

Curriculum Vitae of Alexey Kuznetsov

Personal

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Citizenship Canada, Russia

Languages English, Russian

Education

2002-2004 Ph.D. in Mathematics, University of Toronto, Canada
Ph.D. Thesis: "Solvable Markov processes"
Advisor: Prof. C. Albanese

1997-2002 M.Sc. in Mathematics, Diploma with Honor, Moscow State University, Russia
M.Sc. Thesis: "Pricing of bonds in the Ho-Lee model under transaction costs"
Advisor: Prof. A.V. Melnikov

Research Interests

Stochastic processes
Mathematical Finance, Actuarial Mathematics
Special Functions, Complex Analysis, Numerical Methods

Employment

2011-present Associate Professor, Department of Mathematics and Statistics, York University

2008-2011 Assistant Professor, Department of Mathematics and Statistics, York University

2006-2008 Assistant Professor, Department of Mathematical Sciences, University of New Brunswick

2004-2006 Postdoctoral Fellow, Department of Mathematics and Statistics, McMaster University

Grants and Awards

2017	Casualty Actuarial Society grant “An efficient algorithm for approximating independent and dependent sums of log-normally distributed losses”, \$18,000 USD, joint with Ed Furman and Dan Hackmann
2013	NSERC Discovery Grant: ”Exit problems for Lévy processes” \$19,000 per year for 2013-2018
2012	NSERC Discovery Grant: ”Exit problems for Lévy processes” \$12,000 for 2012-2013
2010	Minor Research Fund, York University, \$1,352
2010	Junior Faculty Research Fund, York University, \$573.97
2007	NSERC Discovery Grant: ”Solvable models in option pricing and credit risk” \$12,000 per year for 2007-2012
2004	NSERC Postgraduate Scholarship
2003-2004	Ontario Graduate Scholarship, \$15,000

Published and accepted papers

- [41] A. Kuznetsov “*A direct evaluation of an integral of Ismail and Valent*” to appear in the edited volume ”Frontiers in Orthogonal Polynomials and q-Series”, World Scientific Publisher
- [40] B. Dyda, A. Kuznetsov and M. Kwasnicki “*Eigenvalues of the fractional Laplace operator in the unit ball*” to appear in the Journal of London Mathematical Society
- [39] A. Kuznetsov “*Constructing measures with identical moments*” to appear in the Proceedings of the American Mathematical Society
- [38] B. Dyda, A. Kuznetsov and M. Kwasnicki “*Fractional Laplace operator and Meijer G-function*”, to appear in Constructive Approximation
- [37] R.v.d. Hofstad, M. Holmes, A. Kuznetsov and W. Ruszel “*Strongly reinforced Polya urns with graph-based competition*”, to appear in Annals of Applied Probability
- [36] E. Furman, A. Kuznetsov, J. Su and R. Zitikis (2016) “*Tail dependence of the Gaussian copula revisited*”, Insurance: Mathematics and Economics, 69, 97-103
- [35] R. Feng, A. Kuznetsov and F. Yang (2016) “*A short proof of duality relations for hypergeometric functions*”, J. Math. Anal. Appl., 443(1), 116-122
- [34] D. Hackmann and A. Kuznetsov (2016) “*Approximating Levy processes with completely monotone jumps*”, Ann. Appl. Probab., 26(1), 328-359
- [33] A. Kuznetsov (2015) “*Explicit Hermite-type eigenvectors of the discrete Fourier transform*”, SIAM J. Matrix Anal. Appl., 36(4), 1443-1464

