Ronnie Pavlov

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EDUCATION

The Ohio State University Columbus, OH

Ph.D. in Mathematics, 2007

- Dissertation: "Some Results on Recurrence and Entropy"
- Advisor: **Professor Vitaly Bergelson**

M.S. in Mathematics, 2003

- Master's Thesis: "Subwords of Sturmian Sequences"
- Advisor: **Professor Vitaly Bergelson**

B.S. in Mathematics, 2000

CURRENT POSITION

Associate Professor, University of Denver, **September 2014 - present**

PREVIOUS POSITIONS

Assistant Professor, University of Denver, **September 2010 - August 2014**

Postdoctoral Fellow, University of British Columbia, **August 2007 - August 2010**

RESEARCH INTERESTS

Dynamical systems and ergodic theory, specifically symbolic dynamics in multiple dimensions

REFEREED PUBLICATIONS (* indicates DU work, authors listed in alphabetical order)

[1*] *Subshifts with slowly growing numbers of follower sets* (with Thomas French and Nic Ormes), Contemp. Math., to appear.

[2*] *On factors of $\mathbb{Z}^d$ SFTs and intrinsic ergodicity* (with Kevin McGoff), Ergodic Theory Dynam. Systems, to appear.

[3*] *Random $\mathbb{Z}^d$-shifts of finite type* (with Kevin McGoff), J. Mod. Dyn., **10** (2016), no. 2, 287–330.

[4*] *Extender sets and multidimensional subshifts*, (with Nic Ormes), Ergodic Theory Dynam. Systems, **36** (2016), no. 3, 908–923.

[5*] *On intrinsic ergodicity and weakenings of the specification property*, Adv. Math. **295** (2016), 250–270.

[6*] *Representation and poly-time approximation for pressure of $\mathbb{Z}^2$ lattice models in the non-uniqueness region*, (with Stefan Adams, Raimundo Briceño, and Brian Marcus), J. Stat. Phys. **162** (2016), no. 4, 1031–1067.

[7*] *An integral representation for topological pressure in terms of conditional probabilities*, (with Brian Marcus), Israel J. Math., **207** (2015), no. 1, 395–433.

[8*] *Entropies realizable by block gluing shifts of finite type* (with Michael Schraudner), J. Anal. Math., **126** (2015), 113–174.

[9] *Classification of sofic projective subdynamics of multidimensional shifts of finite type* (with Michael Schraudner), Trans. Amer. Math. Soc., **367** (2015), 3371–3421.

[10*] *Entropy and measures of maximal entropy for axial powers of subshifts* (with Tom Meyerovitch), Proc. London Math. Soc., **109** (2014), no. 4, 921–945.

[11*] *A characterization of topologically completely positive entropy for shifts of finite type*, Ergodic Theory Dynam. Systems, **34** (2014), no. 6, 2054–2065.

[12*] *Shifts of finite type with nearly full entropy*, Proc. Lond. Math. Soc., **108** (2014), no. 1, 103–132.

[13*] *One dimensional Markov random fields, Markov chains and topological Markov fields* (with N. Chandgottia, G. Han, B. Marcus, and T. Meyerovitch), Proc. Amer. Math. Soc., **142** (2014), no. 1, 227–242.

[14*] *Computing bounds for entropy of stationary $\mathbb{Z}^d$ Markov random fields* (with Brian Marcus), SIAM J. Discrete Math, **27** (2013), no. 3, 1544–1558.

[15] *Independence entropy of $\mathbb{Z}^d$-shift spaces* (with Erez Louidor and Brian Marcus), Acta. Appl. Math., **126** (2013), 297–317.

[16*] *Approximating entropy for a class of $\mathbb{Z}^2$ Markov random fields and pressure for a class of functions on $\mathbb{Z}^2$ shifts of finite type* (with Brian Marcus), Ergodic Theory Dynam. Systems, **33** (2013), no. 1, 186–220.

[17*] *A class of nonsofic multidimensional shift spaces*, Proc. Amer. Math. Soc. **141** (2013), no. 3, 987–996.

[18] *Approximating the hard square entropy constant with probabilistic methods*, Ann. Probab. **40** (2012), no. 6, 2362–2399.

[19] *Perturbations of multidimensional shifts of finite type*, Ergodic Theory Dynam. Systems **31** (2011), no. 2, 483-526.

[20] *Multidimensional sofic shifts without separation and their factors* (with Michael Boyle and Michael Schraudner), Trans. Amer. Math. Soc. **362** (2010), no. 9, 4617–4653.

[21] *Some Counterexamples in Topological Dynamics*, Ergodic Theory Dynam. Systems **28** (2008), no. 4, 1291–1322.

