AYSE DENIZ SEZER

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CURRENT POSITION

- **Department of Mathematics and Statistics, University of Calgary,** Calgary, AB, Canada

Assistant Professor

RESEARCH INTERESTS

- Markov processes, martingale theory, applications to Mathematical Finance
- Superprocesses and applications to partial differential equations
- Markov Chain Monte Carlo Methods

EDUCATION

Ph. D., Cornell University **Ithaca, NY, USA** **August 2000-August 2005**

School of Operations Research and Industrial Engineering
Major- Probability; minors in mathematics and statistics

- Thesis research: Martingale representation for a filtration generated by excursions of a diffusion away from a finite set, and an application to a credit risk model with information reduction. Advisor: Philip Protter

B.S., Middle East Technical University **Ankara, Turkey** **September 1996-June 2000**

- Industrial Engineering
- Double major in Mathematics

POSITIONS HELD

August 2008-present **University of Calgary** Calgary, AB, Canada
Assistant professor, Department of Mathematics and Statistics.

September 2005-2008 **York University** Toronto, ON, Canada
Post-doctoral fellow, Department of Mathematics and Statistics
Supervisors: Tom Salisbury and Neal Madras

- X-Harmonic functions and conditioning super-Brownian motion on its exit measure
- Estimating the approximation error of the Gibbs Sampler for a certain Bayesian model using iterated random maps

TEACHING EXPERIENCE

University of Calgary, Instructor
- **Calculus I:** Freshman level. Approximate enrollment of 120 students.
- **Statistical methods:** Freshman level. Approximate enrollment of 90 students.
- **Stochastic Calculus for Finance:** Senior level.
- **Introduction to Mathematical Finance:** Junior level.
- **Mathematical Probability:** Sophomore level. Approximate enrollment of 55 students.
- **Markov Processes:** Ph.D. level.
- **Credit Risk:** Ph.D./Masters level

York University, Instructor
- **Differential Calculus with Applications:** Freshman level. Approximate enrollment of 70 students. September 2006-December 2006.
- **Probability Models:** Senior level. Approximate enrollment of 30 students. September 2007-December 2007

Cornell University, Instructor
- **Introduction to Stochastic Processes:** Undergraduate and graduate level. Approximate enrollment of 25 students. July 2003-August 2003.

Cornell University, Teaching Assistant
- Responsibilities included conducting recitations, preparing homework solutions, office hours for various graduate and undergraduate courses such as *Credit Risk*, *Probability Theory, Introduction to Stochastic Processes, Financial Engineering with Stochastic Calculus, Applied Financial Engineering.*
- *M. Eng. Project Co-advisor*, Optimal timing of pregnancy diagnosis in dairy cows, Spring 2005; an industrial problem solving project sponsored by Cornell School of Veterinary Medicine.
- *M. Eng. Project Co-advisor*, Applied Financial engineering. Spring 2002. Spring2001. Team projects sponsored by finance companies.

Teaching Development Training

- **International Teaching Assistant Training Program**, Cornell University, Fall 2000.
- **Instructional Skills Workshop** (24 hours), University of Calgary, August 2010.
- **Faculty Teaching Certificate** (36 hours), University of Calgary, November 2010.
- **Teaching in Canadian Classrooms** (30 hours), University of Calgary, November 2010.

Recognitions and Nominations in Teaching

- Students' Union Teaching Excellence Award Nominee (Winter 2011)

Appearances in Media

- *“A fresh approach to teaching”,* UToday, July 19, 2011.

RESEARCH EXPERIENCE

Peer Reviewed Publications

- A. D. Sezer, “Filtration Shrinkage by level-crossings of diffusion”. Annals of Probability 35, 2007.
- R. A. Jarrow, P. Protter, A. D. Sezer, “Information Reduction by level-crossings in a credit risk model”. Finance and Stochastics, Vol. 11, No. 2, 2007.
- N. Madras, D. Sezer, “Quantitative bounds for Markov Chain Convergence: Wasserstein and Total Variation distances”. Bernoulli Volume 16, Number 3 (2010), 882-908.
- T. Salisbury, D. Sezer, “Conditioning super-Brownian motion on its boundary statistics, and fragmentation”, 2012. To appear in the Annals of Probability.

Papers Submitted /In Preparation

- T. Salisbury, D. Sezer, *The moment densities of SBM and applications to X-harmonic functions”.*
- D. Sezer, “*A class of weakly extreme X harmonic functions”.*

Grants

- **NSERC Discovery Grant, 2010-2015**, Markov Processes and Applications to Finance.

Travel and Research Visit Awards

- AWM 2005 annual meeting, travel fellowship. Atlanta, GA, USA, January 2005.
- AWM 2008 annual meeting, travel fellowship. San Diego, CA, USA, January 2008.
- Fields Institute, Thematic Program in Quantitative Finance, May 2010.

