
Curriculum Vitae:

Alp Uzman

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Personal & Contact Information

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Education

Ph.D. in Mathematics Pennsylvania State University, University Park Sep. 2016 – May 2023 (expected)

Advisor: Federico Rodríguez Hertz

B.Sc. in Mathematics, Summa Cum Laude Koç University, Istanbul Sep. 2011 – Jun. 2016

B.A. in Philosophy Koç University, Istanbul Sep. 2012 – Jun. 2016

Exchange Program University of California, Irvine Jan. 2015 – Jun. 2015

Lycee Diploma Kabataş Erkek Lisesi, Istanbul Sep. 2006 – Jun. 2011

Publications

Arithmeticity for Maximal Rank Positive Entropy Actions of \mathbb{R}^k [In Preparation] We extend an arithmeticity theorem of A. Katok and F. Rodríguez Hertz. They showed that [J. Mod. Dyn. 10 (2016), 135–172; MR3503686] given a C^{1+} maximal rank positive entropy action of \mathbb{Z}^k ($k \in \mathbb{Z}_{\geq 2}$), the manifold acted upon can be decomposed into finitely many components in such a way that the action restricted to any one of these components and the finite index subgroup fixing said component is measure theoretically isomorphic to an algebraic action, and the isomorphism has certain smoothness properties compatible with the dynamical foliations. We extend their machinery to locally free C^{1+} maximal rank positive entropy actions of \mathbb{R}^k ($k \in \mathbb{Z}_{\geq 2}$), and show that any such action comes from suspending an algebraic maximal rank positive entropy action of \mathbb{Z}^k up to a constant time change. This in particular solves a problem in a prequel paper of Katok and Rodríguez Hertz, joint with B. Kalinin [Ann. of Math. (2) 174 (2011), no. 1, 361–400; MR2811602].

Fried Average Entropy for Nilpotent Groups [In Preparation]

Pesin-Conditional Hölder Continuity of Subresonant Normal Forms of Contractions [In Preparation]

Honors & Scholarships

KU 1st Ranking Graduate in the College of Sciences Jun. 2016

KU 2nd Ranking Graduate in the Department of Philosophy Jun. 2016

KU Exchange Program Grant Jan. 2015

TEV (Turkish Foundation of Education) Eclat Scholarship Sep. 2012 – Jun. 2015

KU Tuition Scholarship Sep. 2011 – Jun. 2016

Research Talks Given

PSU Semi-annual Workshop in Dynamical Systems and Related Topics Oct. 2021
Katok-Rodríguez Hertz Arithmeticity for Maximal Rank Positive Entropy Actions of \mathbb{R}^k

Expository Talks Given

Student Geometric Functional Analysis Seminar Hofstadter's Butterfly Nov. 2017
Working Seminar: Dynamics and its Working Tools Random Dynamics VI Oct. 2017
WS Random Dynamics III Sep. 2017

Expository Talks Given at the Dynamics Student Seminar:¹

CC Geometry and Lyapunov Spectrum Rigidity, Part II Apr. 2022
CC Geometry and Lyapunov Spectrum Rigidity Apr. 2022
A Roadmap for Sub-Riemannian Dynamics Feb. 2022
Smooth Ergodic Theory of Higher Rank Abelian Actions Oct. 2021
Young's Explicit Examples of Nonuniformly Hyperbolic Cocycles that are not Uniformly Hyperbolic Apr. 2021
Spaces of Anosov Diffeomorphisms Nov. 2020
Some Remarks on the Definition of Hyperbolic Cascades Oct. 2020
A Categorical Approach to Mixing Properties Oct. 2020
Decay of Correlations in Random Dynamics Aug. 2020
Property (FH), Property (T), and Harmonicity Feb. 2020
First Cohomology with Representation Coefficients, Property (FH) and Property (T) Jan. 2020
Ergodic Theory and Weil Measures for Foliations III Nov. 2019
Ergodic Theory and Weil Measures for Foliations II Oct. 2019
Ergodic Theory and Weil Measures for Foliations I Oct. 2019
Basics of Topological Entropy Oct. 2019
The Grigorchuk Group Sept. 2019
The Problem of the Non-Integrability of the Center Distributions of Partially Hyperbolic Diffeomorphisms Feb. 2019
A Criterion for the Simplicity of the Lyapunov Spectrum Oct. 2018
Margulis' Normal Subgroup Theorem Apr. 2018
Kazhdan Property (T) Mar. 2018
Amenability Feb. 2018
Moore Ergodicity Theorem Jan. 2018
Quasi-periodic Schrödinger Operators Dec. 2017
Yomdin's Theorem & Shub Entropy Conjecture Nov. 2017
Random Dynamics Sep. 2017

