

Curriculum Vitae – Andreas Strömbergsson

Contact information:

Department of Mathematics
Uppsala University
Box 480
S-751 06 Uppsala, Sweden
email: astrombe@math.uu.se
Website: <http://www.math.uu.se/~astrombe/>
Telephone: 018-4713221
Fax: 018-4713201

Education:

1995 *B.Sc.*, Mathematics, Uppsala University.

1998 *Filosofie licentiatexamen*, Mathematics, Uppsala University.
Licentiat Thesis: *The Selberg Trace Formula for Modular Correspondences*, UUDM Report 1998:32, 56 pp.

2001 *Ph. D.*, Mathematics, Uppsala University.

Thesis: *Studies in the Analytic and Spectral Theory of Automorphic Forms*.

Academic positions:

Lecturer, Uppsala University, July 2008 –

Royal Swedish Academy of Sciences Research Fellow, 2007–2012.

(On parental leave August 2006 - January 2007.)

Appointed Docent by Uppsala University, October 2005.

Assistant Professor (“Forskarassistent”), Uppsala University, 2003 – 2007.

Senior Visiting Fellow, Newton Institute, University of Cambridge, U.K., January - March, 2004

Visiting Research Fellow, (STINT Postdoc Stipend), Princeton University, USA, 2002 – 2003

Research Assistant, University of Bristol, U.K., 2001 – 2002.

Awards:

The Royal Swedish Academy of Sciences, 5-year research fellowship, awarded 2006.

The Wallenberg prize, 2005 (awarded by the Swedish mathematical society).

Results in competitions:

IMO (International Mathematical Olympiad): Bronze 1990, Silver 1991, Silver 1992.

IOI (International Olympiad in Informatics): Silver 1991.

Swedish mathematical competition: Fourth prize 1989, First prize 1990.

Swedish informatics competition : First prize (shared) 1991, First prize (shared) 1992.

Swedish physics competition: Second prize 1992.

Workshop organization:

March 10-14, 2008, American Institute of Mathematics, co-organizer (joint with Andrew Booker, Sally Koutsoliotas, Stefan Lemurell) of the workshop “Computing Arithmetic Spectra”.

December 10-12, 2008, Uppsala University, organizer of the workshop “Automorphic forms, number theory, and computation”, Workshop in honour of Dennis Hejhal on the occasion of his 60th birthday.

June 22 – July 3, 2009, Centre de recherches mathématiques (Montreal, Canada), principal organizer (joint with Michael Rubinstein) of the NATO Advanced Study Institute: “Modular forms: computational aspects”.

Publications:

(all available on www.math.uu.se/~astrombe/papers/papers.html)

1. *On the Zeros of L-functions Associated to Maass Waveforms*, Inter. Math. Res. Notices **15** (1999), 839–851.
2. *Some Remarks on a Spectral Correspondence for Maass Waveforms*, Inter. Math. Res. Notices **10** (2001), 505–517.
3. (with Dennis Hejhal) *On quantum chaos and Maass waveforms of CM-type*, Foundations of Physics **31** (2001), 519–533.

4. (with Jens Marklof) *Equidistribution of Kronecker Sequences along closed horocycles*, GAFA **13** (2003), 1239-1280.
5. *On the Uniform Equidistribution of Long Closed Horocycles*, Duke Math. J. **123** (2004), 507–547.
6. (with Akshay Venkatesh) *Small solutions to linear congruences and Hecke equidistribution*, Acta Arith. **118** (2005), 41–78.
7. (with Peter Sarnak) *Minima of Epstein’s Zeta Function and Heights of Flat Tori*, Invent. Math. **165** (2006), 115–151.
8. (with Andrew Booker and Akshay Venkatesh) *Effective computation of Maass Cusp forms*, IMRN 2006, Article ID 71281, 34 pages.
9. (with Andrew Booker) *Numerical computations with the trace formula and the Selberg eigenvalue conjecture*, J. Reine Angew. Math. **607** (2007), 113–161.
10. (with Jens Marklof) *The distribution of free path lengths in the periodic Lorentz gas and related lattice point problems*, to appear in the Annals of Mathematics.
11. (with Jens Marklof) *Kinetic transport in the two-dimensional periodic Lorentz gas*, Nonlinearity **21** (2008), 1413-1422.
(Also selected to appear in IOP Select, <http://Select.iop.org>)

Preprints:

12. (with Jens Marklof) *The Boltzmann-Grad limit of the periodic Lorentz gas*, submitted.

Conferences, invited talks:

September 12–14, 2001, LMS Regional Meeting and Workshop, University of Bristol, U.K., Zeta Functions, Random Matrices and Quantum Chaos. Workshop talk: “Uniform equidistribution of long closed horocycles”.

