Resume
Pierre Patie

Contents

1 Personal Details

Private Address:	Professional Address:
17 Leifs Way,	Cornell University
Ithaca, NY 14850	School of Operations Research and Information Engineering
	Frank H.T. Rhodes Hall
	Ithaca, NY 14853

Phone: +1 (607) 255 91 30
E-Mail: pp396@cornell.edu
URL: http://courses2.cit.cornell.edu/pp396

Born in Pau (France)
Citizenship: French
Family Status: Married, 2 children Isïa (2006) and Orion (2008)

2 Professional Experience and Education

2013-   Associate Professor (Tenured since Aug. 2017) - Canaan Family Faculty Fellow
         School of Operations Research and Information Engineering (ORIE),
         Cornell University.

2009-12 Chargé de Cours - Associate Professor
         Actuarial Sciences Unit and Probability Unit,
         Department of Mathematics, Université Libre de Bruxelles (ULB).

2008-09 Privat-dozent (Assistant Professor)
         Institute of Mathematical Statistics and Actuarial Sciences (IMSV),
         University of Bern (UBe).

2006-08 Oberassistent, IMSV, UBe.

2006   Visiting Researcher, 6 months, Department of Mathematics,
         Swiss Federal Institute of Technology Zurich (ETH Zurich).

2005-06 FINRISK Research Fellow, Projet Omega, INRIA Sophia-Antipolis.

2005   PostDoc researcher, 6 months, RiskLab, Department of Mathematics, ETHZ.

2001-04 Researcher, RiskLab, Department of Mathematics, ETHZ.

2000-01 Coopérant du Service National Scientifique Français, RiskLab, Department of
         Mathematics, ETHZ.

1999-2000 Quantitative Analyst, Monis Software LtD, London.

EDUCATION

2008 Habilitation Thesis, Faculty of the Philosophical Natural Sciences, University of Bern,
      Title: *Explicit contributions to the study of self-similar Markov processes*,
      Talk: First passage time problems: From biology to economics.
      Teaching field: Probability Theory.
      Responsible: Prof. I. Molchanov.

2004 Docteur ès sciences, Departement of Mathematics, ETHZ,
      Title: *On some first passage time problems motivated by financial applications*,
      Supervisor : Prof. F. Delbaen.

1999 Mastère spécialisé en ingénierie mathématique, Ecole Polytechnique, France, and
      Swiss Federal Institute of Technology (EPF), Lausanne.
      Thesis: *Extreme value theory in finance*, Supervisor : Prof. N. El Karoui.

3 Research Activities

3 .1 Research Interests

- Operator theory and algebra: (Non) self-adjoint C_0-semigroups, Markov processes and PIDEs

  - Spectral theory of non-self-adjoint C_0-semigroups
  - Convergence to equilibrium for ergodic Markov processes
  - Functional inequalities for C_0-semigroups
  - Time and space non-local parabolic problems
  - Classification schemes: Intertwining, Interweaving and Gateway relations
  - Scaling limits and universality of spectral projections operators
  - Group representation

- (Applied) Probability theory

  - Exponential functional of Lévy processes
  - Exit problems for Markov processes and anomalous diffusions
  - Determinantal point processes and random matrices

- Applications

  - Mathematical finance and Insurance mathematics
  - Neurology

- Simulation

  - Exact simulation and numerical schemes for PIDEs

- Miscellaneous topics

  - The van Dantzig problem and the Riemann hypothesis
  - The moment problem
  - Special functions
  - Asymptotic analysis

3 .2 Research Papers

Published Papers

1. Konstantopoulos T., Patie P. and Sarkar R. (2022), A new class of solutions to the van Dantzig problem, the Lee-Yang property and the Riemann hypothesis, *Ann. Inst. Fourier*, to appear, 45p.

2. Constantinescu C., Loeffen R. and Patie P. (2022), First passage times over stochastic boundaries of subdiffusive processes, *Trans. Amer. Math. Soc.*, 375, no. 3, 1629–1652.

3. Miclo L., Patie P. and Sarkar R. (2022), Discrete self-similar and ergodic Markov chains, *Ann. Probab.* 50(6), 2085-2132.

4. Patie P. and Vaidyanathan A. (2022), Non-classical Tauberian and Abelian type criteria for the moment problem, *Math. Nachr.*, 295, no. 5, 970–990.

5. Chazal M., Kyprianou A.E. and Patie P. (2022), On some new transformations of Laplace exponents of spectrally negative Lévy processes, *A lifetime of excursions through random walks and Lévy processes- a volume in honour of Ron Doney's 80th birthday*, 157–180, Progr. Probab., 78, Birkhäuser/Springer.

6. Miclo L. and Patie P. (2022), On intertwining relations between Ehrenfest, Yule and Ornstein-Uhlenbeck processes, *Séminaires de Probabilités LI*, 117-141, Lecture Notes in Math., 2301, Springer.

