

CURRICULUM VITAE

Florian K. Richter

email: f.richter@epfl.ch

website: <https://people.epfl.ch/f.richter/?lang=en>

arXiv: www.arxiv.org/a/richter_f_1

PROFESSIONAL APPOINTMENTS

Visiting Scholar at the Institute for Advanced Study, Sep. 2022 – Feb. 2023
Princeton University, Princeton NJ, USA.

Tenure Track Assistant Professor, Chair of Ergodic Theory, Sep. 2021 – present
École Polytechnique Fédérale de Lausanne, Lausanne VD, Switzerland.

Boas Assistant Professor of Mathematics Sep. 2018 – Aug. 2021
Non-tenure track position, Northwestern University, Evanston IL, USA.

EDUCATION

Doctor of Philosophy, Aug. 2018
The Ohio State University, Columbus OH, USA.

Master of Advanced Studies, Jun. 2011
University of Cambridge, Cambridge, UK.

Bachelor of Science, Jul. 2010
Technische Universität Wien, Vienna, Austria.

RESEARCH INTERESTS

Ergodic Theory, Topological & Symbolic Dynamics, Additive Combinatorics, Combinatorial Number Theory, Ramsey Theory, Multiplicative Number Theory

PUBLICATIONS¹

- [22] Bryna Kra, Joel Moreira, Florian K. Richter, Donald Robertson, “*A proof of Erdős’s $B + B + t$ conjecture*”
submitted, 14 pages.
arXiv: 2206.12377
- [22] Bryna Kra, Joel Moreira, Florian K. Richter, Donald Robertson, “*Infinite Sumsets in Sets with Positive Density*”
submitted, 49 pages.
arXiv: 2206.01786
- [21] Daniel Glasscock, Joel Moreira, Florian K. Richter, “*Additive and geometric transversality of fractal sets in the integers*”
submitted, 51 pages.
arXiv: 2007.05480
- [20] Vitaly Bergelson, Joel Moreira, Florian K. Richter, “*Multiple ergodic averages along functions from a Hardy field: convergence, recurrence and combinatorial applications*”
submitted, 38 pages.
arXiv: 2006.03558

¹All authors are assumed to have contributed equally and are listed alphabetically; please confer the [culture statement](#) of the AMS for more details on this issue.

- [19] Dmitry Kleinbock, Ioannis Konstantoulas, Florian K. Richter, “Zero-one laws for eventually always hitting points in mixing systems”
submitted, 27 pages.
arXiv: 1904.08584
- [18] Joel Moreira, Florian K. Richter, Donald Robertson, “Disjointness for measurably distal group actions and applications”
to appear in Ergodic Theory and Dynamical Systems, 28 pages.
arXiv: 1708.01934
- [17] Daniel Glasscock, Joel Moreira, Florian K. Richter, “A combinatorial proof of a sumset conjecture of Furstenberg”
to appear in Combinatorica, 26 pages.
arXiv: 2107.10605
- [16] Vitaly Bergelson, Florian K. Richter, “Dynamical generalizations of the Prime Number Theorem and disjointness of additive and multiplicative semigroup actions”
to appear in Duke Mathematical Journal, 47 pages.
arXiv: 2002.03498
- [15] Daniel Glasscock, Andreas Koutsogiannis, Florian K. Richter, “On Katznelson’s Question for skew product systems”
to appear in Bulletin of the AMS, 31 pages.
arXiv: 2106.11393
- [14] Florian K. Richter, “Uniform distribution in nilmanifolds along functions from a Hardy field”
to appear in Journal d’Analyse Mathématique, 45 pages.
arXiv: 2006.02028
- [13] Florian K. Richter, “A new elementary proof of the Prime Number Theorem”
Bulletin of the London Mathematical Society, Volume 53 (2021), Issue 5, pp. 1365–1375.
Doi: 10.1112/blms.12503
- [12] Andreas Koutsogiannis, Anh N. Le, Joel Moreira, Florian K. Richter, “Structure of multicorrelation sequences with integer part polynomial iterates along primes”
Proceedings of the AMS, Volume 149, (2021), Number 1, pp. 209–216.
Doi: 10.1090/proc/15185
- [11] Anh N. Le, Joel Moreira, Florian K. Richter, “A decomposition of multicorrelation sequences for commuting transformations along primes”
Discrete Analysis, 2021:4, 27 pages.
Doi: 10.19086/da.22056
- [10] Vitaly Bergelson, Joel Moreira, Florian K. Richter, “Single and multiple recurrence along non-polynomial sequences”
Advances in Mathematics, Volume 368 (2020), 107146.
Doi: 10.1016/j.aim.2020.107146
- [09] Joel Moreira, Florian K. Richter, Donald Robertson, “A proof of a sumset conjecture of Erdős”
Annals of Mathematics, Volume 189 (2019), Number 2, pp. 605–652.
Doi: 10.4007/annals.2019.189.2.4
- [08] Daniel Glasscock, Andreas Koutsogiannis, Florian K. Richter, “Multiplicative combinatorial properties of return time sets in minimal dynamical systems”
Discrete and Continuous Dynamical Systems, Volume 39 (2019), Number 10, pp. 5891–5921.
Doi: 10.3934/dcds.2019258
- [07] Vitaly Bergelson, Joanna Kułaga-Przymus, Mariusz Lemańczyk, Florian K. Richter, “Rationally almost periodic sequences, polynomial multiple recurrence and symbolic dynamics”
Ergodic Theory and Dynamical Systems, Volume 39 (2019), Issue 9, pp. 2332–2383.
Doi: 10.1017/etds.2017.130

