
 <http://nikolaaksonen.fi>
 n.laaksonen@ucl.ac.uk

Address

Alfréd Rényi Institute of Mathematics
 Reáltanoda utca 13-15
 Budapest 1053, Hungary

Professional Experience

- Research Fellow**, Alfréd Rényi Institute of Mathematics **November 2018–present**
 Supervisors: Gergely Harcos and Miklós Abért.
- Postdoctoral Fellow**, McGill University **August 2017–October 2018**
 Supervisors: Dmitry Jakobson and Maksym Radziwiłł.
- Postdoctoral Fellow**, KTH Royal Institute of Technology **May 2016–July 2017**
 Supervisor: Pär Kurlberg.

Education

- University College London**, PhD **2011–2016**
 Thesis titled *Quantum Limits, Counting and Landau-type Formulae in Hyperbolic Space* supervised by Yiannis Petridis.
- University College London**, Mathematics MSci, 1st-class honours **2007–2011**
 Master's project titled *Discrete Mean Values of Dirichlet L-functions* supervised by Yiannis Petridis (Grade 95%).

Research Interests

Spectral theory of automorphic forms, hyperbolic lattice point problems and equidistribution, Quantum Unique Ergodicity and arithmetic quantum chaos, Prime Geodesic Theorems, classical analytic number theory.

Publications and Preprints

- On the Variance of the Nodal Volume of Arithmetic Random Waves**, joint with G. Cherubini
 Preprint, [arXiv:2007.12143](https://arxiv.org/abs/2007.12143).
- Second Moment of the Prime Geodesic Theorem for $\mathrm{PSL}(2, \mathbb{Z}[i])$** , joint with D. Chatzidakos, G. Cherubini
 Preprint, [arXiv:1812.11916](https://arxiv.org/abs/1812.11916).
- Bykovskii-type Theorem for the Picard Manifold**, joint with A. Balog, A. Biró, G. Cherubini **2020**
 Int. Math. Res. Notices, advance publication, 2020, [doi:10.1093/imrn/rnaa128](https://doi.org/10.1093/imrn/rnaa128), [arXiv:1911.01800](https://arxiv.org/abs/1911.01800).
- Prime Geodesic Theorem in the 3-dimensional Hyperbolic Space**, joint with O. Balkanova, D. Chatzidakos, G. Cherubini, D. Frolenkov **2019**
 Trans. Amer. Math. Soc., **372**, no. 8, 2019, pp. 5355–5374, [doi:10.1090/tran/7720](https://doi.org/10.1090/tran/7720), [arXiv:1712.00880](https://arxiv.org/abs/1712.00880).
- Quantum Limits of Eisenstein Series in \mathbb{H}^3** **2019**
 Probabilistic methods in geometry, topology and spectral theory, pp. 125–138, Contemp. Math., 739, Amer. Math. Soc., Providence, RI, [doi:10.1090/conm/739](https://doi.org/10.1090/conm/739), [arXiv:1511.07411](https://arxiv.org/abs/1511.07411).
- On the Value Distribution of Two Dirichlet L-functions**, joint with Y. Petridis **2018**
 Funct. Approx. Comment. Math., **58**, no. 1, 2018, pp. 43–68, [doi:10.7169/facm/1640](https://doi.org/10.7169/facm/1640), [arXiv:1505.00623](https://arxiv.org/abs/1505.00623).
- Lattice Point Counting in Sectors of Hyperbolic 3-space** **2017**
 Q. J. Math., **67**, no. 3, 2017, pp. 891–922, [doi:10.1093/qmath/hax004](https://doi.org/10.1093/qmath/hax004), [arXiv:1511.00580](https://arxiv.org/abs/1511.00580).

- Numerical Investigation of Exponential Sums Over Eigenvalues in $\mathrm{PSL}_2(\mathbb{Z}) \backslash \mathbb{H}$** 2017
 Appears in Petridis and Risager, *Local Average in Hyperbolic Lattice Point Counting, With an Appendix by Niko Laaksonen*, Math. Z., **285**, 3–4, 2017, pp. 1319–1344, doi:10.1007/s00209-016-1749-z, arXiv:1408.5743.
- Discrete Mean Values of Dirichlet L -functions**, joint with Y. Petridis 2011
 Appears in *The Analytic Theory of Automorphic Forms, Oberwolfach Rep.*, **8**, no. 3, 2011, doi:10.4171/OWR/2011/43, 52–54.

Awards and Achievements

- UCL Faculty of Mathematical and Physical Sciences Postgraduate Research Prize** 2016
 Awarded for outstanding achievements to one candidate among the PhD graduates across the whole faculty.
- 150th Anniversary Postdoctoral Mobility Grant**, London Mathematical Society 2015
 To visit Morten Risager at University of Copenhagen between September 2015 and January 2016.
- Mayer de Rothschild Award in Pure Mathematics**, UCL 2014–2015
 Departmental prize for excellence in research.
- Davenport Prize in Pure Mathematics**, UCL 2012
 Departmental prize for excellence for first year PhD students.
- SET Award**, Finalist 2011
 Shortlisted as one of the final three students for the European Science and Engineering Student of the Year Award in the Mathematics category.
- Dean's Summer Student Scholarship**, UCL Summer 2009
 A funded scholarship to work on a project titled *Discrete Modelling for Complex Systems* supervised by Steven Bishop. During the project I also helped in organising a conference aimed at promoting science to politicians at the House of Lords.

