

CURRICULUM VITAE

Florian K. Richter

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📄 arXiv: www.arxiv.org/a/richter_f_1

PROFESSIONAL APPOINTMENTS

Tenure Track Assistant Professor Sep. 2021 – present
École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.

IAS Member Sep. 2022 – Mar. 2023
Institute for Advanced Study, Princeton NJ, USA.

Boas Assistant Professor of Mathematics Sep. 2018 – Aug. 2021
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 AREAS

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

PUBLICATIONS¹

- [27] Andreas Koutsoyiannis, Anh N. Le, Joel Moreira, Ronnie Pavlov, Florian K. Richter
“*Interpolation sets for dynamical systems*”
submitted, 30 pages.
arXiv: [2401.15339](https://arxiv.org/abs/2401.15339)
- [26] Bryna Kra, Joel Moreira, Florian K. Richter, Donald Robertson
“*Problems on infinite sumset configurations in the integers and beyond*”
submitted, 37 pages.
arXiv: [2311.06197](https://arxiv.org/abs/2311.06197)
- [25] Adam Kanigowski, Mariusz Lemańczyk, Florian K. Richter, Joni Teräväinen
“*On the local Fourier uniformity problem for small sets*”
submitted, 25 pages.
arXiv: [2310.05528](https://arxiv.org/abs/2310.05528)
- [24] Ethan Ackelsberg, Florian K. Richter, Or Shalom
“*On the maximal spectral type of nilsystems*”
submitted, 12 pages.
arXiv: [2307.07213](https://arxiv.org/abs/2307.07213)
- [23] Bryna Kra, Joel Moreira, Florian K. Richter, Donald Robertson
“*A proof of Erdős’s $B + B + t$ conjecture*”
submitted, 14 pages.
arXiv: [2206.12377](https://arxiv.org/abs/2206.12377)

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.

- [22] Bryna Kra, Joel Moreira, Florian K. Richter, Donald Robertson
 “*Infinite Sumsets in Sets with Positive Density*”
submitted, 49 pages.
 arXiv: [2206.01786](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/2006.03558)
- [19] Dmitry Kleinbock, Ioannis Konstantoulas, Florian K. Richter
 “*Zero-one laws for eventually always hitting points in mixing systems*”
to appear in Mathematical Research Letters, 27 pages.
 arXiv: [1904.08584](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1016/j.ejc.2015.12.012)

GRANTS

SNSF Starting Grant (TMSGI2.211214/1), Principal Investigator 5-year Starting Grant from the Swiss National Science Foundation; Title: “Ergodic Methods in Number Theory”.	2023 – 2027
IAS Member My visit at IAS in 2022/23 was supported by the National Science Foundation under Grant No. DMS-1926686.	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
NSF Grant (DMS-1901453), Principal Investigator 3-year research grant awarded by the US National Science Foundation, Division of Mathematical Sciences, Analysis program; Title: “Investigations in Combinatorics and Number Theory via Ergodic Theoretic Methods”.	2019 – 2022

RESEARCH AWARDS

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

TEACHING AWARDS

Best Teacher in the Mathematics Section For the academic year 2023/24, I was awarded the EPFL award for best teacher in the mathematics section.	Aug. 2024
Golden Polysphere Award I received the 2024 <i>SB Polysphère</i> and the 2024 <i>Polysphère d'or</i> awards for outstanding teaching. This prize is the highest award a professor can receive directly from the students at EPFL.	Oct. 2024

RESEARCH TALKS

Colloquium	University of Bern	Sep. 2024
Additive Combinatorics Conference	ICMS, Edinburgh	Aug. 2024
Groups and Geometry Seminar	University of Geneva	Nov. 2023
New England Dynamics Seminar	Brown University	Dec. 2023
Pointwise Ergodic Theory & Connections	King's College, London	Jun. 2023
Nilpotent structures in topological dynamics, ergodic theory and combinatorics	MRCC Bedlewo, Poland	Jun. 2023
Number Theory Seminar	IST Austria	May 2023
Korea Online Ergodic Theory Seminar	Postech, Korea	May 2023
Graduate Research Opportunities for Women	Max-Planck Institute, Bonn	Apr. 2023
Special Year Workshop	IAS, Princeton	Mar. 2023
Combinatorics seminar	MIT	Feb. 2023
Colloquium	Northwestern University	Feb. 2023
Combinatorics Student Seminar	Princeton University	Jan. 2023
Online Analysis Research Seminar (OARS)	Online Seminar	Dec. 2022
Ergodic Theory and Dynamical Systems Seminar	Northwestern University	Nov. 2022
Dynamics Seminar	University of Illinois at Chicago	Nov. 2022
Seminar	IAS, Princeton	Sep. 2022
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

Below is a list of university courses that I have taught.

