Shuyang (Ray) Bai

CONTACT INFORMATION

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RESEARCH INTERESTS

- **Probability**: Stochastic processes, Self-similar processes, Limit theorems, Wiener chaos
- **Statistics**: Time series, Long-range dependence (Long memory), Resampling methods

WORK EXPERIENCE

Assistant Professor, University of Georgia, Athens, GA, 08/2016 - now

EDUCATION

Boston University, Boston, MA, 09/2011- 05/2016

Ph.D. in Mathematics

- Advisor: Murad S. Taqqu

Bejing Normal University, Beijing, China, 09/2007-07/2011

B.S. in Mathematics and Applied Mathematics

PREPRINTS

1. How the instability of ranks in non-central limit theorems affects large-sample inference under long memory (with Murad S. Taqqu) (2016).
2. Hermite rank, power rank and the generalized Weierstrass transform (with Murad S. Taqqu) (2016).

PUBLICATIONS

1. On the validity of resampling methods under long memory (with Murad S. Taqqu) (2016) (To appear in *The Annals of Statistics*).
2. Shuyang Bai, Murad S. Taqqu. "The behavior of the generalized Rosenblatt process at extreme parameter values". (2016) (To appear in *The Annals of Probability*).
3. Shuyang Bai, and Murad S. Taqqu."The impact of diagonals of polynomial forms on limit theorems with long memory". *Bernoulli* 23.1 (2017):710-742.
4. Shuyang Bai, Murad S. Taqqu. "The universality of homogeneous polynomial forms and critical limits". *Journal of Theoretical Probability* 29.4 (2016): 1710-1727.
5. Shuyang Bai, Murad S. Taqqu, Ting Zhang "A unified approach to self-normalized block sampling". *Stochastic Processes and their Applications* 126.8 (2016): 2465-2493.
6. Shuyang Bai, Murad S. Taqqu " Short-range dependent processes subordinated to the Gaussian may not be strong mixing". *Statistics & Probability Letters* 110 (2016): 198-200.

7. Shuyang Bai, Mamikon S. Ginovyan, Murad S. Taqqu "Limit theorems for quadratic forms of Lévy-driven continuous-time linear processes". *Stochastic Processes and their Applications* 126.4 (2016): 1036-1065.
8. Shuyang Bai, Mamikon S. Ginovyan, Murad S. Taqqu. "Functional limit theorems for Toeplitz quadratic functionals of continuous-time Gaussian stationary processes". *Statistics & Probability Letters* 104 (2015): 58-67.
9. Shuyang Bai and Murad S. Taqqu. "Convergence of long-memory discrete k-th order Volterra processe". *Stochastic Processes and their Applications* 125.5 (2015): 2026-2053.
10. Shuyang Bai and Murad S. Taqqu. "Structure of the third moment of the generalized Rosenblatt distribution". *Statistics & Probability Letters* 94 (2014): 2473-2485.
11. Shuyang Bai and Murad S. Taqqu. "Generalized Hermite processes, discrete chaos and limit theorems". *Stochastic Processes and their Applications* 124.4 (2014): 144-152.
12. Shuyang Bai and Murad S. Taqqu. "Multivariate limits of multilinear polynomial-form processes with long memory". *Statistics & Probability Letters* 83.11 (2013): 2473-2485.
13. Shuyang Bai and Murad S. Taqqu. "Multivariate limit theorems in the context of long-range dependence". *Journal of Time Series Analysis* 34.6 (2013) 717-743.

Teaching Experience

1. Probability (undergraduate and graduate)
2. Stochastic Processes (graduate)

Presentations

1. Poster: "Self-normalized resampling of time series". 18th Meeting of New Researchers in Statistics and Probability, University of Wisconsin.
2. Talk: "Self-normalized resampling of long-memory time series". Seminar, Department of Statistics, Southwestern University of Finance and Economics, China, 05/2016.
3. Poster: "Self-normalized resampling of long-memory time series". Workshop on Dependence, Stability, and Extremes, The Fields Institute, Toronto, 05/2016.
4. Talk: "Long memory and non-standard limit theorems". Applied Math Seminar, University of Massachusetts Lowell, 02/2016.
5. Talk: "Self-normalized resampling for time series". Boston University Statistics and Probability Seminar, Boston University, 12/2015.
6. Talk: "Limit theorems for polynomial-form moving average" CRM-PIMS Summer School in Probability, McGill University, 06/2015
7. Poster: "Fractional processes on Wiener Chaos and non-central limit theorems". Information Theory and Concentration Phenomena, Institute for Mathematics and and its Applications, University of Minnesota, 04/2015
8. Talk: "Self-similar processes on Wiener Chaos". Boston University Statistics and Probability Seminar, Boston University, 12/2014.
9. Poster: "Fractional processes on Wiener Chaos and non-central limit theorems". Cincinnati Symposium on Probability Theory and Applications, University of Cincinnati, 09/2014

10. Talk "Wiener chaos and limit theorems under strong dependence" Boston University Student Statistics and Probability Seminar, Boston University, 03/2014.
11. Poster: "Fractional processes on Wiener Chaos and non-central limit theorems". Multifractal Analysis: From Theory to Applications and Back (5-day workshop), Banff International Research Station, 02/2014.
12. Talk: "Long-range dependence meets short-range dependence: multivariate limit theorems". Satellite Summer School to the 7th International Conference on Lévy Processes, 07/2013.
13. Talk: "Limit theorems under independence, weak dependence, and long range dependence". Boston University Student Statistics and Probability Seminar, Boston University, 09/2012.

Honors and Awards

1. Travel award, 18th IMS New Researchers Conference, 2016.
2. Itô Travel Award, International Mathematical Union, 2015.
3. Dean's Fellowship, Boston University, 2011.
4. Outstanding Undergraduate Thesis award, Beijing Normal University, 2011.

Review Service

Referee work for the following journals

1. *Advances in Complex Systems*
2. *Bernoulli*
3. *Fields Institute Communications Series*
4. *Journal of Theoretical Probability*
5. *Journal of Korean Statistical Society*
6. *Physica A*
7. *Statistics & Probability Letters*
8. *Stochastic Analysis and Applications*
9. *Stochastic Processes and their Applications*
10. *The Annals of Probability*

Invited reviewer for *Mathematical Reviews*

Skills

Languages: English (fluent), Mandarin Chinese (native).
Computer: R, Matlab, IDL, SAS, C, LaTex, Linux, Microsoft Office, Google Docs.