April 7–12, 2002, Joint British Mathematical and Applied Mathematical Colloquium, University of Warwick, U.K. Talk in Special Session on Dynamical systems: “On the equidistribution of non-closed horocycles”.

August 5–14, 2002, Foundations of Computational Mathematics, University of Minnesota, USA. Talk in workshop on computational number theory: “Numerical computation of modular forms”.

October 26–27, 2002, AMS Sectional Meeting, Salt Lake City, USA.

Talk in special session on analytic number theory: “The pair correlation function of $n^2\alpha$ modulo one and an equidistribution problem in hyperbolic geometry”.

January 15–18, 2003, AMS National Meeting, Baltimore, USA. Talk in special session on Computational Algebraic and Analytic Geometry for Low-dimensional Varieties: “Numerical computation of modular forms, with applications to Riemann surfaces”.

June 13–18, 2004, American Institute of Mathematics, Workshop on Emerging applications of measure rigidity. Talk: “Equidistribution of Kronecker sequences along closed horocycles”.

June 28 – July 2, 2004, Newton Institute, University of Cambridge, U.K., Workshop on Random Matrix Theory and Arithmetic Aspects of Quantum Chaos. Talk: “Numerical computations with the trace formula and the Selberg eigenvalue conjecture”

August 16–20, 2004, American Institute of Mathematics, Workshop on Sphere Packings, Lattices, and Infinite Dimensional Algebra. Talk: “Minima of Epstein’s Zeta Function”.

April 24–28, 2006, Université Bordeaux I, France, Conference on Arithmetic Aspects of Quantum Chaos and Random Matrices. Talk: “Effective Ratner equidistribution on $ASL(2, \mathbb{R})$ ”.

June 5–8, 2006, University of Rochester, USA., Conference on Advances in Number Theory and Random Matrix Theory. Talk: “Numerical computations with the Selberg trace formula”.

July 3–7, 2006, University of Bristol, U.K., workshop on Effective Equidistribution. Talk: “Effective Ratner equidistribution on $ASL(2, \mathbb{R})$ with some applications”.

December 1–2, 2006, Uppsala University, Sweden, Swedish Mathematical Society’s Fall meeting, **Keynote speaker**. Talk: “Några samspel mellan talteori och dynamiska system” (“Some connections between number theory and dynamical systems”).

March 10-14, 2008, American Institute of Mathematics, Workshop on Computing Arithmetic Spectra. Talk: “Numerical computations with the Selberg trace formula”.

December 10-12, 2008, Uppsala University, “Automorphic forms, number theory, and computation”. Talk: “Rigorous computation of Maass forms”.

June 22 – July 3, 2009, CRM (Montreal, Canada), 3 hours mini-course on “Computations Using the Selberg Trace Formula”.

Teaching and supervising:

Uppsala university, 1995–1999: Teaching assistant in several undergraduate courses in mathematics, including *calculus* (one and several variables), *linear algebra*, *complex analysis*, *abstract algebra*, *combinatorics*.

Uppsala University 2000 and 2003–2004: Taught *Abstract algebra*, *Information and coding theory*, *Matematik MN2* (undergraduate level courses).

Uppsala University, spring 2005 and spring 2006: Taught *Functional analysis* (a graduate level course).

Deputy leader of the Swedish team at the International Mathematical Olympiad 1993–2000 (except 1996).

Member of the problem committee for the Swedish mathematical competition 1993–2004.

Supplementary advisor of PhD student Fredrik Strömberg since October 2003. (Main advisor: Dennis Hejhal. PhD thesis defended March 2005; *Computational Aspects of Maass Waveforms*.)

Supplementary advisor of PhD student Björn Selander since February 2005 (Main advisor: Karl-Heinz Fiesler. PhD thesis defended March 2007; *Arithmetic of three-point covers*.)

Supplementary advisor of PhD student Pierre Bäcklund since February 2005 (Main advisor: Andreas Juhl. PhD thesis: *Automorphic Distributions and Selberg Zeta Functions*. Bäcklund’s PhD defence will take place 11 June 2008.)

Main advisor of PhD student Helen Avelin since March 2005. (PhD thesis defended 2 November 2007: *Computations of Automorphic Functions on Fuchsian Groups*.)

Main advisor of PhD student Anders Södergren since July 2005. Phd defence expected in fall 2010.

Service:

Referee assignments for Amer. J. Math., Ark. Mat., Duke Math. J., Forum. Math., IMRN, Inventiones, J. Geom. Anal., J. Number Theory, Proc. Amer. Math. Soc., and various conference proceedings.

Member of committee for Phd defence of Anders Pelander, Uppsala University, March 2007.

Member of committee for Phd defence of Jimi Lee Truelsen, Aarhus University (Denmark), August 2009.

Expert reviewer of Phd thesis of Eeva Suvitie, Turku University (Finland), October 2009.