¹<https://math-cal.cloud.science.psu.edu/events/seminar/967>

Service

- Turkish Math Society** DRP Turkey 2022, Mentor Jul.-Aug. 2022
- Mentee: Kaan Çim (Koç University); Topic: Expansive Homeomorphisms on Surfaces
- PSU** Dynamics Student Seminar, Leading Organizer Fall 2017 – Spring 2021
- Coorganizers: Nawaf Alansari & Ignacio Correa

Conferences & Workshops Attended

- PSU** Recent Advances in Dynamics, Geometry, and Number Theory Aug. 2022
- PSU** Semi-annual Workshop in Dynamical Systems and Related Topics Oct. 2021, Sep. 2019, Oct. 2018, Oct. 2017, Oct. 2016
- Polish Academy of Sciences** 2020 Vision for Dynamics Aug. 2019
- Institute Des Hautes Études Scientifiques** Aspects of Geometric Group Theory Jul. 2019
- University of Maryland** Workshop on Dynamical Systems and Related Topics Apr. 2019, Apr. 2018
- University of Geneva** Borel Seminar 2018: Topology and Dynamics in the Swiss Alps Dec. 2018
- Universidad de la República** Workshop on Groups, Geometry and Dynamics Jul. 2018
- Institute for Pure & Applied Mathematics** New Methods for Zimmer’s Conjecture Jan. 2018
- PSU** FRG Conference on Moduli of Sheaves and Strange Duality Dec. 2017
- University of British Columbia** Current Trends in Dynamical Systems and the Mathematical Legacy of Rufus Bowen Aug. 2017
- Brigham Young University** Dynamics Beyond Uniform Hyperbolicity 2017 Jun. 2017
- University of Houston** Houston Summer School on Dynamical Systems May 2015, May 2017
- KU & Philosophical Society of Turkey** International Summer Program “Problems of Legal Philosophy in the Application of Law” Jun. 2013

Teaching Experience

- PSU** Graduate Teaching Assistant
- Grader** MATH 435 (Basic Abstract Algebra) Spring 2022
- Instructor** MATH 251 (Ordinary and Partial Differential Equations) Fall 2021
- Grader** MATH 513 (Partial Differential Equations I)
- Instructor** MATH 21 (College Algebra I) ($\times 2$) Fall 2020
- Instructor** MATH 230 (Calculus and Vector Analysis) Spring 2020
- MATH 231 (Calculus of Several Variables)
- Instructor** MATH 251 Fall 2019
- Instructor** MATH 251 ($\times 2$) Fall 2018
- Instructor** MATH 36 (Insights into Mathematics) ($\times 2$) Fall 2017
- Instructor** MATH 22 (College Algebra II) Summer 2017
- Instructor** MATH 220 (Matrices) Spring 2017

Assistant MATH 34 (Mathematics of Money)	Fall 2016
KU Work & Study Program (Selected)	
Teaching Assistant MATH 203 (Multivariable Calculus)	Fall 2014
Assistant EQUR 121 (Symbolic Logic)	Spring 2014
Teaching Assistant EQUR 121	Fall 2013
Assistant MATH 103 (Introduction to Abstract Mathematics)	Fall 2013
Assistant MATH 204 (Differential Equations)	Spring 2013
Teaching Assistant MATH 107 (Linear Algebra)	Fall 2012
Assistant MATH 106 (Single Variable Calculus)	Fall 2012
KU KOLT (Koç Office of Learning & Teaching)	
Tutor MATH 103 & PHIL 101 (Freshman Seminar)	Fall 2013
Tutor MATH 106 & MATH 203	Spring 2013
Tutor MATH 107	Fall 2012

Languages

Mothertongue Turkish
Proficient English
Beginner German