7. Alili L., Bartholmé C., Chaumont L., Patie P., Savov M. and Vakeroudis S. (2022), On Doney's striking factorization of the arc-sine law, *A lifetime of excursions through random walks and Lévy processes- a volume in honour of Ron Doney's 80th birthday*, 43-58, Progr. Probab., 78, Birkhäuser/Springer.

8. Patie P. and Savov M. (2021), Spectral expansions of non-self-adjoint generalized Laguerre semigroups, *Memoirs Amer. Math. Soc.*, 272, no. 1336, vii+182 pp.

9. Miclo L. and Patie P. (2021), On interweaving relations, *J. Funct. Anal.* 280, no. 3, 53pp.

10. Jarrow R.A., Patie P., Srapionyan A. and Zhao Y. (2021), Risk-neutral pricing techniques and example, *Math. Finance*, 31: 857–884.

11. Cheridito P., Patie P., Vaidyanathan A. and Srapionyan A. (2021), On non-local ergodic Jacobi semigroups: spectral theory, convergence-to-equilibrium, and contractivity, *Journal de l'Ecole Polytechnique - Mathématiques*, Tome 8, p. 331-378.

12. Bartholmé C. and Patie P. (2021), Turán inequalities and complete monotonicity for a class of entire functions, *Analysis Math.*, 47, no. 3, 507–527.

13. Patie P. and Srapionyan A. (2021), Spectral projections correlation structure for short-to-long range dependent processes, *European J. Appl. Math.*, 32 , no. 1, 1–31

14. Choi M.C.H. and Patie P. (2020), Analysis of non-reversible Markov chains via similarity orbit, *Combinatorics, Probability and Computing*, 29(4), 508-536.

15. Patie P. and Vaidyanathan A. (2020), A spectral theoretical approach for hypocoercivity applied to some degenerate hypoelliptic, and non-local operators, *Kinet. Relat. Mod.*, 13(3): 479-506.

16. Patie P. and Vaidyanathan A. (2020), The log-Lévy moment problem via Berg-Urbanik semigroups, *Studia Mathematica*, 253, 219-257.

17. Patie P., Savov M. and Zhao Y. (2019), Intertwining, excursion theory and Krein theory of strings for non-self-adjoint Markov semigroups, *Ann. Proba.*, Vol. 47, No. 5, 3231-3277.

18. Miclo L. and Patie P. (2019), On a gateway between continuous and discrete Bessel and Laguerre processes, *Annales Henri Lebesgue*, 2, 59-98.

19. Loeffen R.L., Patie P. and Savov M. (2019), Extinction time of non-Markovian self-similar processes, persistence, annihilation of jumps and the Fréchet distribution, *Journal of Statistical Physics*, 175(5), 1022-1041.

20. Choi M.C.H. and Patie P. (2019), Skip-free Markov chains, *Trans. Amer. Math. Soc.*, 371(10), 7301-7342.

21. Avram F., Patie P. and Wang J. (2019), Purely excessive functions and hitting times of continuous-time branching processes, *Methodol. Comput. Appl. Probab.*, 21:391-399.

22. Chazal M., Loeffen R. and Patie P. (2018), Option pricing in one dimensional affine term structure model via spectral representation, *SIAM J. Finan. Math.* 9(2):634-664.

23. Patie P. and Savov, M. (2018), Bernstein-gamma functions and exponential functional of Lévy processes, *Electron. J. Probab.*, 23(75), 101 p.

24. Chazal M., Loeffen R. and Patie P. (2018), Smoothness of continuous state branching with immigration semigroups, *J. Math. Anal. Appl.* 459(2):619-660.

25. Patie P. and Zhao Y. (2017), Spectral decomposition of fractional operators and a reflected stable semigroup, *J. Diff. Equation* 262(3), 1690-1719.

26. Patie, P. and Savov, M. (2016), Cauchy problem of the non-self-adjoint Gauss-Laguerre semigroups and uniform bounds of generalized Laguerre polynomials, *J. Spectr. Theory* 7:797-846.

27. Choi M.C.H. and Patie P. (2016), Sufficient conditions for continuous time finite skip-free Markov chains to have real eigenvalues, *Math. and Comp. Appr. Adv. Modern Scienc. and Engin.*, 529–536.

28. Patie P. and Zhao Y. (2016), Convergence analysis of spectral expansion of stable related semigroups, *Math. and Comp. Appr. Adv. Modern Scienc. and Engin.*, 787–797.

29. Alili L. and Patie P. (2014), Boundary crossing identities for Brownian motion and some nonlinear ODE's, *Proc. Amer. Math. Soc.*, 142, 3811-3824.

30. Patie P. and Savov M. (2013), Exponential functional of Lévy processes: generalized Weierstrass products and Wiener-Hopf factorization, *C. R. Math. Acad. Sci. Paris*, 351(9-10), 393-396.

31. Patie P. (2013), A Geman-Yor formula for the pricing of Asian options in one-sided Lévy processes, *J. of Appl. Prob.*, 50(2), 359-373.

