

CONTACT INFORMATION

PERSONAL INFORMATION

EDUCATION

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|----------------------|--|
| Ph.D. | Mathematics, 2011 Princeton University, Princeton, NJ. Thesis: <i>Limit Theorems for Theta Sums via Renormalization and Homogeneous Dynamics</i> . Thesis advisor: Prof. Yakov G. Sinai. |
| M.Sc. | Mathematics, 2007 Princeton University, Princeton, NJ. |
| Laurea Magistrale | Mathematics, 2006 Università di Bologna, Italy. <i>Summa cum laude</i> . Thesis advisor: Prof. Mirko Degli Esposti. |

APPOINTMENTS

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| 2021 - current | Associate Professor Queen's University, Kingston, ON. |
| 2015 - 2021 | Assistant Professor Queen's University, Kingston, ON. |
| Spring 2015 | Member. Mathematical Sciences Research Institute. Berkeley, CA. |
| 2012 - 2015 | J.L. Doob Research Assistant Professor University of Illinois at Urbana-Champaign. Mentor: Florin P. Boca |
| Spring 2012 | Member. Mathematical Sciences Research Institute. Berkeley, CA. |
| Fall 2012 | Member. Institute for Advanced Study, Princeton, NJ. Mentor: Jean Bourgain. |

AWARDS AND GRANTS

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| 2016–2021 | NSERC Discovery Grant. <i>Statistical and Number-Theoretical Aspects of Dynamical Systems</i> . 115,000 CAD. |
| 2015–2018 | Research Initiation Grant. Queen's University. 20,000 CAD. |

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| AWARDS AND GRANTS (CONT.) | Spring 2015 | National Science Foundation Grants DMS 1107452, 1107263, 1107367. RNMS: Geometric Structures and Representation Varieties (GEAR Network). 6,460 USD. |
| | 2014–2017 | NSF grant DMS 13-63227. <i>Statistical and Number-Theoretical Properties of Dynamical Systems</i> . 120,000 USD. |
| | 2013–2015 | AMS-Simons Foundation travel grant. 4,000 USD. |
| | 2012 | <i>Best research poster</i> award. European Congress of Mathematics. Krakow, Poland. 2012. 250 EUR. |
| | 2006–2007 | Study Abroad Fellowship, Università di Bologna, Italy. 21,937 EUR |
| SUPERVISION | Postdoctoral Fellows | Abdalrazzaq Zalloum (co-supervised with Thomas Barthelmé), Queen’s University, 2019–current Jory Griffin, Queen’s University, 2017–2019. Maria Avdeeva, Queen’s University, 2016–2017. |
| | Graduate Students | Anirban Dutta (co-supervised with Giusy Mazzone), Queen’s University, 2022–current. Tariq Osman, Queen’s University, 2017–current. Neil MacVicar (co-supervised with James Mingo), Queen’s University, 2018–current. Amita Malik (co-supervised with Jayadev Athreya), University of Illinois at Urbana-Champaign, IGL, 2013–2014. Elizabeth Merriman (co-supervised with Jayadev Athreya), University of Illinois at Urbana-Champaign, IGL, 2013–2014. |
| | Undergraduate Students | Becca Bonham-Carter (co-supervised with Bahman Gharesifard), Queen’s University, NSERC-USRA, 2019. Matthew Spragge (co-supervised with Bahman Gharesifard), Queen’s University, NSERC-USRA, 2019. Fernando Camacho Cadena (co-supervised with Thomas Barthelmé / Bahman Gharesifard), Queen’s University, NSERC-USRA, 2018 / 2019. |

SUPERVISION
(CONT.)

Troy Giorshev (co-supervised with Thomas Barthelmé), Queen's University, NSERC-USRA, 2018.

Jake Wellens (co-supervised with Steven J Miller), Williams College, 2013–2014.

Suhan Liu (co-supervised with Jayadev Athreya), University of Illinois at Urbana-Champaign, IGL, 2013–2014.

Abigail Turner (co-supervised with Jayadev Athreya), University of Illinois at Urbana-Champaign, IGL, 2013–2014.

Ananya Uppal (co-supervised with Jayadev Athreya), University of Illinois at Urbana-Champaign, IGL, 2013–2014.

Peng Xu (co-supervised with Jayadev Athreya), University of Illinois at Urbana-Champaign, IGL, 2013–2014.

Krishnan Mody (co-advised with Yakov G. Sinai), Princeton University, 2010–2012.