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INVITED
CONFERENCE
PRESENTATIONS

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Computation of topological entropy for $\mathbb{Z}^2$ shifts of finite type   **Jun. 2016**
2016 Computability in Europe 2016, Université Paris 13

Almost specification and intrinsic ergodicity   **Apr. 2016**
2016 Workshop on Dynamical Systems and Related Topics, University of Maryland

Almost specification and intrinsic ergodicity   **Apr. 2016**
Sectional Meeting of the AMS, University of Utah

Multidimensional Symbolic Dynamics (5-day course)   **Jan. 2016**
2016 Winter School in Recent Trends in Nonlinear Science, University of Sevilla, Spain

Computation of topological entropy for $\mathbb{Z}^d$ shifts of finite type   **Oct. 2015**
Sectional Meeting of the AMS, Loyola University

Specification properties and intrinsic ergodicity for subshifts   **Apr. 2015**
2015 Workshop on Dynamical Systems and Related Topics, University of Maryland

Specification properties and intrinsic ergodicity for subshifts   **Dec. 2014**
2014 Workshop on Symbolic Dynamics of Finitely Presented Groups, Santiago, Chile

A characterization of topologically completely positive entropy for shifts of finite type   **Jan. 2014**
2014 Joint Meetings of the American Mathematical Society, Baltimore, Maryland

Limiting entropy of d-dimensional axial powers of subshifts **Aug. 2013**
Mathematical Congress of the Americas 2013, Guanajuato, Mexico

Shifts of finite type with nearly full entropy **Jun. 2013**
Automata Theory and Symbolic Dynamics Workshop, UBC

Shifts of finite type with nearly full entropy **Apr. 2013**
Sectional Meeting of the AMS, University of Colorado

Shifts of finite type with nearly full entropy **Dec. 2012**
School on Information and Randomness 2012, Puerto Varas, Chile

Entropy and mixing for multidimensional symbolic systems (mini-course: 4 talks) **Dec. 2012**
DySyCo school in Dynamical Systems and Computation, Santiago, Chile

Limiting entropy of d-dimensional axial powers of subshifts **Jan. 2012**
First Franco-Chilean Congress in Dynamics and Combinatorics, Baie de Somme, France

Notions of subdynamics for multidimensional shifts of finite type **Jun. 2011**
Journées du groupe de travail SDA2, Caen, France

Shifts of finite type with nearly full entropy **Feb. 2011**
Workshop on Ergodic Optimization, BIRS

Limiting d-dimensional nearest neighbor entropy of shifts of finite type **Dec. 2010**
School on Information and Randomness 2010, Pucón, Chile

Limiting entropy and independence entropy of d-dimensional shift spaces **Dec. 2010**
2010 Canadian Mathematical Society Winter Meeting, UBC

Estimating the topological entropy of $\mathbb{Z}^2$ shifts of finite type **Feb. 2010**
Thematic week on multi-dimensional subshifts and tilings, CIRM

Estimating the entropy of a $\mathbb{Z}^d$ shift of finite type with probabilistic methods **Jul. 2009**
1st PRIMA Congress, University of New South Wales, Australia

$\mathbb{Z}^d$ shifts with restricted subshifts and factors **May 2008**
Interdisciplinary Mathematical and Statistical Techniques 2008, Univ. Memphis

OTHER PROFESSIONAL CONTRIBUTIONS	

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PROFESSIONAL
CONTRIBUTIONS

- Served on Program Committee and refereed for the proceedings of the 17th International Workshop on Cellular Automata and Discrete Complex Systems (AUTOMATA '11): Nov. 2011
- Reviewed ECOS-CONICYT grant proposal for Franco-Chilean collaboration, Sep. 2012

FUNDING
(EXTERNAL TO DU)

- PI, NSF grant number DMS-1500685, title "Topics in Symbolic Dynamics," dates Jun. 2015 - May 2018. Funded in amount of $161,416.
- Co-PI (with Nic Ormes), NSF Proposal number DMS-1418490, for Pingree Park Dynamical Systems Workshop 2014. Funded in amount of $25,000.
- Awarded $1,800 by AMS for travel to Mathematical Congress of the Americas, Aug. 2012.
- Co-PI (with Nic Ormes), NSF Proposal number DMS-1113584, for Pingree Park Dynamical Systems Workshop 2011. Funded in amount of $25,000.

AWARDS AND
HONORS

- Sole recipient of university-wide Pioneer award for faculty in 2016
- Nominated for NSM award for Outstanding Junior Faculty in 2012
- Nominated for NSM awards for Excellent Teaching in 2012 and 2015
- Winner of Postdoc Teaching Award at UBC Mathematics Department in 2008
- Winner of Graduate Teaching Award at Ohio State University Mathematics Department in 2006

Service
- Organized DU math department's exhibit for STEMosphere outreach event: Sep. 2015
- Reviewed for Mathematical Reviews: Jan. 2012-present
- Refereed for various journals, including Proceedings of the AMS, Discrete Contin. Dyn. Syst. Series A, Ergodic Theory Dynam. Systems, Israel J. Math., Forum of Mathematics Sigma, Linear Algebra Appl., Theoret. Comput. Sci.: 2010-present
- Co-organized 4th and 5th Pingree Park Dynamics Workshops (with Nic Ormes), 2011 and 2014
- Served on DU math department Undergraduate Committee, 2012-present
- Organized DU math department's Analysis and Dynamics Seminar, 2012-2014
- Supervised DU math department's Putnam Exam Practice Sessions, 2010-present
- Mentored gifted high school student, 2013-2015
- Mentored gifted middle school student, 2011-2012