Teaching Experience

- Calculus 3, MATH222**, McGill University 2017
 Instructor to a multivariable calculus course to about 260 students. Consisted of 3 hours of weekly lectures in addition to holding office hours and marking midterms. Prepared electronic lecture notes.
- Multivariable Calculus, SF1626**, KTH 2017
 Teaching assistant to two sections of a first year multivariable calculus course. Consisted of 12 hours weekly split between tutorials and problem classes, also marked homework scripts, quizzes and exams.
- Linear Algebra for Joint Honours, MATH1203**, UCL 2012–2014
 Lectured the course for 2 years to first year undergraduates, prepared problem sheets and exams. Wrote comprehensive electronic lecture notes.
- Teaching Assistant**, UCL 2011–2015
 Taught small tutorials, problem classes, and marked homework scripts and exams.

Talks

- Prime Geodesic Theorem and arithmetic**, Alfréd Rényi Institute of Mathematics 11 November 2019
 Young Researchers' Mini-Symposium.
- Prime Geodesic Theorem in the three-dimensional hyperbolic space**, Sophia University 31 January 2019
 Number theory mini-workshop at Sophia.

Prime Geodesic Theorem in the three-dimensional hyperbolic space , RIMS RIMS conference “Automorphic forms, automorphic representations and related topics” at Kyoto University.	22 January 2019
Prime Geodesic Theorem in the three-dimensional hyperbolic space , KTH Number Theory Seminar.	19 December 2018
Prime Geodesic Theorem in \mathbb{H}^3 , Concordia University Analytic Number Theory Seminar.	30 November 2017
Prime Geodesic Theorem in \mathbb{H}^3 , McGill University Montreal Analysis Seminar.	3 November 2017
Prime Geodesic Theorem in \mathbb{H}^3 , University of Maine Maine–Quebec Number Theory Conference.	14 October 2017
Mean Values of L-functions and Landau’s Formula , KTH DNA seminar.	9 December 2016
Lattice Point Counting in Sectors of Hyperbolic Space , University of Copenhagen Invited speaker in the workshop for Spectral Theory, Automorphic Forms and Arithmetic.	18 November 2016
Hyperbolic Lattice Point Counting , Aalto University Algebra, Number Theory and Applications seminar.	9 March 2016
Lattice Point Counting in Sectors of Hyperbolic Space , University of Copenhagen Joint Number theory / Geometry and analysis seminar.	6 November 2015
Applications of Landau’s Formula The 8th Young Mathematicians Conference on Zeta Functions at Nagoya University, Japan.	16 February 2015
Exponential Sums Over Eigenvalues of Δ in $\mathrm{PSL}_2(\mathbb{Z})\backslash\mathbb{H}$ Building Bridges: 2nd EU/US Workshop on Automorphic Forms and Related Topics at University of Bristol.	8 July 2014
Numerical Investigation of Exponential Sums in $\mathrm{PSL}_2(\mathbb{Z})\backslash\mathbb{H}$, UCL Postgraduate Seminar	24 April 2014
Quantum Unique Ergodicity , UCL Postgraduate Seminar	22 November 2012
Mean values of Dirichlet L-functions , UCL Postgraduate Seminar	16 March 2012
Approximate Functional Equation for $L(s, \chi)$, London Number Theory Study Group	1 February 2012
Quantum Chaos , UCL Maths Undergraduate Colloquium	January 18th 2011
Nevanlinna Theory , UCL Maths Undergraduate Colloquium	October 26th 2010
Introduction to p-adic Numbers , UCL Maths Undergraduate Colloquium	March 18th 2010

Service and Outreach

Organisation

Co-organised the first virtual conference in automorphic forms “[Online Conference in Automorphic Forms](#)” on 1–5 June 2020.

Referee

Refereeing papers for various journals including *Mathematische Nachrichten*, the *Quarterly Journal of Mathematics* and *Acta Mathematica Hungarica*.

Maths and Stats Programming Club , UCL	2014–2015
Instructor in the Mathematics and Statistics Departments' joint programming club.	
Prime Number Theorem , St. Olave's Grammar School	27 March 2012
Gave a talk to promote pure mathematics to sixth form (and younger) students.	
Modular Forms Study Group , UCL	Spring 2011
Organised a study group on modular forms for undergraduates.	
UCL Maths Undergraduate Colloquium , UCL	2010–2011
Helped organise the undergraduate colloquium.	

Additional Information

- Native Finnish, fluent English, moderate Swedish and Japanese, satisfactory German.
- Finnish National Service in summer 2006 – summer 2007. Completed the Reserve Officer School of Hamina in winter 2006. Current rank reserve 2nd Lieutenant.