- [32] A. Kuznetsov (2015) “*Computing the truncated theta function via Mordell integral*”, *Math. Comp.*, 84, 2911-2926
- [31] D. Hackmann and A. Kuznetsov (2014) “*Asian options and meromorphic Lévy processes*”, *Finance and Stochastics*, 18, 825-844.
- [30] T. Hasebe and A. Kuznetsov (2014) “*On free stable distributions*”, *Elect. Comm. in Probab.*, 19, article 56, 1-12.
- [29] J. Burridge, A. Kuznetsov, M. Kwasnicki and A. E. Kyprianou (2014) “*New families of subordinators with explicit transition probability semigroup*”, *Stoch. Proc. Appl.*, 124(10): 3480-3495.
- [28] A. Kuznetsov and M. Morales (2014) “*Computing the finite-time expected discounted penalty function for a family of Lévy risk processes*”, *Scandinavian Actuarial Journal*, 2014(1), 1-31.
- [27] A. Kuznetsov, A.E. Kyprianou, J.C. Pardo and A.R. Watson (2014) “*The hitting time of zero for a stable process*”, *Electron. J. Probab.* , 19 (paper 30), 1-35.
- [26] A. Kuznetsov (2013) “*On the convergence of the Gaver-Stehfest algorithm*”, *SIAM J. Numer. Anal.*, 51(6): 2984-2998.
- [25] D. Hackmann and A. Kuznetsov (2013) “*A note on the series representation for the density of the supremum of a stable process*”, *Elect. Comm. in Probab.*, 18, article 42, 1-5.
- [24] A. Kuznetsov (2013) “*On the density of the supremum of a stable process*”, *Stoch. Proc. Appl.*, 123(3): 986-1003.
- [23] A. Kuznetsov and J.C. Pardo (2013) “*Fluctuations of stable processes and exponential functionals of hypergeometric Lévy processes*”, *Acta Applicandae Mathematicae*, 123(1): 113-139.
- [22] A. Kuznetsov (2013) “*Asymptotic approximations to the Hardy-Littlewood function*”, *J. Comput. Appl. Math.*, 237(1): 603-613.
- [21] A. Kuznetsov, A.E. Kyprianou and V. Rivero (2013) “*The theory of scale functions for spectrally negative Lévy processes*”, *Lévy Matters II*, Springer Lecture Notes in Mathematics, Vol. 2061: 97-186.
- [20] A. Kuznetsov and X. Peng (2012) “*On the Wiener-Hopf factorization for Lévy processes with bounded positive jumps*”, *Stoch. Proc. Appl.*, 122(7): 2610-2638.
- [19] A. Kuznetsov, A.E. Kyprianou and J.C. Pardo (2012) “*Meromorphic Lévy processes and their fluctuation identities*”, *Ann. Appl. Probab.*, 22(3): 1101-1135.
- [18] A. Kuznetsov, J.C. Pardo and M. Savov (2012) “*Distributional properties of exponential functionals of Lévy processes*”, *Electron. J. Probab.*, 17(8): 1-35.
- [17] A. Kuznetsov (2012) “*On the distribution of exponential functionals for Lévy processes with jumps of rational transform*”, *Stoch. Proc. Appl.*, 122(2): 654-663.

