

Michael Ludkovski

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Citizenship: Canadian
Birth date: 02/11/1980

Employment

University of Michigan, Assistant Professor, Dept of Mathematics Sept 2005 -

Education

Princeton University, Ph.D., Operations Research and Financial Engineering 2005
Simon Fraser University, Vancouver, Canada. B.Sc., Honors Mathematics 2001
Budapest Semesters in Mathematics Undergraduate Program, Hungary Fall 1999

Research Interests

Stochastic control, optimal stopping, stochastic filtering,
Markov processes, Monte Carlo methods in finance.
Energy derivatives, indifference pricing, mortality risk, real
options, optimal insurance design, American options.

Awards and Fellowships

Francis S. Upton Fellowship, Princeton University 2001-2005
Governor General's Silver Medal for top undergraduate GPA (4.28/4.33) 2001
Gordon M. Shrum Academic Scholarship, Simon Fraser University 1997-2001

Grants

"Relative Hedging of Systematic Mortality Risk", with E. Bayraktar. CKER Grant, Society of Actuaries (\$10,000), 2007; PI.
"Financial Engineering for Actuarial Mathematics Workshop". NSF Grant no. 043684 (\$15,000), 2007; PI.

Publications

1. Optimal Tracking of a Hidden Markov Chain with Point Process Observations, with E. Bayraktar, Submitted, 2007.
2. Relative Hedging of Systematic Mortality Risk, with E. Bayraktar, Submitted, 2007.
3. Finite Horizon Decision Timing with Partially Observable Poisson Processes, with S. Sezer, Submitted, 2007.
4. Financial Hedging of Operational Flexibility, Revised and Submitted, 2007.
5. Valuation of Energy Storage: An Optimal Switching Approach, with R. Carmona, Revised and Submitted, 2007.
6. Optimal Risk Sharing with Distortion Risk Measures and Transaction Costs, with V.R. Young, Submitted, 2007.

7. On Comonotonicity of Pareto Optimal Allocations, with L. Rüschendorf, *Statistics and Probability Letters*, to Appear, 2008.
8. Indifference Pricing of Annuities under Stochastic Mortality and Stochastic Interest Rates, with V.R. Young, *Insurance: Mathematics and Economics*, to Appear, 2007.
9. Filling the Gap between American and Russian Options: Reduced Regret, with S. Dayanik, *Stochastics*, 79(1-2), pp. 61—83, 2007.
10. Pricing Asset Scheduling Flexibility using Optimal Switching, with R. Carmona. *Applied Mathematical Finance, Special Issue on Commodities*, to Appear, 2008.
11. Energy Trading, with R. Carmona, *SIAM News*, 39(5), June 2006.
12. Spot Convenience Yield Models for the Energy Markets, with R. Carmona. *Mathematics of Finance*, 2004, *AMS Comm. volume 351*, Eds. G Yin and Q Zhang , pp. 65—80.
13. New Families of Ideal 2-Level Autocorrelation Ternary Sequences from Second Order Decimation Hadamard Transform, with G. Gong. *International Workshop in Coding and Cryptography* (Paris, 2001), Elsevier, 2001, pp. 345—354.

Working Papers

- A Simulation Algorithm for Optimal Stopping under Partial Information, 2007.
- Pricing Commodity Derivatives with Partial Observations and Basis Risk, with R. Carmona, 2006.