- [06] Vitaly Bergelson, Joanna Kułaga-Przymus, Mariusz Lemańczyk, Florian K. Richter, “A generalization of Kátai’s orthogonality criterion with applications”
Discrete and Continuous Dynamical Systems, Volume 39 (2019), Number 5, pp. 2581–2612.
Doi: 10.3934/dcds.2019108
- [05] Joel Moreira, Florian K. Richter, “A spectral refinement of the Bergelson-Host-Kra decomposition and new multiple ergodic theorems”
Ergodic Theory and Dynamical Systems, Volume 39 (2019), Issue 4, pp. 1042–1070.
Doi: 10.1017/etds.2017.61
- [04] Vitaly Bergelson, Joanna Kułaga-Przymus, Mariusz Lemańczyk, Florian K. Richter, “A Structure Theorem for Level Sets of Multiplicative Functions and Applications”
International Mathematical Research Notices, rny040 (2018).
Doi: 10.1093/imrn/rny040
- [03] Vitaly Bergelson, Florian K. Richter, “On the density of coprime tuples of the form $(n, \lfloor f_1(n) \rfloor, \dots, \lfloor f_k(n) \rfloor)$, where f_1, \dots, f_k are functions from a Hardy field”
Number Theory – Diophantine Problems, Uniform Distribution and Applications, Festschrift in Honour of Robert F. Tichy’s 60th Birthday, Springer International Publishing (2017), pp. 109–135.
Doi: 10.1007/978-3-319-55357-3_5
- [02] John H. Johnson, Florian K. Richter, “Revisiting the Nilpotent Polynomial Hales-Jewett Theorem”
Advances in Mathematics, Volume 321 (2017), pp. 269–286.
Doi: 10.1016/j.aim.2017.09.033
- [01] Joel Moreira, Florian K. Richter, “Large subsets of discrete hypersurfaces in \mathbb{Z}^d contain arbitrarily many collinear points”
European Journal of Combinatorics, Volume 54 (2016), pp. 163–176.
Doi: 10.1016/j.ejc.2015.12.012

GRANTS

NSF Grant (DMS-1901453), Principal Investigator 3-year research grant awarded by the National Science Foundation, Division of Mathematical Sciences, Analysis program; Title: “Investigations in Combinatorics and Number Theory via Ergodic Theoretic Methods”.	2019 – 2022
AIM SQuaRE Collaborative Grant , co-Principal Investigator American Institute of Mathematics – Structured Quartet Research Ensembles; 3-year collaborative grant with D. Glasscock (UMass Lowell), A. Koutsogiannis (Aristotle University of Thessaloniki), J. Moreira (University of Warwick), and D. Robertson (Manchester University).	2021 – 2024

AWARDS & HONORS

Louise B.C. Vetter Award Competitive research award sponsored by the Ohio State chapter of the Phi Kappa Phi Honor Society. I was selected from a pool of Ohio State Graduate School Presidential Fellows for excellence in research.	Oct. 2017
The Ohio State Presidential Fellowship Prestigious research award given to graduate students by the Ohio State University Graduate School. Fellows are selected through a university-wide competition led by a faculty committee. This award provided a generous stipend and full tuition support for a twelve month period.	Apr. 2017

Two Special Graduate Assignments (SGAs)

Awarded by the Mathematics Department of the Ohio State University based on academic merit, these semester-long research fellowships provided stipends and tuition without teaching obligations.