32. Patie P. (2012), Law of the absorption time of positive self-similar Markov processes, *Ann. Probab.*, 40(2): 765-787.

33. Pardo J.-C., Patie P. and Savov M. (2012), A Wiener-Hopf type factorization for the exponential functional of Lévy processes, *J. London Math. Society* 86(3): 930-956.

34. Patie P. and Savov M. (2012), Extended factorizations of exponential functionals of Lévy processes, *Electron. J. Probab.*, 17(38): 1-22.

35. Patie P. and Simon T. (2012), Intertwining certain fractional operators, *Potent. Anal.*, 36: 569-587.

36. Cissé M., Patie P. and Tanré E. (2012), Optimal stopping problems for regular one sided Markov processes, *Ann. Appl. Probab.*, 22(3): 1243-1265.

37. Kyprianou A.E. and Patie P. (2011), A Ciesielski-Taylor type identity for positive self-similar Markov processes, *Ann. Inst. H. Poincaré Probab. Statist.*, 47(39): 917-928.

38. Patie P. (2010), A refined factorization of the exponential law, *Bernoulli*, 17(2):814-826.

39. Alili L. and Patie P. (2010), Boundary crossing identities for diffusions having the time inversion property, *J. Theor. Prob.*, 23(1), 65-84.

40. Patie P. (2009), Exponential functional of one-sided Lévy processes and Asian options, *C. R. Math. Acad. Sci. Paris*, 347 (7-8), 407-411.

41. Patie P. (2009), Law of the exponential functional of a new family of one-sided Lévy processes via self-similar continuous state branching processes with immigration, *Bull. Sci. Math.*, 133(4), 355-382.

42. Patie P. (2009), Infinitely divisibility of solutions to some semi-stable integro-differential equations and exponential functionals of Lévy processes, *Ann. Inst. H. Poincaré Probab. Statist.*, 45 (3), 667-684.

43. Patie P. (2009), A few remarks on the supremum of stable processes, *Statist. Probab. Lett.* 79(8):1125-1128.

44. Patie P. (2008), q-invariant functions associated to some generalizations of the Ornstein-Uhlenbeck semigroup, *ALEA Lat. Am. J. Prob. Math. Stat.*, 4:31-43.

45. Patie P. and Winter C. (2008), First exit time probabilities for multidimensional diffusion: A PDE-based approach, *J. Comput. Appl. Math.*, 222(1):43-53.

46. Alili L. and Patie P. (2007), On the joint law of the L1 and L2 norms of a 3-dimensional Bessel bridge, In Séminaire de Probabilités XL, vol. 1899 of LNM, p. 247-264, Springer, Berlin.

47. Patie P. (2007), Two sided-exit problem for a spectrally negative α-stable Onstein-Uhlenbeck process and the Wright's generalized hypergeometric functions, *Electron. Comm. Probab.*, 12:146-160.

48. Alili L. and Patie P. (2005), On the first crossing times of a Brownian motion and a family of continuous curves, *C. R. Math. Acad. Sci. Paris*, 340(3):225-228.

49. Patie P. (2005), On a martingale associated to generalized Ornstein-Uhlenbeck processes and an application to finance, *Stochastic Process. Appl.*, 115(4):593-607.

50. Alili L., Patie P. and Pedersen J.L. (2005), Representations of the first hitting time density of an Ornstein- Uhlenbeck process, *Stoch. Models*, 21(4):967-980.

51. Embrechts P., Kaufmann R. and Patie P. (2005), Strategic long-term financial risks: Single risk factors, *Comput. Optim. Appl.*, 32(1-2):61-90.

52. Frey R. and Patie P. (2002), Risk management for derivatives in illiquid markets: A simulation study, *Advances in Finance and Stochatics*, Essays in Honour of D. Sondermann, 137-160.

Revised/Submitted papers

53. Patie P. and Sarkar R., Weak similarity orbit of log-Bessel semigroups on the Euclidean space, submitted, 51p.

54. Ascione G., Patie P. and Toaldo B., Non-local heat equation with moving boundary and curve-crossing of delayed Brownian motion, submitted, 55p.

55. D'Onofrio G., Patie P., L. Sacerdote L., Jacobi processes with jumps as neuronal models : a first passage time analysis, submited

56. Loeffen R., Patie P. and Wang J., Fluctuation theory of continuous-time skip-free downward Markov chains with applications to branching processes with immigration, submitted

Manuscripts

Habilitation Thesis: Explicit Contributions to the Study of Self-Similar Markov Processes. University of Bern, October 2008.

Ph.D. Thesis: On some First Passage Time Problems Motivated by Financial Applications. ETH Zurich, December 2004.