Presentations and Seminars

- “Optimal Stopping and Optimal Switching with Partially Observed Poisson Processes”, Statistics and Applied Probability Colloquium, University of California at Santa Barbara, Goleta, CA. January 2008.
- “Optimal Stopping and Optimal Switching with Partially Observed Poisson Processes”, Mathematics Colloquium, Claremont McKenna College, Claremont, CA. December 2007.
- “Relative Hedging of Systematic Mortality Risk”, Actuarial Math Seminar, Concordia University, Montreal, QC. November 2007.
- “Relative Hedging of Systematic Mortality Risk”, Financial Math Seminar, University of Toronto, Toronto, ON. September 2007.
- “Decision Timing with Partially Observed Poisson Processes”, Stochastic Processes and Applications 2007, Urbana, IL. August 2007.
- “Valuation of Energy Storage”, invited speaker, BIRS Workshop on Mathematics and the Environment, Banff, Canada. May 2007.
- “Financial Hedging of Operational Flexibility”, Financial Math Seminar, University of Florida, Gainesville, FL. December 2006.
- “Financial Hedging of Energy Assets”, invited speaker, INFORMS 2006, Pittsburgh, PA. November 2006.
- “Financial Hedging of Operational Flexibility”, speaker and travel grant at 4th Bachelier World Congress, Tokyo, Japan. August 2006.
- “Financial Hedging of Operational Flexibility”, invited talk at SIAM Financial Mathematics and Engineering FME06 Conference, Boston, MA. July 2006.
- “Indifference Pricing of Annuities under Stochastic Mortality and Stochastic Interest Rates”, Actuarial and Financial Math Seminar, University of Michigan, Ann Arbor, MI. March 2006.
- “Optimizing operational management of energy assets”, poster presentation, Optimal Stopping Symposium, University of Manchester, Manchester, UK. January 2006.

- “Optimal Switching with Applications to Finance”, presentation at Saint Flour Probability Summer School, Saint Flour, France. July 2005.
- “Optimal Switching with Applications to Finance”, speaker and travel grant. Stochastic Processes and Applications 2005, Santa Barbara, CA. June 2005.
- “Stochastic Convenience Yield Model with Partial Observations and Exponential Utility”, invited speaker, INFORMS 2004, Denver, CO. October 2004.
- “Stochastic Convenience Yield Model with Partial Observations and Exponential Utility”, poster presentation. Workshop on Model Implementation, Algorithms and Software Issues. IMA, Minneapolis, MN. May 2004.
- “Stochastic Control for Energy Assets”, presentation, Princeton-Oxford Financial Mathematics Workshop, Oxford, UK. March 2004.

Service

Main Local Organizer, Workshop on Financial Engineering for Actuarial Mathematics, May 4-6, 2007.

Co-Organizer, Actuarial and Financial Math Seminar, University of Michigan, 2006-2008

Referee for Applied Mathematical Finance, SIAM Journal on Mathematical Analysis, Journal of Banking and Finance, North American Actuarial Journal, Annals of Applied Probability, SIAM Journal on Scientific Computation, Methods of Mathematical Operations Research, Mathematical Reviews.

Organizer, *ORFE Graduate Student Seminar*, Summer 2003 and Fall 2004
 President, *Mathematics and Statistics Student Society*, 1999-2000

Teaching

Math 526, *Stochastic Processes*, Winter 2007, Fall 2007, Winter 2008.

Math 523, *Theory of Risk*, Fall 2006;

Math 424, *Theory of Interest*, Fall 2005, Fall 2006, Spring 2007, Fall 2007;

Math 423, *Mathematics of Finance*, Winter 2006;

Math 115, *Calculus I*, Fall 2005;

All at University of Michigan

Lecturer, “Fortunes Made and Lost: Introduction to Financial Mathematics”, Michigan Math and Science Scholars Summer Camp, Ann Arbor, MI, July 2006, July 2007.

REU Supervisor: Anthony Kuehne, “Optimization of Hydroelectric Pumped Storage: An Extension of Optimal Switching”, University of Michigan, Summer 2007.

Teaching Assistant, ORFE Dept, Princeton University, 2002-2004

Graduate Student Advisor, *Senior Thesis Writers Discussion Group*, Fall 2004

Industry Experience

Intern, Energy Quantitative Research, Citadel Investment Group, LLC. (Chicago, IL), 06/2004-08/2004.

Software Developer, Certicom, Inc. (Toronto, ON), 01/2001-08/2001

Languages

English (fluent), Russian (fluent), Hebrew (fluent), French (good).

References

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Engineering
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