

Morten S. Risager

Curriculum Vitae

April 4, 2025

Department of Mathematical Sciences
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Research Interests

Analytic and probabilistic number theory, Hyperbolic lattice counting problems, Modular symbols, Spectral theory of automorphic forms, Eisenstein series, Spectral deformations, Quantum chaos, Mathematical physics, Riemann surfaces, Free groups, Lattice theory.

Education

Ph.D., Mathematics, June 18th 2003. University of Aarhus. Advisors: E. Balslev and A. B. Venkov. Thesis: *Automorphic forms and modular symbols*.

Cand. Scient., Jan 2001. University of Aarhus. Mathematics (major) and Philosophy (minor).

Employment

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|----------------|---|
| 4/2018–present | Professor at the Dept. of Mathematical Sciences, University of Copenhagen. |
| 7/2009–3/2018 | Associated professor at the Dept. of Mathematical Sciences, University of Copenhagen. |
| 8/2008–6/2009 | Assistant professor at University of Copenhagen. |
| 8/2005–7/2008 | Steno Research Fellow at University of Aarhus. |
| 8/2004–7/2005 | Member at Institute for Advanced Study, Princeton. |
| 8/2003–7/2004 | Assistant professor (Adjunkt) at University of Aarhus. |
| 6/2003–7/2003 | Post Doc at Network in Mathematical Physics and Stochastics (MaPhySto), Aarhus. |
| 1/2002–7/2002 | Visiting scholar at Max Planck Institut for Mathematics in Bonn. |

Grants etc.

I have received grants totalling 3,5 million € (including overhead). I have been the principal investigator on grants totalling 2,6 million € (including overhead).

- Project “Correlations, arithmetic, and periods”, DFF-FNU (2023-2028) – 826K €.
- Project “L-functions”, DFF-FNU (2017-2020) – 292K €. Extended to 2022 due to CoVid19.
- Individual Sapere Aude grant “Automorphic forms and deformation”, DFF (2012-2016) – 1060K €.
- Professor T. Bonnesen and wife’s award (2011) – 200 €.
- Participant in project “Arithmetical group actions on symmetric spaces”, FNU (2011-2013) – 426K €.
- Participant in project “Spherical functions”, FNU (2009-2011) – 470K €.
- Copenhagen University Faculty Research Grant (2008-2009) – 134K €.
- Steno Individual Research Grant, FNU (2005-08) – 235K €.
- Carlsberg Individual Research Grant (2004-05) – 47K €.

Collaborators

Y. Petridis, University College London, UK (14 papers).
 N. Raulf, Université de Sciences et Technologies de Lille, France (2 papers).
 C. O’Sullivan, BCC & CUNY, New York, USA (1 paper).
 N. Laaksonen, Alfréd Rényi Inst of Math, Budapest, Hungary (1 paper).
 G. Cherubini, INdAM/La Sapienza, Rome, Italy (1 paper).
 Z. Rudnick, Tel-Aviv University, Israel (1 paper).
 R. Sharp, University of Warwick, UK (1 paper).
 A. Södergren, Chalmers institute, Gothenburg, Sweden (1 paper).
 O. Balkanova, Khabarovsk Division of the Institute for Applied Math, Far Eastern Branch and Steklov Institute, Moscow, Russia (1 paper).
 D. Frolenkov, Steklov Institute, Moscow, Russia (1 paper).
 A. Nordentoft, University of Copenhagen, Denmark (2 paper).
 N. Matthes, University of Copenhagen, Denmark (1 paper).
 I. Shparlinski, Uni. of N. South Wales, Australia (1 paper in preparation).
 V. Blomer, University of Bonn, Germany (1 paper in preparation).
 S. Lester, King’s College London, UK (1 paper in preparation).
 D. Chatzakos, University of Patras, Greece (1 paper in preparation).

Students etc.

Postdocs

Keshaw Aggawal (2023-2024)
 Nils Matthes (2021-2022).
 Oscar Marmon (2015-2017).
 Niko Laaksonen (2015–2016 (3 months)).
 Piotr Maciak (2014–2017).
 Anders Södergren (2013-2016).