Conferences--Invited

- AWM 2005 annual meeting. Atlanta, GA, USA, January 2005. Poster presentation. *“Filtration Shrinkage and Compensators’’.*
- AWM 2008 annual meeting. San Diego, CA, USA, January 2008. *“Conditioning super-Brownian motion on its exit measure”.*
- Workshop in Memory of Prof. Hayri Korezlioglu: Recent Developments in Financial Mathematics and Stochastic Calculus, Ankara, Turkey, April 2008 *“An Information Reduction model for credit risk based on level-crossings of a diffusion”*
- Conference on Liquidity Risk, Ithaca, NY, June 2008. *“An Information Reduction model for credit risk based on level-crossings of a diffusion”.*
- AMS 2009 annual meeting, Washington D.C., USA, January 2009. *“An Information Reduction model for credit risk based on level-crossings of a diffusion”*
- CMS-SMM-2009, Second Joint Meeting of the Canadian Mathematical Society and the Sociedad Matemática Mexicana, Vancouver B.C., August 2009*, “Conditioning Super-Brownian motion on its boundary statistics and a class of weakly extreme functions”.*

- Canadian Mathematical Society Winter Meeting, Toronto, ON, December 2011, *"The moment densities of SBM and applications to X-harmonic functions"*

Conferences-- Contributed

- Second Canada-France Congress. June, 2008. *"Conditioning super-Brownian motion on its exit measure''*.
- Seminar on Stochastic Processes. The Fields Institute, Toronto, Canada, March 2007. Short presentation. *"Conditioning super-Brownian motion on its exit measure"*.
- Annual Meeting of Alberta Statisticians, Edmonton, AB, Canada, October 2008. *"Quantitative bounds for Markov chain convergence: Wasserstein and Total Variation distances"*

Seminars--Invited

- Department of Statistics and Applied Probability, UCSB, Santa Barbara, USA, February 2005, *"Filtration Shrinkage: Modeling Information Reduction"*.
- Department of Mathematics and Statistics, University of Iowa, Iowa City, IA, USA, February 2005, Toronto Probability Seminar, Fields Institute, Toronto, ON, Canada, October 2005, *"A theory of filtration shrinkage"*.
- Center of Applied Mathematics, Cornell University, Ithaca, NY, USA, February 2005, *"Filtration Shrinkage: Modeling Information Reduction"*.
- Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey, January 2007, *"Convergence of Markov Chain Monte Carlo Methods in Continuous State Space."*
- Department of Mathematics, Claremont McKenna College, Claremont, CA, USA , January 2008 *"Information reduction via level-crossings in a credit risk model":*
- Department of Mathematics and Statistics, McGill University, Montreal, QB, Canada, February 2008 *"Conditioning super-Brownian motion on its exit measure":*
- Department of Mathematics and Statistics, McMaster University, Hamilton, ON, Canada, February 2008, *"Information reduction via level-crossings in a credit risk model":*
- Department of Mathematics and Statistics, University of Calgary, Calgary, AB, Canada, March 2008, *"Information reduction via level-crossings in a credit risk model":*
- Department of Mathematics, Simon Fraser University, Vancouver, BC, Canada, September 2011, *The Martin boundary theory for the nonlinear p.d.e.1/2 \Delta u=2 u^2: A probabilistic approach*
- PIMS/ Shell Lunchbox Lecture Series, Calgary, AB, Canada, February 2012, *"What does math have to do with cows?"*

Departmental Seminars

University of Calgary, Department of Mathematics and Statistics, Calgary, AB, Canada

- March 2008, *"Information reduction via level-crossings in a credit risk model"*.
- October, 2010, 'Lunch at the Lab'-- Financial mathematics seminar, *'Exotic Cliquets' , Book Review: 'The Volatility Surface' by Jim Gatheral, Wiley, 2006)*
- February, 2011, 'Lunch at the Lab'-- Financial mathematics seminar, *'Exotic Cliquets' , Book Review: 'Adding Jumps' (Book Review: 'The Volatility Surface' by Jim Gatheral, Wiley, 2006)*
- POTSI/Mprime talks in analysis: March 2012, *The Martin boundary theory for the nonlinear p.d.e.1/2 \Delta u=2 u^2: A probabilistic approach.*

York University, Toronto, ON, Canada

- November 2007, *"Filtration shrinkage by level crossings of a diffusion"*

- May 2008, *“Information reduction via level-crossings in a credit risk model”*

Graduate Students Supervised

- Azamed Gezahagne , Ph.D candidate, Summer 2009-Winter 2011
- Yang Liu, Masters candidate, Fall 2011-present
- Mobalaji Ogunsolu, Ph.D candidate, January 2012-present
- Juan Dong, Masters candidate, Fall 2012-present

Undergraduate Students Supervised

- Brittany Cora Martin-NSERC USRA, summer 2011
- Zahra Arablou, research assistant, summer 2011-fall 2011

SERVICE

University Service

University of Calgary

- Judge, Undergraduate Research Symposium, Fall 2011
- Panelist for Teaching in Canadian Classrooms, Teaching and Learning Center, Winter 2012
- Internal-external examiner- Graduate examination committee ,Electrical and Computer Engineering, Fall 2013

Departmental Service

Department of Mathematics and Statistics, University of Calgary

- Graduate examination committee, Neutral chair, Summer 2011, Fall 2012
- Graduate examination committee member, Winter 2012, Summer 2012
- Curriculum revision for Mathematical Finance
- Open house volunteer
- First year undergraduate orientation volunteer

Department of Mathematics and Statistics, York University

- Organizer, Probability Seminar

Other Service

- Referee for 14th Conference Applied Stochastic Models and Data Analysis (ASMDA2011)
- Referee for Quantitative Finance.