3 .3   Projects with industrial partners

- 2021: Johnson & Johnson. Classification of medical referrals, MEng project.
- 2020: Goldman Sachs, New-York. Quantifying the Significance of Strategic Asset Allocation Decisions, MEng project.
- 2020: HSBC, New-York. Application of Topic Modeling and Sentiment Analysis on Financial News and Reports, MEng project.
- 2018: TD Bank, New-York - Machine Learning for Multi Asset Trend Following Strategy, MEng project.
- 2017: TD Bank, New-York - Volatility Trading, MEng project.
- 2016: Newmark Grubb Night Frank, New-York - U.S. Enterprise Headcount Modeling, MEng project.
- 2014-15: Guggenheim Asset Management New-York - Machine Learning in Merger and Acquisition Portfolio, MEng project.
- 2003-04: Swiss Re Zurich - Risk Measures for Long-Term Financial Risk, RiskLab project.
- 2002-04: UBS London - Measures of Market Illiquidity, RiskLab project.

3 .4   Communications

1. University of Manchester, UK, Probability Seminar, March 2022, e-talk.
2. University Texas AM, Probability Seminar, USA, April 28th 2021, e-talk.
3. University of Connecticut, USA, Probability seminar, March 2021, e-talk.
4. Ritsumeikan University, Japan, Probability seminar, January 2021, e-talk.
5. University of Liverpool, UK, Dynamical systems seminar, November 2020, e-talk.
6. University of Angers, Probability seminar, December 2020, e-talk.
7. University of Liverpool, UK, IFAM seminar, November 2020, e-talk.
8. University of Turin, Italy, December 2019, 1 week.
9. ETH Zurich, Switzerland, November 2019, 1 week.
10. University Paul Sabatier, Toulouse, France, October 2019, 3 days.
11. Université de Pau et des Pays de l'Adour, France, September 2019.
12. Ecole Centrale, Lyon, France, September 2019, 2 days.
13. Toulouse School of Economics, France, May 2019, 2 weeks.
14. Toulouse School of Economics, France, December 2018, 2 weeks.
15. University Paul Sabatier, Toulouse, France, December 2018, 2 days.
16. University Paul Sabatier, Toulouse, France, July 2018, 4 days.
17. University of Manchester, UK, June 2018, 3 days
18. University of Liverpool, UK, June 2018, 2 days.
19. University of Cincinnati, USA, April 2018, 3 days, Prof. J. Najnudel.
20. Probability Seminar, Cornell University, USA, October 2017.
21. University of Toulouse, France, May 2017, 2 days, Prof. L. Miclo.
22. University of Manchester, UK, December 2016, 2 days, Prof. R. Loeffen.
23. Princeton University, USA, April 2016, Prof. P. Cheredito.
24. Institut Fourier, Université de Grenoble, France, December 2015, 3 days.
25. Université de Pau et des Pays de l'Adour, France, December 2015, 7 days.
26. University of Illinois at Urbana-Champaign, USA, November 2015, 2 days, Prof. R. Song.
27. Purdue University, USA, November 2015, 3 days, Prof. F. Baudoin.
28. University of Maryland, USA, September 2015, 3 days, Prof. P.E. Jabin.
29. Institut de Mathématiques Toulouse, France, July 2015, 2 days Prof. L. Miclo.
30. INRIA Sophia-Antipolis, France, May 2014, 2 days, Prof. D. Talay.
31. Center of Applied Mathematics colloquium, Cornell University, USA, March 2014.
32. Institut de Mathématiques de Bourgogne, Dijon, France, November 2013, 1 week,
33. Analysis Seminar, Cornell University, USA, October 2013.
34. University of Toronto, Canada, May 2013, 1 week, Prof. A Kuznetsov.
35. Probability Seminar, Cornell University, USA, March 2013.
36. University of Michigan, United-States, February 2013, 2 days, Prof. E. Bayraktar.
37. Warwick University, United-Kingdom, November 2012, 2 days, Prof. L. Alili.
38. Cornell University, United-States, June 2012, 1 week, Prof. A. Lewis.