PUBLICATIONS

16. Improved Tail Estimates for the Distribution of Quadratic Weyl Sums (with Jory Griffin and Tariq Osman). *Submitted*.
15. Autocorrelation functions for quantum particles in supersymmetric Pöschl-Teller Potentials. *Canadian Mathematical Bulletin*, **64**, 4, 840–852, 2021.
14. Smooth arithmetical sums over k -free integers (with Ram M. Murty). *Journal of the Ramanujan Mathematical Society*, **36**, 2, 147–156, 2021
13. Ergodic and Statistical Properties of \mathcal{B} -Free Numbers (with Maria Avdeeva and Yakov G. Sinai). *Theory of Probability and its Applications*, **61**, 4, 2017.
12. The work of Yakov G. Sinai (with Leonid Bunimovich, Boris M. Gurevich, Dong Li, Konstantin M. Khanin, Yakov B. Pesin, Nándor Simányi, and Domokos Szász). *The Abel Prize 2013–2017*, edited by H. Holden and R. Piene, Springer, 2019.
11. Quadratic Weyl Sums, Automorphic Functions, and Invariance Principles (with Jens Marklof). *Proceeding of the London Mathematical Society*, **113**, 6, 2016.
10. On two Conjectures for M&m Sequences (with Sara Munday). *Journal of Difference Equations and Applications*, 2, 3, 428–440, 2016.
9. The Abel Prize Award to Ya.G. Sinai (with Alexander I. Bufetov, Boris M. Gurevich, Konstantin M. Khanin). *Uspehi Matematicheskikh Nauk*, **69**, 5 (419), 167–190. English translation in *Russian Mathematical Surveys*, **69**, 5, 931–956. 2014
8. Continued Fraction Digit Averages and Maclaurin's Inequalities (with Douglas Hensley, Steven J. Miller and Jake L. Wellens). *Experimental Mathematics*. **24**, 1, 23–44, 2015

PUBLICATIONS
(CONT.)

7. Ergodic Properties of k -Free Integers in Number Fields (with Ilya Vinogradov). *Journal of Modern Dynamics*, **7**, 3, 461–488, 2013
6. Smooth Sums over Smooth k -Free numbers and Statistical Mechanics. *Moscow Journal of Combinatorics and Number Theory*, **3**, 2, 144–180, 2013.
5. Ergodic Properties of Square-Free Numbers (with Yakov G. Sinai). *Journal of the European Mathematical Society*, **15**, 1343–1374, 2013.
4. The Möbius Function and Statistical Mechanics (with Yakov G. Sinai). *Bulletin of Mathematical Sciences*, DOI 10.1007/s13373-011-0011-6, 2011.
3. Non-Standard Limit Theorems in Number Theory (with Yakov G. Sinai). *Prokhorov and Contemporary Probability Theory*, Springer Proceedings in Mathematics & Statistics, **33**, 197–213, 2013
2. On the Curlicue Measures for Theta Sums. *Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques*, **47**, 2, 466–497, 2011.
1. Renewal-type Limit Theorem for Continued Fractions with even partial quotients. *Ergodic Theory and Dynamical Systems*, **29**, 5, pp 1451–1478, 2009.

SELECTED
INVITED TALKS

2022

DinAmici VIII. Riemann International School of Mathematics, Varese, Italy. June 2022.

2021

CMS Summer Meeting. Ergodic Theory, Dynamical Systems, Fractals and Applications Session. Ottawa, Ontario.

2020

CMS Winter Meeting. Probability in Number Theory Session. Online meeting.
Workshop "Expanding Dynamics. Creative Online Ventures in Dynamics". Online meeting.

DinAmiciI: Another Internet Seminar. Online meeting.

2019

LG&TBQ conference on geometry, topology and dynamics. University of Michigan. Ann Arbor, MI.

DinAmici VI - the Sixth Workshop of the Italian Dynamacists. Centro di Ricerca Matematica Ennio De Giorgi. Pisa, Italy.

2018

GDD/GEAR Seminar. University of Illinois at Urbana-Champaign. IL.

Number Theory Seminar. University of Waterloo, Ontario.

2017

Workshop on Mathematical Physics Perspectives on Billiards and Dominoes. UMassAmherst. Amherst, MA.

INdAM Workshop "Modern Trends in the Ergodic Theory of Dynamical Systems". Istituto Nazionale di Alta Matematica, Roma, Italy.

Ergodic Theory and Dynamical Systems Workshop. University of North Carolina, Chapel Hill, NC.

2016

CMS Winter Meeting. Stochastic Properties of Dynamical Systems Session. Niagara Falls, Ontario.