PhD

Alf Söderberg, 2024–
Asbjørn Nordentoft, On arithmetic statistics and periods of automorphic forms, 2016–2020, won SCIENCE PhD Award of the year for outstanding thesis, 1st postdoc at Universität Bonn.

Giacomo Cherubini, Studies in the hyperbolic circle problem, 2013–2016. 1st postdoc at MPI, Bonn.

Flemming von Essen, Automorphic forms - Multiplier Systems and Taylor Coefficients, 2011–2014.

Jimi Lee Truelsen, Distribution results in automorphic forms and analytic number theory, 2005 – 2009. Received 2008. the Elite researchers travel award from the Danish Minister of Science, Technology and Development. 1st. postdoc in Cambridge.

Master projects

Alexander Specht, 2024, An experimental investigation of the error term in the Gauss circle problem , (j.w. S. Eilers)

Nikoline Hyllested, 2023, The ABC-Conjecture and its applications

Nicholas Arnvig, 2023, Hyperbolic lattice points

Line Jensen, 2022, The Lindelöf hypothesis for admissible sequences

Jasmin Karina Øder Madsen, 2021, Vinogradov's 3-prime theorem

Gustav Torp, 2021, Selberg's central limit theorem for the Riemann zeta function

Lasse Nøhr Henriksen, 2021, The L -function of a Maass form

Jasmin Karina Øder Madsen, 2020, Zeroes of L -functions (project)

Patrick Dinesen, 2019, Taylor coefficients for Ramanujan's Delta function (j.w. S. Eilers)

Mads Friis Frand-Madsen 2018, Equidistribution of zeroes

Kasper Bro Møller, 2017, Optimal sphere packings.

Jens Siegstad, 2016, The Selberg trace formula.

Camilla Frantzen, 2014, The Bombieri-Vinogradov theorem.

Christina Slaatorn, 2013, Vinogradov's three prime theorem.

Bo Malling Christensen, 2012, The Lindelöf Conjecture.

Martin Damhus & Rune Bak, 2008, Tate's thesis. (project)

Bachelor

Rafei Malik, p -adiske tal, 2025

Albert Jels Eilgaard, Modulære former og deres L -funktioner, 2024

Oscar Neerup Breiø, Modular forms and their L -functions ,2023

Sebastian Davidsen Nørregaard, The Prime Number Theorem and the functional equation for ζ , 2023

Niklas Ellelund Hansen, P -adiske tal, 2023

Sofie Faxholm, AKS-primtalstesten, 2023

Oliver Wagner, 2022, Legemet af p -adiske tal

Laura Obel, 2022, Primes in Arithmetic Progression

Victoria Snow, 2022, The prime number thm and Riemann's zeta fct.