39. Université Louis Pasteur, Strasbourg, France, May 2012, 4 days, Prof. M. Emery.
40. INRIA Sophia-Antipolis, France, April 2012, 1 week, Prof. D. Talay.
41. Cornell University, United-States, February 2012, 3 days, Prof. A. Lewis.
42. Université de Lille 1, France, April 2011, 1 day, Prof. T. Simon.
43. Vienna University, Austria, April 2011, 2 days, Dr. K. Glau.
44. Swansea University, , March 2011, 3 days, Prof. N. Jacob.
45. University of Bath, UK, March 2011, 2 days, Prof. A. Kyprianou.
46. The University of Oxford, UK, March 2011, 4 days, Dr. M. Savov.
47. ISFA, Université de Lyon 1, France, February 2011, 2 days, Prof. V. Maume-Deschamps.
48. Université de Strasbourg, France, December 2010, 4 days, Dr. V. Vigon.
49. Université de Pau et des Pays de l'Adour, France, December 2010, Prof. F. Avram.
50. University of Manchester, UK, November 2010, 2 days, Prof. G. Peskir.
51. HEC Lausanne, Switzerland, April 2010, Prof. H.-J. Albrecher.
52. University of Nice Sophia-Antipolis, France, April 2010, 3 days, Prof. F. Delarue.
53. University of Bath, UK, March 2010, 1 week, Prof. A. Kyprianou.
54. University of Lille 1, France, January 2010, Prof. T. Simon.
55. University of Pau et des Pays de l'Adour, France, October 2009, 1 month, Prof. F. Avram.
56. INRIA Sophia-Antipolis, France, September 2009, 1 week, Prof. D. Talay.
57. University of Warwick, United-Kingdom, June 2009, 1 week, Dr. L. Alili.
58. University of Rouen, France, March 2009, 1 week, Prof. P. Lescot.
59. EPF Lausanne, Switzerland, March 2008, Prof. R. Dalang.
60. University of Bath, UK, February 2008, 3 days, Prof. A. Kyprianou.
61. University of Manchester, UK, February 2008, 1 week, Prof. R. Doney.
62. INRIA Sophia-Antipolis, France, January 2008, 1 month, Prof. D. Talay.
63. ETH Zurich, Switzerland, November 2007, 3 days, Prof. F. Delbaen.
64. Swiss Probability Seminar, UBe, Switzerland, May 2007.
65. University of Fribourg, Switzerland, January 2007, 1 day, Prof. C. Mazza.
66. CIMAT, Guanajuato, Mexico, December 2006, 2 weeks, Prof. V. Rivero.
67. University of Strasbourg, France, November 2006, 1 week, Dr. V. Vigon.
68. University of Freiburg, Germany, September 2005, 3 days, Prof. E. Eberlein.
69. Heriot Watt University, UK, May 2005, 3 days, Prof. A. Kyprianou.
70. University of Manchester, UK, May 2005, 2 days, Prof. R. Doney.
71. LMU Munich, Germany, February 2005, 2 days, Prof. D. Filipovic.
72. University of Konstanz, Germany, December 2004, 1 day, Prof. J. Jackwerth.
73. Warwick University, UK, September 2004, 2 weeks, Dr. L. Alili.
74. University of Manchester, UK, July 2004, 2 days, Prof. R. Doney.
75. University of Technology of Sydney, Australia, October 2003, 5 weeks, Prof. A. Novikov.
76. University of Melbourne, Australia, October 2003, 2 days, Prof. K. Borovkov.
77. Goethe Universität, Germany, November 2001, 2 days, Prof. U. Wystup.
78. University of Lugano, Switzerland, May 2001, 2 days, Prof. F. Trojani.
79. UBS-Warburg, London, UK, May 2001, 2 days.

1. 10th International Conference on Lévy Processes, Germany, July 2022.

2. Conference in honor of Ron Doney, UK, July 2022.

3. 8th European Congress of Mathematics, Slovenia, July 2021.

4. 9th International Conference on Lévy Processes, Samos, Greece, July 2019.

5. International Conference on Stochastic Analysis and Related Topics, Xuzhou, China, June 2019 (Cancelled du illness).

6. Perspectives on Actuarial Risks, Sibiu, Romania, April 2019.

7. AMS Sectional Meeting, University of Connecticut, USA, April 2019.

8. The 40th Stochastic Processes and their Applications International Conference, Gothenburg, Sweden, June 2018.

9. 14th International conference on Mathematics and Applications, Jaca, Spain September 2017.

10. Stable Processes, Banff International Research station, November 2016.

11. The 7th Conference on Lévy Processes: Theory and Applications, Angers, France, July 2016.

12. Conference in Honor of M. Yor, Kyoto University, Japan, June 2016.

13. 1st Eastern Conference on Mathematical Finance, Worcester, US, March 2016.

14. 19th International Congress on Insurance: Mathematics and Economics, Liverpool, UK, June 2015.

15. Finger Lakes Probability Seminar, Rochester, April 2015.

16. Journées de Probabilités, CIRM, France, May 2014.

17. Workshop "Hitting times and exit problems for stochastic models", Dijon, France, November 2013.

18. International conference Lévy Processes and Selfsimilarity, Tunis, Tunisia, November 2013.

19. The 7th Conference on Lévy Processes: Theory and Applications, Wroclaw, Poland, July 2013.

20. Workshop on Lévy Processes, Zurich, Switzerland, December 2012.

21. XII Latin American Congress of Probability and Mathematical Statistics, Viña del Mar, Chile, March 2012.

22. INFORMS Applied Probability Conference, Stockholm, Sweden, July 2011.

23. 7th Seminar on Stochastic Analysis, Random Fields and Applications, Ascona, Switzerland, May 2011.

