Notes in Physics, Springer, to appear.
- On the Zeros of Linear Combinations of K-Bessel Functions (Licentiate Thesis), U.U.D.M. Report 2000:15.
- Iterated Function Systems, the chaos game and invariant measures (Masters Thesis), U.U.D.M. Report 1997:35.

4.2. **Preprints.**

- Weil representation associated to finite quadratic modules, preprint, arXiv:1108.0202.
- Newforms and Spectral Multiplicity for $\Gamma_0(9)$, preprint, arXiv:1106.5741.
- Computation of harmonic weak Maass forms (joint with Jan H. Bruiner), arXiv:1101.3190.
- Noncongruence subgroups of $\mathrm{PSL}_2(\mathbb{Z})$ and Maass waveforms: Computational aspects, preprint (2009).
- Computations of Selberg zeta functions on Hecke triangle groups, arXiv:0804.4837v1 (2008).

5. Invited Talks

- March 7, 2011, MSRI, Berkeley, USA. Postdoc seminar. Talk: "On multiplicities and newforms for $\Gamma_0(9)$".
- September 28, 2010, Siegen, Germany. Kolloquium Talk: "On theoretical and computational aspects of the Weil representation".
- August 31, 2010, Durham, UK. Durham Days on Modular Forms. Talk: "On some liftings from half-integral weight, scalar-valued modular forms to vector-valued modular forms".
- May 27, 2010, KTH, Stockholm, Sweden. Finnish - Swedish Number Theory Conference. Talk: "On multiplicities and newforms for $\Gamma_0(9)$".
- May , 2010, Lille, France. Seminar Talk: "On multiplicities and newforms for $\Gamma_0(9)$".
- January 19, 2010, Humboldt University, Berlin. Forschungsseminar "Arithmetische Geometrie", Talk: "On newforms and multiplicity of the spectrum for $\Gamma_0(9)$".
- September 30, 2009, AKLS seminar on automorphic forms, Siegen, Germany. Talk: "On computational aspects of vector-valued Poincaré series for the Weil representation".

- June 22-26, 2009, CRM Montreal, SMS Summerschool “Automorphic Forms and L-functions: Computational Aspects”. Lecture series: “Maass waveforms for $\mathrm{SL}_2(\mathbb{Z})$ and subgroups, from a computational point of view”.
- March 25, 2009, Queen Mary University of London, UK. Workshop: “Dynamical Systems and Quantum Mechanics". Talk: “A dynamical approach to the Selberg zeta function”.
- March 12, 2009, Bucknell University, Lewisburg, USA, Annual workshop on automorphic forms and related topics. Talk: “On computations of vector-valued Poincaré series for the Weil representation”.
- December 8, 2008, Uppsala University, Sweden. Workshop in honour of Dennis Hejhal on the occasion of his 60th birthday. Talk: “On computations of vector-valued Poincaré series and harmonic weak Maassforms”.
- August 18, 2008, University of Bristol, UK. Workshop: “Computations of Modular forms”. Talk: “Computations of (non-holomorphic) automorphic forms on GL_2”.
- February 21, 2008, MPIM Bonn, 2nd Japanese-German Number Theory Workshop. Talk: “Computations of Selberg Zeta functions for Hecke Triangle Groups”.
- September 27, 2007, Ryukyu university, Okinawa, Japan. Talk: “Symbolic Dynamics for the Geodesic Flow on Hecke Triangle Surfaces”.
- April 4, 2007, AKLS seminar on automorphic Forms, Aachen, Germany. Talk: “Hecke Operators for $\mathrm{PSL}(2,\mathbb{Z})$ with integer weight and non-trivial multiplier”.
- March 27, 2007. Annual meeting of the German mathematical society (DMV-Tagung), Berlin, Germany. Talk in the mini symposium *Automorphe Formen und Automorphe Darstellungen:* “Hecke Operators for $\mathrm{PSL}(2,\mathbb{Z})$ with integer weight and non-trivial multiplier”.
- September 4, 2006. DNA Seminar, Uppsala University, Sweden. “Transfer Operators for Hecke Triangle Groups.”
- April 25, 2006, Arithmatrix conference, Bordeaux, France. Conference talk: “Transfer Operators for Hecke Triangle Groups.”
- April 14, 2005, DNA Workshop, KTH, Sweden. “Computational Aspects of Maass waveforms with non-trivial multiplier systems.”
- May 4, 2004, Workshop on Spectral Theory and Automorphic Forms, CRM, Montreal, Canada. Workshop talk on ”Computational Aspects of Maass waveforms with non-trivial multiplier systems.”
- October 4-11, 2003. Mathematical Aspects of Quantum Chaos II "Quantum Chaos on Hyperbolic Manifolds", Schloss Riesensburg, Germany. Talk on “Computational aspects of Maass waveforms”.

6. Other research activities

I have been invited (without giving talks) to the workshops “L-functions and modular forms” (July 2007), “Computing arithmetic spectra” (March 2008) and “Noncongruence modular forms” (August 2009) all taking place at the American Institute of Mathematics (AIM) in Palo Alto.

I am a senior member of the NSF FRG (Focused Research Group) “L-functions and Modular Forms” .

7. Teaching experience and other pedagogical work:

This is a list of courses I have taught at Uppsala University, Dept. of Math.:

- Calculus of one variable, problem sessions, Fall 1997
- Basic algebra, lectures and problem sessions, Fall 1998
- Linear algebra , lectures and problem sessions, Fall 1998
- Fractal geometry , lectures, Summer 2001 and 2002
- Calculus of one and several variables (for biology and chemistry majors), lectures and problem sessions, Fall 2002
- Basic algebra, lectures and problem sessions, Spring 2003
- Ordinary Differential Equations, lectures and problem sessions, Spring 2003
- Fuchsian groups and Automorphic Functions, lectures, Summer 2003
- Basic algebra, lectures and problem sessions, Fall 2003.
- Basic algebra, Spring 2004.
- Ordinary Differential Equations, lectures and problem sessions, Spring 2004

At TU Clausthal I have been assistant for the following courses:

- Mathematical Methods in Theoretical Physics, Winter 2005/6.
- Electrodynamics, Summer 2006.
- Classical Mechanics, Winter 2006/7.
- Statistichal Physics and Thermodynamics, Summer 2007.

At TU Darmstadt I have been assistant for the following courses:

- Linear Algebra II.
- Higher Mathematics I and II (for engineering students with major in chemistry).

Courses I have developed:

- Fractal geometry
- Fuchsian groups and automorphic functions

Pedagogical projects I have worked with:

- Course connection between mathematics and chemistry for the civil engineering program
- Web course in applied mathematics for high school teachers in mathematics and graduate students in areas other than mathematics.