Katrine Laursen, 2022, Dirichlets klassetalsformel

Gunn Joensen, 2022, Primtalssætningen

Christian Jensen, 2022, Primtalssætningen

Stine Langhede, 2022, p -adiske tal

Bertram Koch-Larsen, 2021, Constr. and study of p -adic numbers

Nanna Wiberg Nielsen, 2021, Modular forms

Nikoline Hyllested Andersen, 2021, Primes in arithmetic progression

Esben F. Ydesen, 2020, Modular forms and the partition function

Mathias Kirkeby, 2020, The functional equation for Riemann's zeta
 Frederik Weber Wellendorf, 2019, p -adic numbers
 Karoline Amalie Trond Reich, 2019, Gauss' circle problem
 Line Lindholm Jensen, 2019, The prime number theorem
 Rasmus Goddixsen Graabæk, 2019, Modular forms
 Stine Valgreen, 2018, Sieve methods, and twin primes.
 Rasmus Brammer, 2018, Primes in arithmetic progression.
 Erik Lange, 2018, The prime number theorem
 Jasmin Madsen, 2017, p -adic numbers.
 Helle Bertelsen, 2017, p -adic number.
 Astrid Mortensen, 2016, The AKS algorithm.
 Sebastian T. Holdum, 2016, Weyls law and the Gauss' circle problem.
 Asbjørn Nordentoft, 2015, Gaps between primes.
 Anders Aagaard, 2015, The Bombieri-Vinogradov theorem.
 Bjarke Østergaard Nielsen, 2015, Dirichlets unit theorem.
 Hector Hougaard, 2015, The Hasse-Minkowski theorem.
 Rikke Langhede, 2014, Higher reciprocity laws.
 Mathilde Kjær Pedersen, 2014, The AKS algorithm.
 Kristoffer Holm Nielsen, 2014, Pell's equation and Archimedes' revenge.
 Mathis Elmgaard Isaksen, 2013, Phragmen Lindelöf Princippet.
 Freja Elbro, 2013, Modular forms.
 Nilin Abrahamsen, 2013, A central limit theorem for the free group.
 Niels Andreas Hvitved, 2011, Billing-Mahlers theorem.
 Peter Humphries, 2009, Elementary proof of the prime number theorem.
 Diana Bertelsen, 2007, The prime number theorem.
 Jesper Vejgaard Knudsen, 2006, Primes in Arithmetic Progressions.

Invited talks

2023	Arithm. Statistics, Autom. Forms and Ergodic Methods, MPI, Bonn, DE 1st Analytic number theory & autom. forms conference in Patras, Greece Dynamics and Asymptotics in Algebra and Number Th., Bielefeld, Germany Ganda workshop, Marseille, France
2022	International seminar on automorphic forms, (online) Budapest workshop on number theory, Budapest, Hungary Lausanne number theory days, Lausanne, Switzerland Bucharest number theory days, Bucharest, Romania Greek Algebra and Number theory seminar (online)
2021	Program on Number theory, Mittag-Leffler semester (online)
2020	Workshop Automorphic Forms and Arithmetic, Oberwolfach, Germany. Online Conference in Automorphic Forms, Budapest, Hungary
2019	Heilbronn seminar, Bristol, UK Analytic Number Theory week by GANDA, Johannesburg, South Africa

	Analytic and Algebraic aspects of Automorphic Forms, Bangalora, India Number theory seminar, Gothenburg, Sweden
2018	IMFUFA-seminar, Denmarks Technical University, Roskilde, Denmark Number theory seminar, ETH Zürich, Switzerland Elementare und Analytische Zahlentheorie (ELAZ), Max Planck institute for Mathematics, Bonn, Germany
2017	London number theory Seminar, Imperial college, London, UK. Workshop Automorphic Forms and Arithmetic, Oberwolfach, Germany. Nordic Number theory Network (\mathbb{N}^3) meeting 7, Stockholm, Sweden. Humboldt Universität, Berlin, Germany.
2016	Nordic math congress, Number theory session, Stockholm, Sweden. A. Rényi Institute of Mathematics, Hungarian Academy of Sciences, Bu- dapest, Hungary.
2015	Rencontre Daboussi, Institut Henri Poincaré, Paris, France. Kolloquium, University of Göttingen, Germany. Jahrestagung der DMV, Hamburg, Germany.
2014	Analytic number theory workshop, Turku, Finland.
2013	Arithmetic of modular forms and related topics, Copenhagen, Denmark.
2012	Automorphic forms and L -functions, IMAR, Bucharest, Romania. Holomorphic Day, Copenhagen, Denmark.
2011	Oberwolfach, Germany.
2010	75'th birthday conference for E. Balslev, University of Aarhus, Denmark. Number theory seminar, Humboldt Universität, Berlin, Germany.
2009	Birthday conference for R. Bruggeman, University of Utrecht, The Nether- lands. Number Theory Seminar, University of Copenhagen, Denmark.
2008	60'th birthday conference for D. Hejhal, University of Uppsala, Sweden. Number theory seminar, University of Bristol, England. Math Colloquium, University of Copenhagen, Denmark.
2007	Number theory seminar, University of Tel Aviv, Israel. DNA seminar, University of Uppsala, Sweden. Analysis seminar, University of Aarhus, Denmark.
2006	Kolloquium Mathematische Physik, Clausthal, Germany. Differential Geometry and Lie Theory Seminar. CUNY Graduate Center, USA.
2005	Number theory Lunch seminar, Max Planck institute for Mathematics, Ger- many. Math Colloquium, Lehigh U., USA. Number theory seminar, Johns Hopkins U., USA.