Fields Dynamics Day. Fields Institute. Toronto, Ontario.

Fourth Zürich-Strasbourg joint seminar "Frontiers in Analysis and Probability". Zürich, Switzerland.

First Joint Meeting Brazil-Italy in Mathematics. IMPA, Rio de Janeiro, Brazil.

115th Statistical Mechanics Conference. Rutgers University, New Brunswick, NJ.

Ergodic Theory and Dynamical Systems Workshop. University of North Carolina, Chapel Hill, NC.

Number Theory Seminar. Queen's University. Kingston, Ontario.

SELECTED
INVITED TALKS
(CONT.)

2015

Departmental Colloquium. Queen's University. Kingston, Ontario.
2nd Workshop on Combinatorics, Number Theory, & Dynamical Systems.. IMPA, Rio de Janeiro, Brazil.
Mathematical Physics Seminar. Università di Bologna, Italy.
DinAmicI IV - Fourth Workshop of the Italian Dynamicists. Corinaldo, Italy.
Rocky Mountain Dynamical Systems Conference. Provo, UT.
Dynamical Systems, Ergodic Theory, and Probability Theory Conference dedicated to the memory of Nikolai Chernov. University of Alabama at Birmingham, AL.
Dynamics Seminar. University of Chicago, IL.
AMS Special Session. "Number Theory in Ergodic Theory and Dynamical Systems". 2015 Spring Eastern Sectional Meeting. Georgetown University. DC.
Dynamical Systems Seminar. University of Stony Brook, NY.
Special Colloquium. DePaul University. Chicago, IL.
Colloquium. Florida Institute of Technology. Melbourne, FL.
Workshop "Geometric and Arithmetic Aspects of Homogeneous Dynamics". Mathematical Sciences Research Institute, Berkeley, CA.
Colloquium. Wesleyan University. Middletown, CT.
Recruitment Talk. The Ohio State University. Columbus, OH.
Special Colloquium. University of California - Irvine, CA.
Departmental Colloquium. Queen's University. Kingston, Ontario.

2014

Fourth Abel Conference: A Celebration of Yakov G. Sinai, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, MN.
Meeting "Dynamics, Geometry, and Groups". Indianapolis, IN.
Analysis Seminar. Indiana University, Bloomington, IN.
Workshop "Théorèmes Limites en Dynamique et Applications". Centre International de Rencontres Mathématiques. Marseille, France.
Workshop on Tiling Dynamics. Bielefeld University, Germany.
Dynamics And Numbers. Max Planck Institute, Bonn, Germany.
Seminario di Teoria dei Numeri. Università di Genova, Italy.
Dynamics Seminar. Università di Bologna, Italy.
Dynamical Systems seminar. University of Maryland, College Park, MD.
Rice Dynamics Workshop. Rice University, Houston, TX.
Ergodic Theory Workshop. University of North Carolina, Chapel Hill, NC.

SELECTED
INVITED TALKS
(CONT.)

2013

Workshop “Some trends in dynamical systems and fluid dynamics”. Tsinghua Sanya International Mathematics Forum. Sanya, China.

Workshop “Measurable and Topological Dynamical Systems”. Keio University. Yokohama, Kanagawa, Japan.

Ergodic theory seminar. Università di Bologna, Italy.

Departmental Colloquium. Queen’s University. Kingston, Ontario.

Continued Fractions, Interval Exchanges and Applications to Geometry Workshop. Centro di ricerca matematica Ennio De Giorgi. Pisa, Italy.

Rice Dynamics Workshop. Rice University, Houston, TX.

Ergodic Theory and Statistical Mechanics Seminar. Princeton University, Princeton, NJ.

Dynamics Seminar. Indiana University - Purdue University Indianapolis, IN.

Probability Theory Seminar. University of Illinois at Urbana-Champaign, IL.

Ergodic Theory Workshop. University of North Carolina, Chapel Hill, NC.

2012

Dynamics Seminar. University of Chicago, IL.

Analysis Seminar. De Paul University, Chicago, IL.

Dynamics Seminar. Northwestern University, Evanston, IL.

Ergodic Theory Seminar. University of Illinois at Urbana-Champaign, IL.

Spring 2012 Meeting of the Workshop on Dynamical Systems and Related Topics. University of Maryland, College Park, MD.

Ergodic Theory Workshop 2012. University of North Carolina, Chapel Hill, NC.

2011

Analysis/PDE seminar. Institute for Advanced Study, Princeton, NJ.

Dynamical Systems seminar. University of Maryland, College Park, MD.