- [16] A. Kuznetsov, A.E. Kyprianou, J.C. Pardo and K. van Schaik (2011) “*A Wiener-Hopf Monte-Carlo simulation technique for Lévy processes*”, *Ann. Appl. Probab.*, 21(6): 2171-2190.
- [15] F. Hubalek and A. Kuznetsov (2011) “*A convergent series representation for the density of the supremum of a stable process*”, *Elect. Comm. in Probab.*, 16: 84-95.
- [14] A. Kuznetsov (2011) “*On extrema of stable processes*”, *Ann. Probab.*, 39(3): 1027-1060.
- [13] A. Kuznetsov (2011) “*Analytic proof of Pecherskii-Rogozin identity and Wiener-Hopf factorization*”, *Theory Probab. Appl.*, 55(3): 432-443.
- [12] A. Kuznetsov (2010) “*Wiener-Hopf factorization for a family of Lévy processes related to theta functions*”, *J. Appl. Probab.*, 47(4): 1023-1033.
- [11] A. Kuznetsov (2010) “*Wiener-Hopf factorization and distribution of extrema for a family of Lévy processes*”, *Ann. Appl. Probab.*, 20(5): 1801-1830.
- [10] C. Albanese and A. Kuznetsov (2009) “*Transformations of Markov processes and classification scheme for solvable driftless diffusions*”, *Markov Process. Relat. Fields*, 15(4): 563-574.
- [9] T.R. Hurd and A. Kuznetsov (2009) “*On the first passage time for Brownian motion subordinated by a Lévy process*”, *J. Appl. Probab.*, 46(1): 181-198.
- [8] A. Kuznetsov (2008) “*Expansion of the Riemann Xi function in Meixner Pollaczek polynomials*”, *Canad. Math. Bull.*, 51(4): 561-569.
- [7] A. Kuznetsov (2008) “*On the Lanczos limit formula*”, *Integral Transforms and Special Functions*, 19(11): 853-858.
- [6] T.R. Hurd and A. Kuznetsov (2008) “*Explicit formulas for Laplace transform of stochastic integrals*”, *Markov Process. Relat. Fields*, 14(2): 277-290.
- [5] A. Kuznetsov (2007) “*Integral representations for the Dirichlet L-functions and their expansions in polynomials*”, *Integral Transforms and Special Functions*, 18(11): 827-835.
- [4] A. Kuznetsov (2007) “*On the Riemann-Siegel formula*”, *Proc. R. Soc. A*, 463(2086): 2557-2568.
- [3] T.R. Hurd and A. Kuznetsov (2007) “*Affine Markov chain model of multifirm credit migration*”, *Journal of Credit risk*, 3(1): 3-29.
- [2] C. Albanese and A. Kuznetsov (2005) “*Affine lattice models*”, *International Journal of Theoretical and Applied Finance (IJTAF)*, 8(2):223-238.
- [1] C. Albanese and A. Kuznetsov (2004) “*Unifying volatility models*”, *Risk Magazine*, 17(3): 94-98.

Submitted papers

- [4] A. Kuznetsov and M. Kwasnicki “*Spectral analysis of stable processes on the positive half-line*”

- [3] R. Feng, A. Kuznetsov and F. Yang “*Exponential functionals of Lévy processes and variable annuity guaranteed benefits*”
- [2] E. Furman, A. Kuznetsov and R. Zitikis “*Weighted risk capital allocations in the presence of systematic risk*”
- [1] A. Kuznetsov “*On Dirichlet series and functional equations*”

Recent presentations (since 2011)

- July 11, 2016 “Reinforced Polya urns”, World Congress in Probability and Statistics, Toronto
- April 15, 2016 “Reinforced Polya urns”, Probability Seminar, Department of Mathematics, University of Rochester, USA
- April 5, 2016 “The hitchhiker’s guide to Lévy processes”, Smith School of Business, Queens University, Kingston
- March 31, 2016 “Reinforced Polya urns”, CRM Probability Seminar, McGill University, Montreal
- October 6, 2015 “On tail dependence of the Gaussian copula”, Industrial-Academic Workshop on Optimization in Finance and Risk Management. Fields Institute, Toronto
- September 30, 2015 “How hard is it to compute a finite sum?”, International Conference on Analysis, Applications and Computations: In Memory of Lee Lorch. Fields Institute, Toronto
- June 9, 2015 “Spectral analysis of stable processes on the half-line”, Adventures in Self-Similarity Conference, Cornell University, Ithaca, USA
- May 10, 2015 “Hardy-Littlewood function: a nightmare for numerical analysts”, International Conference on Orthogonal Polynomials and q-Series, University of Central Florida, Orlando, USA
- October 18, 2014 “On special functions arising in the theory of stochastic processes”, AMS Sectional Meeting, Halifax
- June 23, 2014 “Numerical methods for Lévy processes”, CAIMS meeting, Saskatoon
- May 28, 2014 “Numerical methods for Lévy processes”, Statistical Society of Canada annual meeting, Toronto
- March 24, 2014 “Numerical methods for Lévy processes”, Cornell University, Ithaca, USA
- January 8, 2014 “On extrema of stable processes”, NZ Probability Workshop, Te Anau, New Zealand
- November 6, 2013 “Analytical theory of exponential functionals”, Lévy processes and self-similarity, Hammamet, Tunisia
- July 31, 2013 “The hitting time of zero for a stable process”, 36th Conference on Stochastic Processes and Their Applications, Boulder, Colorado, USA
- July 18, 2013 “On extrema of stable processes”, 7th International Conference on Lévy Processes, Wrocław, Poland