2004	Differential Geometry and Analysis Seminar. CUNY Graduate Center, USA. Workshop on Spectral Theory and Automorphic Forms, CRM, Montreal, Canada.
2003	Topology seminar, University of Aarhus, Denmark.
2002	Number theory lunch seminar, Max Planck institute for Mathematics, Germany.

Teaching

2024	Introduction to number theory, Introduction to the Mathematical Sciences (Calculus), Introduction to analytic number theory
2023	Introduction to number theory, Introduction to the Mathematical Sciences (Calculus)
2022	Introduction to number theory, Introduction to the Mathematical Sciences (Calculus), Introduction to analytic number theory
2021	Introduction to number theory, Introduction to the Mathematical Sciences (Calculus)
2020	Introduction to number theory, Introduction to the Mathematical Sciences (Calculus), Introduction to analytic number theory
2019	Introduction to number theory, Introduction to the Mathematical Sciences (Calculus)
2018	Advanced complex analysis, Introduction to number theory, Introduction to the Mathematical Sciences (Calculus), Introduction to analytic number theory
2017	Introduction to number theory
2016	Elementary number theory, Introduction to analytic number theory
2015	Elementary number theory, Fuchsian groups and number theory, Linear Algebra TA.
2014	Elementary number theory, Introduction to analytic number theory.
2013	Elementary number theory, Fuchsian groups and number theory.
2012	Introduction to analytic number theory,
2011	Linear Algebra, Fuchsian groups and number theory. Introduction to analytic number theory
2010	Linear Algebra , Elliptic curves
2009	Linear algebra, Introduction to Analytic number theory,
2008	Linear Algebra, Calculus TA
2006	Introduction to analytic number theory,
2005	Advanced analysis.

2004	In charge of the Mathematical Laboratory, University of Aarhus.
2003	In charge of the Mathematical Laboratory, University of Aarhus
1995-2002	Teaching Assistant at University of Aarhus: Mat. α , Mat. β , Mat 10 (Linear Algebra), Mat 11 (Calculus), Algebra, Analysis (Lebesgue theory and real analysis), Geometry, Complex Analysis.

Formal pedagogical training

2009	One year course “Higher Education Teaching and Teaching Practice Programme for assistant professors and post docs (KNUD)” at the University of Copenhagen
2006	Pedagogical course for mathematicians at Sandbjerg gods. 3 days. Organized by the University Educational Development Unit Aarhus.
2003	Pedagogics course for university lecturers at Sandbjerg gods. 4 days organized by the University Educational Development Unit Aarhus.

Professional services

Current

Department Junior Hiring committee (2024–)

Department PhD committee (2024–)

Department Faculty Board (2024–)

Department PhD coordinator (2016–)

Department Teaching Committee (2009–)

Former

Young staff teaching mentor (2017–2023)

Freshman VIP mentor (2016–2023)

Department Research Committee (2016–2023)

University Student Grant Board (2010–2019). Head 2016-2019

Department Travel Committee (2014–2016)

Department Council (2013–2017)

Department Library Committee (2010–2016). Head 2015–2016

Organization

Mittag-Leffler semester, spring 2024

Masterclass: Relative trace formula, 2022

Number theory session at the Nordic Congress of Mathematicians, 2022

Workshop: Spectral Theory, Automorphic Forms and Arithmetic, 2016

Masterclass: Randomness: classical and quantum, 2013

Geometry and analysis seminar, 2008–2017

Outreach

Talks for highschool students (gymnasiebesøg). About 10+ times a year (2012–)

Talk for Science talents, Sorø (2019,2020, 2021, 2023, 2024)

Danish Youth Association of Science (UNF) talks (2012,2019,2022)

Biographical

Born May 20th 1973 in Strandby, Frederikshavn, Denmark. Danish citizen. Married to Sigrid. Children: Karl (2001), Niels (2004), and Johan (2012).

April 4, 2025