Random Matrix and Probability Seminar. Harvard University, Cambridge, MA.

Weak Chaos, Infinite Ergodic Theory, and Anomalous Dynamics. Max-Planck-Institut für Physik komplexer Systeme. Dresden, Germany.

Mathematical Physics Seminar. Università di Roma “Tor Vergata”. Rome, Italy.

Dynamical Systems Seminar. Università di Pisa, Italy.

AMS Sectional Meeting “Interactions between Dynamical Systems, Number Theory, and Combinatorics”. College of the Holy Cross, Worcester, MA.

Special lecture. Institute for Advanced Study, Princeton, NJ.

Ergodic Theory Workshop. University of North Carolina. Chapel Hill, NC.

Workshop on Discrete Methods in Ergodic Theory. Northwestern University, Evanston, IL.

Number Theory Seminar. University of Illinois at Urbana-Champaign, IL.

2010

Workshop “Homogeneous Dynamics and Number Theory”. Mathematisches Forschungsinstitut Oberwolfach, Germany.

INdAM Meeting - Hyperbolic Dynamical Systems in the Sciences. Corinaldo, Italy.

Ergodic Theory and Statistical Mechanics Seminar. Princeton University, Princeton, NJ.

Dynamical Systems Seminar. State University of New York, Stony Brook, NY.

Spring 2010 Meeting of the Workshop of Dynamical Systems and Related Topics. University of Maryland, College Park, MD.

SELECTED
INVITED TALKS
(CONT.)

2009

Ergodic Theory and Dynamical Systems Seminar. University of Bristol, UK.
Workshop on Limit Theorems. Academy of Sciences of the Czech Republic, Prague.
Dynamical Systems II. University of North Texas, Denton, TX.
Ergodic Theory and Statistical Mechanics Seminar. Princeton University, Princeton, NJ.
Columbia-Princeton Probability Day. Columbia University. New York, NY.

2008

Student Dynamics Seminar. University of Maryland, College Park, MD.
Ergodic Theory Seminar. Rice University, Houston, TX.
School and Workshop on Dynamical Systems. Abdus Salam International Center for Theoretical Physics, Trieste, Italy.
Rocky Mountain Conference on Dynamical Systems. Brigham Young University, Park City, UT.
Ergodic Theory and Statistical Mechanics Seminar. Princeton University, Princeton, NJ.
Spring 2008 Meeting of the Workshop on Dynamical Systems and Related Topics. University of Maryland, College Park, MD.

TEACHING AT
QUEEN'S
UNIVERSITY

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| Winter 2021 | Real Analysis. Functional Analysis and Quantum Mechanics. |
| Fall 2020 | Advanced Calculus. |
| Winter 2020 | Introduction to Deterministic Dynamical Systems. Core Course in Probability Theory. |
| Fall 2019 | Differential and Integral Calculus. |
| Winter 2019 | Core Course in Probability. Topics in Probability: Reading Course on Stochastic Processes and PDEs. Reading course on Ergodic Theory. |
| Fall 2018 | Introduction to Functional Analysis and Quantum Mechanics. <i>Nominated for the W.J. Barnes Teaching Award.</i> Core Course in Analysis I. |
| Winter 2018 | Differential and Integral Calculus. <i>Nominated for the W.J. Barnes Teaching Award.</i> Core Graduate Course in Probability Theory. |
| Fall 2017 | Differential and Integral Calculus. |
| Winter 2017 | Differential and Integral Calculus. Core Graduate Course in Probability Theory. |
| Fall 2016 | Differential and Integral Calculus. |
| Winter 2016 | Differential and Integral Calculus. . <i>Finalist for the Frank Knox Award for Excellence in Teaching.</i> Topics in Analysis: Ergodic Theory of Numbers. . |
| Fall 2015 | Differential and Integral Calculus. |