- March 21, 2013 “Numerical methods for Lévy processes”, three lectures at the Workshop on Numerical Methods in Finance, Western University, London, Canada
- December 12, 2011 “What do stable Lévy processes have in common with Quantum Topology?”, Canadian Mathematical Society winter meeting, Toronto, Canada.
- December 10, 2011 “Cool Math behind Asian options”, Canadian Mathematical Society winter meeting, Toronto, Canada.
- July 28, 2011 “A Wiener-Hopf Monte-Carlo simulation technique for Lévy processes”, Applied Mathematics, Modelling and Computational Science conference, Wilfried Laurier University, Waterloo, Canada.
- June 20, 2011 “On extrema of stable processes”, 35th Conference on Stochastic Processes and their applications, Oaxaca, Mexico.
- June 17, 2011 “Meromorphic Lévy Processes and their Applications in Finance and Insurance”, Workshop on Finance: Econometrics, Numerical Methods and foundations, CIMAT, Guanajuato, Mexico.
- June 3, 2011 “A Wiener-Hopf Monte-Carlo simulation technique for Lévy processes”, Canadian Mathematical Society summer meeting, University of Alberta, Edmonton, Canada.

Colloquium lectures

- March 9, 2017 “The hitchhiker’s guide to Lévy processes”, Department of Mathematical Sciences, University of Cincinnati, USA
- April 28, 2015 “The hitchhiker’s guide to Lévy processes”, Department of Mathematics, University of Illinois at Urbana-Champaign, USA
- February 5, 2015 “From Lévy processes to Number Theory and beyond”, Department of Mathematics, Ryerson University, Toronto

Editorial work

- 2016 - present Associate editor of the Journal of Applied Probability
- 2016 - present Associate editor of Advances in Applied Probability
- 2012 - present Associate editor of Stochastics (An International Journal of Probability and Stochastic Processes)

External professional activities

A course of lectures “Complex analytical methods in the theory of Lévy processes” at the Summer School on Lévy processes, July 18-22, 2016
 Université de Lille 1, France

Reviewing papers for: Annals of Probability, Probability Theory and Related Fields, Annals of Applied Probability, Electronic Journal of Probability, Journal of Applied Probability, Journal of Theoretical Probability, Stochastic

Processes and their Applications, Operations Research Letters, SIAM Journal of Financial Mathematics, Mathematical Finance, Quantitative Finance, International Journal of Theoretical and Applied Finance, IMA Journal of Management Mathematics, Journal of Computational and Applied Mathematics, IMA Journal of Numerical Analysis, Scandinavian Actuarial Journal, Proceedings of the American Mathematical Society, Inverse Problems, Abstract and Applied Analysis

International research invitations:

University of Bath, July 2010 and June 2013, visiting Andreas Kyprianou
University of Auckland, December 2013-January 2014, visiting Mark Holmes
Cornell University, March 2014, visiting Pierre Patie

Conferences/workshops organised

Co-organizer of the “Pre-World Congress Meeting of New Researchers in Statistics and Probability” at Fields Institute, July 8-9, 2016

Co-organizer of the workshop “Stable processes” at The Casa Mathematica Oaxaca, Mexico, November 6-11, 2016

Service

2016-present	Chair of the PhD Committee
2016-present	Senate Appeals Committee
2014 - present	Canadian Mathematical Olympiad Committee (Canadian Mathematical Society)
2014 - present	Executive Committee (department of Mathematics and Statistics)
2014 - present	Chair of the High School Liaison Committee
2015-2017	YUFA steward
2014 - 2016	FGS Petitions Committee
2014 - 2016	PhD Committee
2014-2015	50th Anniversary Committee
2014	Curriculum Committee (Applied Mathematics section)
2012 - 2013	Chair of the Curriculum Committee (Applied Mathematics)
2011 - 2012	Postdoctoral Committee
2011 - 2013	Adjudicating Committee (Applied Mathematics section)
2011 - present	Organizer of the Probability Seminar (department of Mathematics and Statistics)
January 2010 - June 2011	organizer of the weekly Mathematical Finance seminar (Fields Institute)