Nov. 2014 &

Nov. 2015

RESEARCH TALKS

ULTRAMATH Conference	Università di Pisa	Jun. 2022
Ergodic Theory Seminar	ETH Zürich	Apr. 2022
Colloquium	UMass Lowell	Feb. 2022
Ergodic Theory and Analysis Seminar	Rutgers University	Feb. 2022
Colloquium	Northwestern University	Feb. 2021
Colloquium	Carnegie Mellon University	Feb. 2021
Colloquium	University of Montreal	Jan. 2021
Colloquium	Stony Brook University	Jan. 2021
Colloquium	EPFL	Jan. 2021
Colloquium	University of Texas at Austin	Jan. 2021
Colloquium	University of Notre Dame	Jan. 2021
Colloquium	Texas A&M	Dec. 2020
Colloquium	University of Manchester	Dec. 2020
Colloquium	University of Waterloo	Dec. 2020
Colloquium	Queen's University	Nov. 2020
Midwest Virtual Dynamics Seminar	University of Chicago	Oct. 2020
One Day Dynamics Meeting	CMM – Universidad de Chile	Jun. 2020
Joint PU/IAS Number Theory Seminar	Princeton University	Jun. 2020
Ergodic Theory Seminar	Nicolaus Copernicus University	Jun. 2020
ETDS Seminar	University of Warwick	May 2020
Virtual Lecture Series in Dynamics	University of Maryland	Apr. 2020
Midwest Dynamics Day	Northwestern University	Mar. 2020
Number Theory Seminar	Harvard University	Feb. 2020
Weihnachtskolloquium	Technische Universität Wien	Dec. 2019
Lund Shrinking Targets Workshop	University of Lund	Dec. 2019
Joint Analysis Seminar of UCLA & Caltech	UCLA	Nov. 2019
AMS Sectional Meeting	University of Florida, Gainesville	Nov. 2019
Arbeitsgemeinschaft Diskrete Mathematik	Technische Universität Wien	Jun. 2019
Ergodic Theory Seminar	The Ohio State University	Apr. 2019
Arbeitsgemeinschaft Diskrete Mathematik	Technische Universität Wien	May 2018
Combinatorics seminar	Brandeis University	Apr. 2018
AMS Spring Eastern Sectional Meeting	Northeastern University	Apr. 2018
Complex Analysis Seminar	Indiana University Bloomington	Mar. 2018
Ultrafilters, Ramsey Theory and Dynamics	University of Lyon	Nov. 2017
Ergodic Theory Seminar	The Ohio State University	Sep. 2017
Max Dehn Seminar	The University of Utah	Sep. 2017
NU Dynamical Systems Seminar	Northwestern University	Oct. 2016
Mathematical Research Lecture Series	The Ohio State University	Aug. 2016

TEACHING EXPERIENCE

Tenure Track Assistant Professor in Mathematics, EPFL

Teaching related responsibilities include: designing and instructing courses at all levels (Bachelor, Master, and PhD); helping cultivate a comprehensive math curriculum at EPFL; supervising Bachelor-, Master-, and PhD-thesis projects.

Fall 2021 *Combinatorial Number Theory*

Spring 2022 *Ergodic Theory*

Expanding Dynamics Summer School 2021

Designed and instructed a graduate-level course titled "Dynamics and Infinitary Combinatorics" as part of the online workshop series "Expanding Dynamics – Creative Online Ventures in Dynamics".

Summer 2021 *Dynamics and Infinitary Combinatorics*

Boas Assistant Professor in Mathematics, Northwestern University

As a course instructor at Northwestern University, my responsibilities included preparing lesson plans, writing and grading exams, designing syllabi, mentoring and advising students, coordinating joint instructions, teaching online courses, and more.