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| PREVIOUS TEACHING | Fall 2014 | Calculus III. UIUC |
| | | Undergraduate Research in Mathematics. UIUC. |
| | Spring 2014 | Probability Theory. UIUC. |
| | Fall 2013 | (In)finite Ergodic Theory. Graduate course. UIUC. |
| | Spring 2013 | Probability Theory. UIUC. |
| | Fall 2012 | Elementary Theory of Numbers. UIUC. |
| | Spring 2010 | Calculus. Princeton University. <i>Nominee for the 2010 Graduate School Teaching Award.</i> |
| DEPARTMENTAL COMMITTEES | Headship Selection Committee, 2020–2021 | |
| | Advisory Committee on Policy, 2019–2020 (head), and 2020–2021 (head). | |
| | Curriculum committee: 2018–2019, 2019–2020, and 2020–2021. | |
| | Faculty recruitment core subcommittee: 2015–2016 and 2016–2017. | |
| | Graduate committee: 2015–2016 and 2016–2017. | |
| | Colloquium committee: 2016–2017 and 2017–2018. | |
| FACULTY COMMITTEES | Equity, Diversity, Inclusion, and Indigeneity (EDII) Implementation Committee, 2019–2020 and 2020–2021. | |
| ORGANIZATIONAL ACTIVITIES | <ul style="list-style-type: none"> • Organizer (with Idris Assani, Zoltan Buczolich, Tushar Das, Natalia Jurga, Jana Rodriguez-Hertz, Raul Ures, and Paulo Varandas) of the <i>2021 Chapel Hill Ergodic Theory Workshop: Global Online Edition</i>. June 21–21, 28–29, and July 5–6, 2021. • Organizer (with Tariq Osman) of the <i>Mini-course Nonlocal Problems in PDEs and Geometry</i> taught by Prof Eleonora Cinti (Università di Bologna). Queen’s University, 2019. • Organizer (with Thomas Barthelmé) of the first <i>Fields@Queen’s Lecture Series</i>. Queen’s University, 2018. • Organizer (with Thomas Barthelmé and Catherine Pfaff) of the <i>Dynamics, Geometry, and Groups Seminar</i>. Queen’s University, 2018–2020. • Organizer (with Maria Avdeeva, Thomas Barthelmé, and Boris Hasselblatt) of the <i>Conference on Dynamics in Number Theory and Geometry</i>. Queen’s University, 2017. • Organizer (with Thomas Barthelmé) of the <i>Dynamics Seminar</i>, Queen’s University. 2016–2018. • Organizer (with Yakov G. Sinai) of the conference <i>Number Theory and Dynamics</i>. Institut Mittag-Leffler. Djursholm, Sweden. 2015. • Organizer (with Mirko Degli Esposti) of the workshop <i>Randomness and Ergodic Features in Number Theory</i>. Università di Bologna, Italy. 2013. • Organizer (with Joseph G Ronsenblatt) of the <i>Ergodic Theory Seminar</i>, University of Illinois Urbana-Champaign, 2012–2013. • Organizer (with Yakov G Sinai) of the <i>Ergodic Theory and Statistical Mechanics Seminar</i>, Princeton University, 2007– 2011. | |

REFeree
ACTIVITY

- Reviewer for the *NSA Mathematical Sciences Grant Program*, 2016.
- NSF panel member. Fiscal Year 2015.
- Manuscript reviewer for *Annali della Scuola Superiore di Pisa*, *Czechoslovak Mathematical Journal*, *Ergodic Theory and Dynamical Systems*, *Geometriae Dedicata*, *Indagationes Mathematicae*, *Journal d'Analyse*, *Journal of Number Theory*, *Journal of Difference Equations and Applications*, *Journal of Integer Sequences*, *Journal of Statistical Physics*, *Journal d'Analyse Mathématique*, *International Journal of Number Theory*, *Mathematika*, *Experimental Mathematics*, *Nonlinearity*, *Journal of the London Mathematical Society*, *Journal of Spectral Theory*, *Michigan Mathematical Journal*, *Symmetry*.

OTHER
ACTIVITIES

- Member of the Canadian Mathematical Society.
- Member of the American Mathematical Society.
- Member of SPECTRA (Association for LGBTQ+ mathematicians and their allies), Since 2019.
- Member of QUAQE (*Queen's University Association of Queer Employees*), funded by the Provost Office as official employee resource group at Queen's. Since 2020.
- *Positive Space* training session. Human Rights and Equity Office. Queen's University. 2019.
- *Diversity Panel* of the Canadian Undergraduate Mathematical Conference. Queen's University, 2019.
- Workshop *Faculty and Student Voices: Decolonizing the curriculum*. Centre for Teaching and Learning. Queen's University. 2019
- Speaker in the *Math Club*. Queen's University. 2016–2020.
- *Teaching Apprenticeship Program*. Queen's University. 2016.
- *Career Week*, School of Graduate Studies at Queen's University. 2015.
- Affiliated Faculty Advisor to Steven J. Miller's SMALL REU group. Williams College. 2013–2014
- Mentor (with Jayadev Athreya) of the Illinois Geometry Lab projects *Visibility in Random Forests* and *Random Discrete Sets*. 2013–2014.
- Collegio Superiore Alumnus, Collegio Superiore, Bologna, Italy. Since 2006.