2009 - 2012	Curriculum Committee (Math for Commerce)
2009 - 2012	Curriculum Committee (Applied Mathematics)
2009 - 2011	organizer of the Applied and Industrial Mathematics Seminar
2008 - 2013	Graduate Executive Committee
2008 - 2013	Coordinator of the Graduate Diploma in Financial Engineering program
2008 - 2013	Financial Engineering Coordination Committee
2008 - 2012	PhD Committee

PhD examining committees

2015	Member of the Examining Committee for the PhD defence of Jianxi Su (Department of Mathematics and Statistics, York University)
2015	External examiner for the PhD defence of Shen Shan (Department of Statistical and Actuarial Sciences, Western University, London, Canada)
2015	External examiner for the PhD defence of Chen Yang (Department of Statistical and Actuarial Sciences, Western University, London, Canada)
2014	Chair and Dean's representative for the PhD defence of Haohan Huang (Department of Mathematics and Statistics, York University)
2014	Member of the Examining Committee for the PhD defence of Ikjyot Singh Kohli (Department of Physics and Astronomy, York University)
2014	Chair and Dean's representative for the PhD defence of Oliver Jovanovski (Department of Mathematics and Statistics, York University)
2013	Member of the Examining Committee for the PhD defence of David Rosa (Department of Chemistry, York University)
2010	Member of the Examining Committee for the PhD defence of Shahla Molahajloo (Department of Mathematics and Statistics, York University)

Teaching (York University)

Undergraduate

MATH 1013 "Applied Calculus I" (I was the course director in the Fall term of 2015)
MATH 1014 "Applied Calculus II" (I was the course director in the Winter term of 2016)
MATH 1530 "Introductory Mathematics for Economists I"
MATH 2280 "Mathematical Theory of Interest"
MATH 4143 "Scientific Computations for Finance Applications"
MATH 4280 "Risk Theory: Loss Models and Risk Measures"
MATH 4281 "Risk Theory: Ruin and Credibility"

Graduate

MATH 6911 “Numerical Methods in Finance”

Curriculum development (York University)

2017 have written a proposal on a new Specialized Honours BA and BSc stream in Applied Mathematics, specializing in Financial Mathematics

2009 developed a new course: MATH 2281 “Financial Economics”

Supervision (Postdoctoral)

2009-2010 Xianhua Peng (co-supervised with Tom Salisbury), Fields Ontario Postdoctoral Fellow, Ph.D. (Columbia), York University/Fields Institute

Supervision (Ph.D.)

2016 - present Justin Miles

2016 - present Mayad Al-Saidi

2013 - present Fenghao Yang, co-supervised with Tom Salisbury

2011-2015 Daniel Hackmann, Ph.D. Thesis “Analytical methods for Lévy processes with applications to finance” defended in June 2015 (currently a Postdoctoral Fellow at Johannes Kepler University Linz)

Supervision (M.A.)

2016 Hassan Chehaitli, M.A. survey paper

2016 Snezhana Kirusheva, research paper for the Graduate Diploma in Financial Engineering

2012 Denis Kourktchan, research paper for the Graduate Diploma in Financial Engineering

2012 Branislav Nikolic, research paper for the Graduate Diploma in Financial Engineering

2011 Wei Huang, research paper for the Graduate Diploma in Financial Engineering

2010-2011 Daniel Hackmann, M.A. thesis “The optimal dividend problem for two families of meromorphic Lévy processes” defended in August 2011

2010 Kaijie Cui, survey paper

2010 Yang Liao, research paper for the Graduate Diploma in Financial Engineering

Supervision (Undergraduate)

2015 Syed Asghar, Research Assistant (Undergraduate)

2014 Sandeep Saju, NSERC Undergraduate Student Research Award
2013 Iain Page, NSERC Undergraduate Student Research Award
2009 Anton Tenyakov, NSERC Undergraduate Student Research Award

My papers are available at: <http://www.math.yorku.ca/~akuznets/>

Toronto, ON, April 5, 2017