24. The 6th Conference on Lévy Processes: Theory and Applications, Dresden, Germany, July 2010.

25. Journées de Probabilités, Dijon, France, June 2010.

26. Crossing Barriers: Hitting and stopping time problems in Finance and Insurance, Bath, UK, January 2010.

27. International Conference on Selfsimilar Processes and their Applications, Angers, France, July 2009.

28. Workshop on Probability and Statistical Mechanics. Neuchâtel, Switzerland, September 2008.

29. Sixth Seminar on Stochastic Analysis, Random Fields and Applications, Ascona, Switzerland, May 2008.

30. Journées de Probabilités, La Londe, France, September 2007.

31. International Conference of Applied Mathematics, Plovdiv, Bulgaria, August 2006.

32. Journées MAS de la SMAI, Contrôle Stochastique et Statistique, Lille, France, September 2006.

33. Journée Probabilités et Finance, University of Nice and INRIA, France, December 2005.

34. The 4th Conference "Lévy Processes: Theory and Applications", University of Manchester, UK, January 2005.

35. Journées MAS de la SMAI, Contrôle Stochastique et Statistique, Nancy, France, September 2004.

36. From Lévy Processes to Semimartingales: Recent Theoretical Developments and Applications to Finance, MaPhySto University of Aarhus, August 2002.

37. Risk Day 2001, ETH Zurich, Switzerland, October 2001.

38. Stochastic Approaches in Finance, Insurance and Physics, TU Munich, Germany, September 2000.

39. Swiss Re workshop, Zurich, Switzerland, June 2000.

40. Numerical Modelling in Finance, Université of Paris-Dauphine, December 2000.

4 Teaching Activities

4 .1 Teaching

- Cornell

  - ORIE 5650, Quantitative Methods of Financial Risk Management, Fall 2022.
  - ORIE 7590, Spectral theory and Simulation, Spring 2022.
  - ENGRG 1050, Engineering Seminar, Freshmen students, Fall 2017, 2020, 2021.
  - ORIE 5600, Stochastic Calculus for Financial Engineering I, Fall 2018, 2021
  - ORIE 3500/5500, Engineering Probability and Statistics II, Fall 2014, 2015, 2017.
  - ORIE 6510, Probability, Spring 2017, 2019.
  - ORIE 6540, Advanced Stochastic processes, Fall 2015.
  - ORIE 6500, Applied Stochastic Processes, graduate course, Fall 2013, Fall 2020.
  - ORIE 5610, Stochastic Calculus for Financial Engineering II, Master in Financial Engineering, Spring 2013, Spring 2014, Spring 2015, Spring 2016.

- ULB

  - Mathématiques générales
    Bachelor in Chemistry and Bio-engineers, Fall 2010, Fall 2011.
  - Mathématiques générales
    Bachelor in Biology, Spring 2010.
  - Lévy processes in Finance and Insurance
    Master in Actuarial Sciences, ULB, Spring 2011, Spring 2012.
  - Assurance non vie
    Master in Actuarial Sciences, ULB, Fall 2009, Fall 2010, Fall 2011, Fall 2012
  - Stochastic Processes
    Master in Statistics, ULB, Fall 2009, Fall 2010, Fall 2011, Fall 2012.

- UBe

  - Advanced course : A Study of Markov Processes
    Master in Statistics, Fall 2008.
  - Stochastische Prozesse II: Continuous-Time
    with Prof. I. Molchanov, Master in Statistics, Spring 2008.
  - Student Stochastic Seminar: Risk Measures
    with Prof. I. Molchanov, Master in Statistics, Fall 2007.
  - Stochastische Prozesse I: Discrete-Time
    with Prof. I. Molchanov, Master in Statistics, Spring 2008.
  - Student Stochastic Seminar: An Introduction to Random Matrix Theory
    with Prof. I. Molchanov, Master in Statistics, Spring 2007.

- Invited

  - First passage times: From processes to jumps to moving boundaries problems.
    Toulouse School of Economics, France, December 2019.

- Mathematical Finance: Continuous-Time Models
  Long life education in Risk Modelling, ULB, Fall 2010, Fall 2011.

- Introduction to Probability Theory
  Long life education in Risk Modelling,ULB, Fall 2010, Fall 2011.

- Mathematical Finance
  Master en mathématique, EPF Lausanne, Spring 2009.

- Stochastic Calculus for Finance
  Konstanz Universität, Doctoral Program in Quantitative Economics and Finance, Spring 2005, 2006, 2008.

- Introduction to Linear Diffusions
  INRIA, cours pour des étudiants doctorants, Spring 2006.

- Mathematical Finance: Continuous-Time Models
  Master in Economics, Université de Zurich, Fall 2002.

- Finite Element Methods in Finance
  Master in Mathematics, EPF Zurich, Fall 2002.

4 .2 Advising

PostDoc:

- Dr. S. Vakeroudis, Project ARC IAPAS, ULB, October 2012 - September 2013
  Topic: Fluctuation Theory for one-sided Markov processes.

- Dr. M. Chazal, Post-doctoral position, ULB, since October 2009.
  Topic: Spectral theory for affine processes.

- Dr. R. Loeffen, AXA Post-doctoral Fellowships, ULB, January 2010 - January 2011
  Topic: Modern actuarial risk theory.