Spring 2021 *Graduate Topics Course in Dynamical Systems*

Spring 2021 *Multivariable Integral Calculus for Engineering*

Winter 2021 *Foundations of Higher Mathematics*

Winter 2020 *Multiple Integration and Vector Calculus*

Fall 2019 *Multivariable Differential Calculus*

Spring 2019 *Foundations of Higher Mathematics*

Fall 2018 *Single-Variable Differential Calculus*

Northwestern Prison Education Program, Northwestern University

Held at the Stateville Maximum Security Prison in Chicago, the Northwestern Prison Education Program (NPEP) fills a vital need in Illinois by being the only Bachelor's degree awarding education program in a prison in the state offering a comprehensive liberal arts curriculum. Professors participate on a voluntary basis. In fall quarter 2019, I was the first instructor from the mathematics department to participate in the program, teaching a course in quantitative reasoning to a cohort of 21 incarcerated students.

Fall 2019 *Quantitative Reasoning*

PhD Headstart Program, The Ohio State University

In summer 2016, I co-taught a course in Real Analysis for the PhD head-start program at the Ohio State University, which is a four week intensive summer program for incoming PhD students in the mathematics department.

Summer 2016 *Real Analysis*

Graduate Teaching Associate, The Ohio State University

This teaching associateship involved instructing semi-weekly recitation classes, writing and grading quizzes, grading exams, maintaining weekly office hours, and facilitating evening review sessions and workshops for students.

Spring 2017 *Multivariable Differential and Integral Calculus*

Fall 2015 *Calculus for Business*

Fall 2014 *Engineering Math A*

Spring 2014 *Calculus for Business*

Fall 2013 *Engineering Math A*

Spring 2013	Calculus 1
Fall 2012	Calculus 1

Undergraduate Teaching Assistant, Technische Universität Wien

During my undergraduate studies I worked as a recitation instructor for two courses at the Institute of Discrete Mathematics and Geometry at the Vienna University of Technology.

Spring 2010	Discrete Mathematics for Computer Sciences
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Fall 2009	Discrete Mathematics for Computer Sciences
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SERVICE

Young Researchers in Mathematics Program

Summer 2022

In summer 2022, I will initiate a new program at the Bernoulli Center for Fundamental Studies offering an immersive mathematical research experience for undergraduate students. The purpose of this program is to foster enthusiasm for continued research in mathematics, guide budding mathematicians towards their first publication, and encourage students from underrepresented groups to pursue a PhD in mathematics. This will be the first program of this kind in mathematics in Switzerland.

Northwestern Prison Education Program

Fall 2019

I participated in the Northwestern Prison Education Program, where I designed and taught a college-level course in mathematical literacy at the Stateville Correctional Center, a maximum-security correctional facility for men in Chicago.

Midwest Virtual Dynamics Seminar Organizer

Spring 2020 –
Fall 2021

I help organize a virtual dynamics seminar held jointly with UoC, UIC, U. Michigan, and Indiana U. Bloomington.

Seminar Organizer at Northwestern University

Fall 2018 –
Fall 2021

Currently, I function as one of the organizers for the weekly research seminar of the NU Dynamical Systems Research Group at Northwestern University.

Seminar Organizer at OSU

2015 – 2018

I was an organizer of the *Ergodic Theory and Combinatorial Number Theory Seminar*, a student-lead research seminar at the Ohio State University, which met twice a week, with a consistent attendance of 10-15 participants, and educated graduate students and faculty members alike.

Ergodic Ramsey Theory Conference, Organizer

Nov. 2020

Online conference in honor of Viatly Bergelson's 70th birthday.

Peer Reviewing for International Journals

Annals of Mathematics, *Advances in Mathematics*, *Forum of Mathematics – Sigma*, *Transactions of the AMS*, *Nonlinearity*, *Ergodic Theory and Dynamical Systems*, and others.

Reviewer for Mathematical Reviews

2020 –
present

Reviewer for the MR Database at MathSciNet.

PROFESSIONAL AFFILIATIONS

Member of the AMS (American Mathematical Society)

Member of the OeMG (Austrian Mathematical Society)

Member of the SMS (Swiss Mathematical Society)

OUTREACH ACTIVITIES

The *Quanta Magazine* is an online news outlet founded by the Simons Foundation focusing on public service journalism in mathematics, theoretical physics, theoretical computer science and the basic life sciences. In 2020 they published an article on my paper “A new elementary proof of the Prime Number Theorem”. The article is called “Mathematicians Will Never Stop Proving the Prime Number Theorem” and is [available online](#).

SCHOLARSHIPS

Mobilitätsstipendium Scholarship awarded by the Austrian Study Grant Department for the purpose of studying abroad at Cambridge University.	2010–2011
3-year Scholarship Awarded by the Austrian Study Grant Department based on academic merit.	2007–2010