

Brandon Seward

☎ 5739 AP&M 📞 (858)246-5121 ✉ bseward@ucsd.edu 🌐 www.math.ucsd.edu/~bseward/

Academic Appointments

- 2023– Associate Professor, University of California San Diego
- 2019–2023 Assistant Professor, University of California San Diego
- 2016–2019 Assistant Professor/Courant Instructor, Courant Institute of Mathematical Sciences, New York University
- 2015–2016 Postdoctoral Fellow, The Hebrew University of Jerusalem

Education

- 2015 Ph.D. in Mathematics (under Ralf Spatzier), University of Michigan
- 2009 Masters in Mathematics (under Su Gao), University of North Texas
- 2008 Bachelors in Mathematics, University of North Texas

Awards

- 2021–2023 Alfred P. Sloan Research Fellow
- 2020–2023 NSF Grant DMS-1955090: Entropy theory for non-amenable groups
- 2018 The Michael Brin Dynamical Systems Prize for Young Mathematicians
- 2016 ProQuest Distinguished Dissertation Award, University of Michigan
- 2015 The Sumner Myers Thesis Prize, University of Michigan
The Wirt and Mary Cornwell Prize in Mathematics, University of Michigan
- 2010–2014 NSF Graduate Student Research Fellowship
- 2008 Outstanding Undergraduate in Mathematics Award, University of North Texas

■ Publications and Preprints

26. *Borel combinatorics of abelian group actions*, with S. Gao, S. Jackson, and E. Krohne
submitted.
25. *Minimal subdynamics and minimal flows without characteristic measures*, with J. Frisch and A. Zucker
submitted.
24. *Borel asymptotic dimension and hyperfinite equivalence relations*, with C. Conley, S. Jackson, A. Marks, and R. Tucker-Drob
Duke Mathematical Journal 172 (2023), no. 16, 3175–3226.
23. *Bernoulli shifts with bases of equal entropy are isomorphic*
Journal of Modern Dynamics 18 (2022), 345–362.
22. *The Koopman representation and positive Rokhlin entropy*
International Mathematics Research Notices (2023), no. 1, 350–371.
21. *Continuous combinatorics of abelian group actions*, with S. Gao, S. Jackson, and E. Krohne
Memoirs of the American Mathematical Society, to appear.
20. *Positive entropy actions of countable groups factor onto Bernoulli shifts*
Journal of the American Mathematical Society 33 (2020), no. 1, 57–101.
19. *Krieger’s finite generator theorem for actions of countable groups III*, with A. Alpeev
Ergodic Theory and Dynamical Systems 41 (2021), no. 10, 2881–2917.
18. *Følner tilings for actions of amenable groups*, with C. Conley, S. Jackson, D. Kerr, A. Marks, and R. Tucker-Drob
Mathematische Annalen 371 (2018), no. 1-2, 663–683.
17. *Hyperfiniteness and Borel combinatorics*, with C. Conley, S. Jackson, A. Marks, and R. Tucker-Drob
Journal of the European Mathematical Society 22 (2020), no. 3, 877–892.
16. *Weak containment and Rokhlin entropy*
submitted.
15. *Cost, ℓ^2 -Betti numbers, and the sofic entropy of some algebraic actions*, with D. Gabo-riau
Journal d’Analyse Mathématique 139 (2019), 1–65.
14. *Forcing constructions and countable Borel equivalence relations*, with S. Gao, S. Jack-son, and E. Krohne
Journal of Symbolic Logic 87 (2022), no. 3, 873–893).
13. *Krieger’s finite generator theorem for actions of countable groups II*
Journal of Modern Dynamics 15 (2019), 1–39.

12. *Krieger's finite generator theorem for actions of countable groups I*
Inventiones Mathematicae, 215 (2019), no. 1, 265–310.
11. *Borel structurability on the 2-shift of a countable group*, with R. Tucker-Drob
Annals of Pure and Applied Logic 167 (2016), no. 1, 1–21.
10. *Every action of a non-amenable group is the factor of a small action*
Journal of Modern Dynamics 8 (2014), no. 2, 251–270.
9. *Locally nilpotent groups and hyperfinite equivalence relations*, with S. Schneider
Mathematical Research Letters, to appear.
8. *Arbitrarily large residual finiteness growth*, with K. Bou-Rabee
Journal für die reine und angewandte Mathematik (Crelle's Journal) 710 (2016), 199–204.
7. *Ergodic actions of countable groups and finite generating partitions*
Groups, Geometry, and Dynamics 9 (2015), no. 3, 793–810.
6. *Finite entropy actions of free groups, rigidity of stabilizers, and a Howe–Moore type phenomenon*
Journal d'Analyse Mathématique 129 (2016), no. 1, 309–340.
5. *A subgroup formula for f -invariant entropy*
Ergodic Theory and Dynamical Systems 34 (2014), no. 1, 263–298.
4. *Group colorings and Bernoulli subflows*, with S. Gao and S. Jackson
Memoirs of the American Mathematical Society 241 (2016), no. 1141, 1–241.
3. *Generalizing Magnus' characterization of free groups to some free products*, with K. Bou-Rabee
Communications in Algebra 42 (2014), no. 9, 3950–3962.
2. *Burnside's Problem, spanning trees, and tilings*
Geometry & Topology 18 (2014), no. 1, 179–210.
1. *A coloring property for countable groups*, with S. Gao and S. Jackson
Mathematical Proceedings of the Cambridge Philosophical Society 147 (2009), no. 3, 579–592.