PhD:

- Andrew Chew, ORIE, Cornell University, since Fall 2018.
  Topic: C_0 semigroups on the Weyl chamber and scaling limit of biorthogonal ensembles.

- Rohan Sarkar, ORIE, Cornell University, graduated August 2021.
  Continuous and discrete self-similarity via classification schemes of Markov processes, and the van Dantzig problem

- Jian Wang, ORIE, Cornell University, graduated August 2020.
  Continuous time skip-free Markov process and study of branching process with immigration

- Aditya Vaidyanathan, CAM, Cornell University, graduated May 2019.
  Contributions to the Stieltjes moment problem and to the intertwining of Markov semigroups

- Anna Srapionyan, CAM, Cornell University, graduated May 2019.
  Some spectral ideas applied to finance and to self-similar and long-range dependent processes

- Yixuan Zao, ORIE, Cornell University, graduated 2017.
  Spectral expansions and excursion theory for non-self-adjoint Markov semigroups with applications in mathematical finance

- Chek Hin Choi, ORIE, Cornell University, graduated 2017.
  Analysis of non-reversible Markov chains.

- C. Bartholmé, ULB, graduated August 2014.
  Self-similarity and exponential functionals of Lévy processes.

- C. Van Weverberg, ULB, graduated in August 2015, co-direction with G. Deelstra
  Matrix-valued Affine Processes.

Bachelor/Master:

- Yuexing Li, Dynkin isomorphism and boundary crossing problems for Brownian motion, Spring and Fall 2014.

- A. Cagley: Sophomore ORIE (minor CS), Cornell University,
  Topic: Simulation and the Black-Scholes model, summer 2013.

- O. Petermann: Master Project, Master in Mathematics, ULB
  Topic: Hitting times of skip-free Markov chains, 2012-2013.

- V. Buffaria: Master Project, Master in Mathematics, ULB
  Topic: Lie group methods for fractional equations, 2011-2012.

- R. Viroux: Master Project, Master in Mathematics, ULB
  Topic: Coherent risk measures, 2011-2012.

- O. Petermann: Bachelor Project, Bachelor in Mathematics, ULB
  Topic: Spectral analysis of birth and death processes, 2010-2011.

- A. Larif: Master project, Master in mathematics, EPFL
  Topic: Incomplete Markets, Summer semester, 2009.

- L. Gaudias: Master project, Master in mathematics, EPFL
  Topic: Asian options, Summer semester, 2009.

- M. Cirit: Bachelor project, Bachelor in Mathematics, UBe
  Topic: Premium principles in insurance, Summer semester 2009.

- D. Burren: Master thesis, Master in Statistics, UBe
  Topic: Continuous state branching processes in finance, Winter semester 2008.

Undergraduates: I advised more than 200 undergraduate students at CU

- A. Larif: Master project, Master in mathematics, EPFL

5   Organization and Administrative Duties

2023   Visiting Professor, University of Turin, Italy, March 2023.

2018   Visiting Professor, Toulouse School of Economics, France, December 2018.

2016   NSF Grant, Asymptotically Efficient and Efficiently Computable Bayesian Estimation,
       co-Pi with PI L. Saloff-Coste, 120.000 dollars.

2016   CNRS researcher grant. Université de Pau et des Pays de l'Adour, France, 5.000 dollars.

2016   NSF Grant, Finger Lakes Probability Seminar,
       co-Pi with J. Pike and C. Mueller, 7.439 dollars.

2012   Action de Recherche Concerté (ARC) by the Gouvernement de la communauté Francaise (PI)
       with D. Bonheure, G. Deelstra and C. Lefèvre (ULB)
       Project: Interplay between Analysis, Probability and Actuarial Sciences,
       5 years, 500.000 euros.

2011   Assistantship research grant by the Belgium National Fund of Scientific Research (FNRS)
       Project: Matrix valued affine processes: Theoretical studies and their applications in finance,
       3 years, $\simeq$ 130.000 euros. Candidate: C. Van Weverberg (ULB).

2011   Grant from the fondation Anspach-Wiener,
       Visit of M. Savov from the University of Oxford, 1.000 euros.

2011   Grant from the region Nord-Pas-de-Calais,
       Organisation of the international conference "Self-similarity and related topics",
       with T. Simon, 55.000 euros.

2011   Mission Scientifique grant awarded by FNRS,
       1 month visit of M. Savov from the University of Oxford, 2.500 euros.

2010   Assistantship research grant by the FNRS
       Project: Exponential functional of Lévy processes and insurance mathematics,
       3 years, $\simeq$ 130.000 euros. Candidate: Carine Bartholmé (ULB).

2010   Grant award from the National Bank of Belgium
       Project: *Around Asian Options*, 9.800 euros.

2009   Post-doctoral fellowship from the AXA research fund
       Project: *Modern Actuarial Risk Theory*, 1 year, 60.000 euros.
       Candidate: Dr. Ronnie Loeffen.

