

Wenbo Sun

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Employment

- **Virginia Tech, Blacksburg, VA** Aug. 2019 - present
Assistant Professor in mathematics
- **The Ohio State University, Columbus, OH** Aug. 2016 - May 2019
Zassenhaus Assistant Professor in mathematics

Education

- **Northwestern University, Evanston, IL** Sep. 2011 - June 2016
Ph.D. in mathematics; Advisor: Bryna Kra
– Thesis title: Topological and finite structure theorems and applications.
- **Peking University, Beijing, China** Sep. 2007 - June 2011
B.A. in mathematics; Advisor: Wenxiang Sun
– Undergraduate Research: Boundedness of Riesz means on H^p space associated with Hermite expansions (Joint with Y. Deng and H. Liu, unpublished).
B.A. in philosophy; minor.

Research Interests

- Ergodic theory and dynamical system
- Combinatorics
- Number theory

Publications

- *Seminorms for multiple averages along polynomials and applications to joint ergodicity.* (Joint work with S. Donoso and A. Koutsogiannis) submitted. arXiv: 1902.10237.
- *Sarnak's Conjecture for nilsequences on arbitrary number fields and applications.* submitted. arXiv: 1902.09712.
- *Weak ergodic averages over dilated measures.* Ergodic Theory and Dynamical System, to appear. arXiv: 1809.06916.
- *Optimal lower bounds for multiple recurrence.* (Joint work with S. Donoso, A. Le and J. Moreira) Ergodic Theory and Dynamical System, to appear. arXiv: 1809.06912.
- *Under- and over-independence in measure preserving systems.* (Joint work with T. Adams and V. Bergelson) Israel Journal of Mathematics, to appear. arXiv: 1807.02966.
- *Pointwise multiple averages for sublinear functions.* (Joint work with S. Donoso and A. Koutsogiannis) Ergodic Theory and Dynamical System, doi:10.1017/etds.2018.118.

- *Equidistribution of dilated curves on nilmanifolds.* (Joint work with B. Kra and N. Shah) Journal of the London Mathematical Society, **98** (2018), no. 3, 708-732.
- *Quantitative multiple recurrence for two and three transformations.* (Joint with S. Donoso) Israel Journal of Mathematics, (2018), 1-15.
- *Pointwise convergence of some multiple ergodic averages.* (Joint with S. Donoso) Advances in Mathematics, **330** (2018), 946-996.
- *A structure theorem for multiplicative functions over the Gaussian integers and applications.* Journal d'Analyse Mathématique, **134** (2018), no. 1, 55-105.
- *Pointwise multiple averages for systems two commuting transformations.* (Joint with S. Donoso) Ergodic Theory and Dynamical Systems, **38** (2018), no. 6, 2132-2157.
- *A pointwise cubic average for two commuting transformations.* (Joint with S. Donoso) Israel Journal of Mathematics, **216** (2016), no. 2, 657-678.
- *Dynamical cubes and a criteria for systems having product extensions.* (Joint with S. Donoso) Journal of Modern Dynamics, **9** (2015), no. 1, 365-405.
- *Multiple recurrence and convergence for certain averages along shifted primes.* Ergodic Theory and Dynamical Systems, **35** (2015), no. 5, 1592-1609.

Paper Reviewed

- 2019: 1 paper from *Advances in Mathematics*.
- 2019: 1 paper from *Contemporary Mathematics of the American Mathematical Society*.
- 2018: 1 paper from *Fundamenta Mathematicae*.
- 2018: 1 paper from *Proceedings of the London Mathematics Society*.