École Polytechnique Fédérale de Lausanne (EPFL)

Spring 2025	<i>Analysis II</i>
Fall 2024	<i>Combinatorial Number Theory</i>
Fall 2024	<i>Ergodic Theory</i>
Spring 2024	<i>Analysis II</i>
Fall 2023	<i>Combinatorial Number Theory</i>
Fall 2023	<i>Ergodic Theory</i>
Spring 2023	<i>Ergodic Theory</i>
Spring 2023	<i>Combinatorial Number Theory</i>
Spring 2022	<i>Ergodic Theory</i>
Fall 2021	<i>Combinatorial Number Theory</i>

Northwestern University

Spring 2021	<i>Graduate Topics Course in Dynamical Systems</i>
Spring 2021	<i>Multivariable Integral Calculus for Engineering</i>
Winter 2021	<i>Foundations of Higher Mathematics</i>
Winter 2020	<i>Multiple Integration and Vector Calculus</i>
Fall 2019	<i>Multivariable Differential Calculus</i>
Spring 2019	<i>Foundations of Higher Mathematics</i>
Fall 2018	<i>Single-Variable Differential Calculus</i>

The Ohio State University

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

Vienna University of Technology (TU Wien)

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

PHD STUDENTS

- ◆ **Dimitrios Charamaras**, 2021-2025 (anticipated)
- ◆ **Felipe Osiel Hernández Castro**, 2023-2027 (anticipated)

INSTITUTIONAL SERVICE

Hiring Committee Work

I served on several hiring committees at various levels at EPFL, including positions for Bernoulli instructors, Tenure-Track Professors, and administrative roles.

Outreach Committee

I am the head of the EPFL mathematics outreach committee.

2024–
present

OUTREACH SERVICE

Young Researchers in Mathematics Program

In summer 2022, I initiated 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 is the first program of this kind in mathematics in Switzerland. To date, there have been three installments of the program: summer 2022, summer 2023, and summer 2024. Here is a link to the program's website: <https://bernoulli.epfl.ch/young/>.

2022–
present

Northwestern Prison Education Program (NPEP)

Held at the Stateville Maximum Security Prison, a maximum-security correctional facility for men 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. In fall quarter 2019, I was the first instructor from the mathematics department to participate in the program by designing and teaching a college-level course in mathematical literacy and quantitative reasoning to a cohort of 21 incarcerated students. Here is a [link to the NPEP website](#).

Fall 2019

Comité camps d'été pour gymnasiens.

I am part of a committee that created a new type of math camp for high school students called *Pensée Mathématique*. The program, which is organized in collaboration with EPFL's *service de promotion de l'éducation (SPE)*, ran successfully for the first time in fall 2023, and is scheduled to run again in fall 2024. Here is a [link to the program's website](#).

2022–
present

RESEARCH SERVICE

Midwest Virtual Dynamics Seminar Organizer

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

Spring 2020–
Fall 2021

Seminar Organizer at Northwestern University

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

Fall 2018–
Fall 2021

Expanding Dynamics Summer School

Summer 2021

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

Conference Organizer: Ergodic Ramsey Theory Conference

Nov. 2020

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

PhD Headstart Program, The Ohio State University

Summer 2016

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.

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.

Peer Reviewing for International Journals

I offered expert opinions and conducted formal peer reviews of manuscripts for mathematics journals across all levels. These included prestigious journals such as *Annals of Mathematics* and *JAMS*, among numerous others, too many to list here.

PROFESSIONAL AFFILIATIONS

Member of the AMS (American Mathematical Society)**Member of the OeMG (Austrian Mathematical Society)****Member of the SMS (Swiss Mathematical Society)**

MEDIA OUTREACH

- In 2020 the *Quanta Magazine*, an online news outlet founded by the Simons Foundation focusing on public service journalism in mathematics, 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](#).
- In 2022, the *Quanta Magazine* published another article on my research, featuring my recent work on the Erdős sumset conjecture titled "From Systems in Motion, Infinite Patterns Appear". A link to the article can be found [here](#).
- Each year the *Institute of Advanced Study* at Princeton publishes an article featuring some of the work done by members of the School of Mathematics for a broader audience. In 2023, the article concerned my work on Erdős's $B + B + t$ conjecture and is available on the [IAS website](#).
- My work and research was also featured on Terrence Tao's prominent online blog: see [here](#) and [here](#).