2010   Grant award from the ULB, 5.000 euros.

2008   Assistantship research grant by the Swiss National Science Foundation
       Project: *Fluctuation theory for one-sided Markov processes with application
        in insurance and finance: theoretical, numerical and inferential aspects*,
       No 2000021_121901, 3 years, 151.951 CHF, with Prof. R. Gatto.

2007   Grant award from the UBe, 2.000 CHF.

2018-19	Director of Undergraduate Studies, ORIE, School of Engineering (CU).
2017-18	Search Committee Faculty Position, ORIE and NY Tech (CU).
2017-18	Faculty Advisor, Freshmen (23 students), School of Engineering, (CU).
2017-18	Search Committee Faculty Position, ORIE and NY Tech, (CU).
2014-18	Faculty Advisor, MEng students ($\sim$ 20 students/year), ORIE, (CU).
2014-15	Admission committee of PhD program in Applied Math., (CU).
2013-17	Admission committee of MEng program, (CU)
From 2009	Secretary of the Master in statistics, ULB
From 2009	Member of the committee for the Master program in Actuarial Sciences , ULB
From 2010	President of the PhD committee of S. Dendhievel.
From 2010	Responsible of the exams organization in the Mathematical Department, ULB
From 2009	Member of the committee for the Bachelor program in Mathematics, ULB

2022	Scientific committee of "Lévy processes and random walks", a workshop in celebration of Ron Doney's 80th birthday University of Manchester.
2016-23	Co-organizer of the Finger Lakes probability seminar.
2016-19	Co-organizer of the Probability Seminar, Cornell.
2015	Scientific committee and local organizer of the international conference "Adventures in Self-Similarity", Cornell University.
2015-16	Co-organizer of the Center of Applied Mathematics colloquium, Cornell.
2014	Member of the organizing committee for the Bachelier Society Conference, Bruxelles.
2012	Organization of the Workshop IPAS "Interplay between Probability and Actuarial Sciences", Université Libre de Bruxelles.
2012	Member of the organizing committee of the AMAMEF conference, "Actuarial and Financial Mathematics Conference", Bruxelles.
2011	Organization of a short course for the Doctoral School in Statistics, ULB Prof. R. Doney, Fluctuation theory for random walks and Lévy processes.
2009-11	Organizer of the Actuarial Sciences seminar, ULB.
2010-11	Co-organizer with G. Deelstra of the in-serving training (formation continue), 2 University Certificates: risk modeling and quantitative methods in finance, ULB. Budget of the trainee: $\simeq$ 110.000 euros.
2011	Member of the organizing committee of the AMAMEF conference, "Actuarial and Financial Mathematics Conference", Bruxelles.
2011	Member of the organizing committee of the conference, "Self-similarity and stochastic analysis", Le Touquet.
2011	Member of the project FP7 Marie Curie Initial Training Network, Advanced Mathematical Methods for Finance with Applications to Risk Management, Insurance and Sustainable Economics.
2010	Co-chair of the conference "journée de contact FNRS sciences actuarielles", ULB.

Thesis Committee	Laura Gay, Ecole Centrale Lyon, France, September 2019.
	Mehrez, Edward, Field of Economics, Cornell In-Process.
	Copros, Guillaume, Université Toulouse 3 Paul Sabatier, July 2018.
	Verdiyan,Vardan, Center of Applied Mathematics, Cornell, May 2016.
	Ashivni Shekhawat, Cornell (Physics), April 2013, proxy of Prof. S. Resnick,
	X. De Scheemaekere, ULB, February 2011.
	D. Chedom Fotso, UPPA, December 2010.
	M. Gatty, ULB, September 2010.
	I. Diallo, ULB, January 2010.
Editor	Associate Editor Mathematics, since Jan. 2021
	Associate Editor Stochastic Models, since March 2019
	Associate Editor of Risks, since Sept. 2014.
	Guest Editor of the special issue of the journal *Risks*
	on "Application of Stochastic Processes in Insurance", 2013.
Referee	
Probability:	Ann. Prob., Prob. Th. Rel. Fields, Prob. Survey, Elect. J. Probab.,
	Stoch. Proc. and Appl., Bernoulli, Stochastics, Séminaire de Probabilités.
Applied Probability:	Ann. Appl. Prob., Stoch. Models, Math. Finance,
	Quantitative Finance, Astin Bulletin, Risk,
Other fields of math.:	London Math. Soc., J. Funct. Anal., Pot. Anal., Expo. Mathematica.
Grants	Humboldt Research Fellowship, Germany.
	Swiss National Science Foundation.
	National Science Center in Poland.
	Free Competition of the Netherlands Organisation for Scientific Research.
	Fond de la Recherche Scientifique, Belgium.
	Engineering and Physical Sciences Research Council, United Kingdom

Miscellaneous

Languages	French: mother tongue
	English: fluent
	Spanish: basic conversational skills