■ Service and Public Engagement

- 2022 Co-organizer of the Banff International Research Station workshop “Interactions between Descriptive Set Theory and Smooth Dynamics”
- 2020– Co-organizer of the Group Actions Seminar at UC San Diego
- 2020 Participated in the Society of Undergraduate Mathematics Students (SUMS) event “Interview with a Professor”

- 2018 Served on the scientific committee of Workshop: Entropies and Soficity held at the Milyon Labex
- 2017 Co-organizer of the Graduate Summer School: Classification Problems in Ergodic Theory held at the University of California Irvine
- 2011 Served on a panel that presented study abroad opportunities to students in Buea and Douala, Cameroon
Participated in the Wolverine Express and visited economically underprivileged Michigan high schools to promote college aspirations

■ Lecture Series and Minicourses

- 2017 Graduate Summer School: Classification Problems in Ergodic Theory, University of California Irvine.
Ergodic Theory and Operator Algebras, Texas A&M University.
- 2016 Measured Group Theory Winter School, The Erwin Schrödinger International Institute for Mathematical Physics.

■ Conference Talks

- 2022 Graduate Mini-school in Groups and Dynamics, University of Texas at Austin.
- 2019 Midwest Dynamical Systems Conference, University of Illinois at Chicago.
Measurable, Borel, and Topological Dynamics, Centre International de Recontres Mathématiques.
Measurability, Ergodic Theory, and Combinatorics, University of Warwick.
Workshop on Dynamical Systems and Related Topics, University of Maryland.
Very Informal Gathering of Logicians, University of California Los Angeles.
- 2018 Semi-Annual Workshop in Dynamical Systems and Related Topics, Pennsylvania State University
Workshop: L^2 -Invariant and Their Analogues in Positive Characteristic, Instituto de Ciencias Matemáticas.
Borel Combinatorics and Ergodic Theory Conference, École Polytechnique Fédérale de Lausanne.
Workshop: Entropies and Soficity, Milyon Labex.
- 2017 Mean Dimension and Sofic Entropy Meet Dynamical Systems, Geometric Analysis and Information Theory, Banff International Research Station.
- 2016 Measured Group Theory, Mathematisches Forschungsinstitut Oberwolfach.
Entropy Theory in Dynamics, Banff International Research Station.

- Random Spatial Processes and Dynamics, Texas A&M University.
 Measured Group Theory, The Erwin Schrödinger International Institute for Mathematical Physics.
- 2015 Groups, Dynamics and Related Topics, Technion.
 Ergodic Theory, Fractals, and Groups, The Hebrew University of Jerusalem.
- 2014 Concentration Week on Groups, Groupoids, and Dynamics, Texas A&M University.
 Logic, Dynamics, and Their Interactions II, University of North Texas.
 AMS Western Spring Sectional Special Session on Descriptive Set Theory and its Applications, University of New Mexico.
- 2013 Arbeitsgemeinschaft: Sofic Entropy, Mathematisches Forschungsinstitut Oberwolfach.
 Descriptive Set Theory Workshop, The Erwin Schrödinger International Institute for Mathematical Physics.
 Dynamics, Geometry, and Operator Algebras, Texas A&M University.
 Geometric and Asymptotic Group Theory with Applications, City College of New York.
 AMS Southeastern Spring Sectional Special Session on Set Theory and Its Applications, University of Mississippi.
- 2012 Logic, Dynamics, and Their Interactions, University of North Texas.
 Spring Topology and Dynamics Conference, Universidad Nacional Autónoma de México.
- 2011 Second International Conference on the Mathematical Sciences, University of Buea.
 Spring Topology and Dynamics Conference, University of Texas at Tyler.
- 2009 Spring Topology and Dynamics Conference, University of Florida.

■ Colloquia

- 2019 Cornell University, Princeton University
- 2018 University of California Los Angeles, California Institute of Technology, Texas A&M University, Northwestern University, University of Illinois at Chicago, University of California San Diego, City College of New York
- 2016 University of Michigan
- 2015 Ben Gurion University of the Negev

■ Seminar Talks

- 2021 University of California Los Angeles, University of California San Diego, Wrocław University of Science and Technology
- 2020 University of California Los Angeles
- 2019 Cornell University
- 2018 École Normale Supérieure de Lyon
- 2017 Rutgers University, University of California Los Angeles, State University of New York at Buffalo, Vanderbilt University, Courant Institute of Mathematical Sciences, Simons Foundation, Universidad de Chile
- 2016 Tel Aviv University, École Normale Supérieure de Lyon, Alfréd Rényi Institute of Mathematics
- 2015 The Hebrew University of Jerusalem, Technion, Vanderbilt University, Ohio State University
- 2014 Pennsylvania State University, University of California Los Angeles, California Institute of Technology, Cornell University, École Normale Supérieure de Lyon
- 2013 Cornell University
- 2012 Université de Genève
- 2011 Yale University, University of Michigan