Talks Given/to Give

- **Combinatorial and Additive Number Theory (CANT) 2019, City University of New York, New York, NY, May 21-24, 2019:** Sarnak's Conjecture for nilsequences on arbitrary number fields and applications.
- **Seminar on Dynamical Systems, Northwestern University, Evanston, IL, May 14, 2019:** Sarnak's Conjecture for nilsequences on arbitrary number fields and applications.
- **Joint Mathematics Meetings # 1145, Baltimore Convention Center, Hilton Baltimore, and Baltimore Marriott Inner Harbor Hotel, Baltimore, MD, Jan. 16-19, 2019:** Topological models characterizing multiple ergodic averages.
- **Seminar on Dynamical Systems, University of Chicago, Chicago, IL, Nov. 19, 2018:** Weak ergodic averages over dilated curves.
- **Seminar on Dynamical Systems, the City University of New York, New York, NY, Nov. 16, 2018:** Weak ergodic averages over dilated curves.
- **Seminar on Dynamical Systems, University of Science and Technology of China, Hefei, Anhui, China, July 16, 2018:** Under- and over-independence in measure preserving systems.
- **International conference on dynamical systems, Southern University of Science and Technology, Shenzhen, China, Jun. 18-29, 2018:** Pointwise convergence of some averages for commuting transformations.

- **Combinatorial and Additive Number Theory (CANT) 2018, City University of New York, New York, NY, May 22-25, 2018:** Quantitative recurrence theorem and solution counting problem.
- **AMS Sectional Meetings # 1139, Northeastern University, Boston, MA, Apr. 21-22, 2018:** Quantitative recurrence theorem and solution counting problem.
- **Seminar on Dynamical Systems, Northwestern University, Evanston, IL, Nov. 7, 2017:** Pointwise multiple convergence for commuting transformations.
- **AMS Sectional Meetings # 1131, University of North Texas, Denton, TX, Sep. 9-10, 2017:** Equidistribution of dilated curves.
- **Mathematical Congress of Americas 2017, Session "Symbolic Dynamics", Montreal, Canada, July 24-28, 2017:** Quatitative multiple recurrence problem.
- **Seminar on Dynamical Systems, Chile University, Santiago, Chile, July 10, 2017:** Equidistribution of dilated curves.
- **Seminar on Dynamical Systems, Penn State University, University Park, Pennsylvania, Mar. 13, 2017:** Quatitative multiple recurrence problem.
- **AMS Sectional Meetings # 1113, University of Memphis, Memphis, TN, Oct. 17-18, 2015:** Structure theorem for multiplicative functions of Gaussian integers and its applications.
- **AMS Sectional Meetings # 1112, Loyola University Chicago, Chicago, IL, Oct. 2-4, 2015:** Face transformations on dynamical cubes and its applications.
- **BIRS Workshop: Combinatorics Meets Ergodic Theory, Banff, BC, Canada, July 19 - 23, 2015:** Dynamical cubes and a criteria for systems having product extensions.
- **Workshop and Dynamical Systems and Related Topics, University of Maryland, College Park, MD, Apr. 18-20, 2015:** Multiple pointwise averages and topological models.
- **AMS Sectional Meetings # 1107, Georgetown University, Washington, DC, Mar. 7-8, 2015:** Partition regularity over Gaussian integers.
- **Seminar on Dynamical Systems, University of Science and Technology of China, Hefei, Anhui, China, July 1, 2013:** Multiple averages along shifted primes.

Teaching Experience

The Ohio State University, Columbus, OH

2016 - 2019

Lecturer for:

- Linear Algebra (2 sections): Spring 2019.
- Mathematical Topics for Engineers: Fall 2018.
- Linear Algebra (2 sections): Spring 2018.
- Mathematical Topics for Engineers: Fall 2017.
- Engineering Mathematics B: Spring 2017.
- Calculus III (2 sections): Fall 2016.

Northwestern University, Evanston, IL

2011 - 2016

Teaching Assistant for:

- Complex Analysis: Spring 2015.

- Linear Algebra and Multivariable Calculus: Fall 2014.
- Applied Analysis (Ordinary Differential Equations): Fall 2014.
- Analysis: Winter 2014.
- Algebra: Winter 2014.
- Accelerated Mathematics for ISP (calculus): Fall 2013.
- Geometry/Topology: Fall 2013.
- Accelerated Linear Algebra and Multivariable Calculus: Winter 2013.
- Analysis: Winter 2013.
- Accelerated Mathematics for ISP (calculus): Fall 2012.
- Analysis: Fall 2012.