Mikko S. Pakkanen

Curriculum Vitae

Department of Mathematics
Imperial College London
South Kensington Campus
London SW7 2AZ
United Kingdom

Phone: +44 (0)20 7594 8541 (office)
Web: www.mikkopakkanen.fi
Email: m.pakkanen@imperial.ac.uk (work)
msp@iki.fi (personal)

Personal Data

Born in Joensuu, Finland in 1983. Finnish citizen.

Education

PhD in Applied Mathematics, University of Helsinki, Dec 2010.

MSc in Mathematics, University of Helsinki, Nov 2006.

Academic Appointments

Imperial College London, Department of Mathematics — London, United Kingdom
Lecturer in Mathematical Finance and Statistics — Nov 2014 – Present

Aarhus University, Department of Economics and Business and CREATES — Aarhus, Denmark
Postdoctoral Research Fellow — May 2012 – Oct 2014
Research Assistant — Feb 2012 – Apr 2012

Affiliations

International Fellow at CREATES, Aarhus University, Aarhus, Denmark, 2015 – Present.

Research Interests

- Statistical modelling of high-frequency financial data and market microstructure
- Volatility modelling and forecasting
- Monte Carlo methods in finance
- Limit theorems for stochastic processes

Research Visits

Visiting Fellow at Isaac Newton Institute for Mathematical Sciences, Cambridge, United Kingdom, Sept – Oct 2014 (5 weeks).

Université Paris-Dauphine, CEREMADE, Paris, France, Oct 2013 (1 week).

Saarland University, Department of Mathematics, Saarbrücken, Germany, Sept 2013 (1 month).

Heidelberg University, Institute of Applied Mathematics, Heidelberg, Germany, Sept – Oct 2012 (3 weeks).

Grants

Academy of Finland, postdoctoral fellowship, Sept 2012 – Oct 2014.

Finnish Cultural Foundation, PhD scholarship, Jan 2008 – Dec 2010.

Publications

Refereed Articles in Journals

1. M. S. Pakkanen (2010): Microfoundations for diffusion price processes. *Mathematics and Financial Economics* **3**(2), 89 – 114.
2. M. S. Pakkanen (2010): Stochastic integrals and conditional full support. *Journal of Applied Probability* **47**(3), 650 – 667.
3. M. S. Pakkanen (2011): Brownian semistationary processes and conditional full support. *International Journal of Theoretical and Applied Finance* **14**(4), 579 – 586.
4. J. Lukkarinen and M. S. Pakkanen (2013): On the positivity of Riemann–Stieltjes integrals. *Bulletin of the Australian Mathematical Society* **87**(3), 400 – 405. (Erratum: *Bulletin of the Australian Mathematical Society* **89**(3), 524.)
5. J. M. Corcuera, E. Hedevang, M. S. Pakkanen, and M. Podolskij (2013): Asymptotic theory for Brownian semi-stationary processes with application to turbulence. *Stochastic Processes and their Applications* **123**(7), 2552 – 2574.
6. E. Bayraktar, M. S. Pakkanen, and H. Sayit (2014): On the existence of consistent price systems. *Stochastic Analysis and Applications* **32**(1), 152 – 162.
7. M. S. Pakkanen (2014): Limit theorems for power variations of ambit fields driven by white noise. *Stochastic Processes and their Applications* **124**(5), 1942 – 1973.
8. O. E. Barndorff-Nielsen, M. S. Pakkanen, and J. Schmiegel (2014): Assessing relative volatility/intermittency/energy dissipation. *Electronic Journal of Statistics* **8**(2), 1996 – 2021.
9. C. Bender, M. S. Pakkanen, and H. Sayit (2015): Sticky continuous processes have consistent price systems. *Journal of Applied Probability* **52**(2), 586 – 594.
10. M. S. Pakkanen and A. Réveillac (2016): Functional limit theorems for generalized variations of the fractional Brownian sheet. *Bernoulli* **22**(3), 1671 – 1708.
11. M. S. Pakkanen, T. Sottinen, and A. Yazigi (2017): On the conditional small ball property of multivariate Lévy-driven moving average processes. *Stochastic Processes and their Applications* **127**(3), 749 – 782.
12. J. Lukkarinen and M. S. Pakkanen (2017): Arbitrage without borrowing or short selling? *Mathematics and Financial Economics* **11**(3), 263 – 274.
13. M. Bennedsen, A. Lunde, and M. S. Pakkanen (2017): Hybrid scheme for Brownian semistationary processes. *Finance and Stochastics* **21**(4), 931 – 965.
14. R. McCrickerd and M. S. Pakkanen (2018+): Turbocharging Monte Carlo pricing for the rough Bergomi model. *Quantitative Finance*, to appear.

Refereed Articles in Conference Proceedings

15. E. Lappi, M. S. Pakkanen, and B. Åkesson (2012): An approximative method of simulating a duel. *Proceedings of the 2012 Winter Simulation Conference* (Berlin, Dec 2012), pp. 2230 – 2339.

Preprints

16. M. Bennedsen, U. Hounyo, A. Lunde, and M. S. Pakkanen (2017): The local fractional bootstrap. Available as arXiv:1605.00686, 32 pages.

17. M. Bennedsen, A. Lunde, and M. S. Pakkanen (2017): Decoupling the short- and long-term behavior of stochastic volatility. Available as arXiv:1610.00332, 46 pages.

18. A. Jacquier, M. S. Pakkanen, and H. Stone (2017): Pathwise large deviations for the rough Bergomi model. Available as arXiv:1706.05291, 12 pages.

19. M. Morariu-Patrichi and M. S. Pakkanen (2018): Hybrid marked point processes: characterisation, existence and uniqueness. Available as arXiv:1707.06970, 40 pages.

20. C. Heinrich, M. S. Pakkanen, and A. E. D. Veraart (2017): Hybrid simulation scheme for volatility modulated moving average fields. Available as arXiv:1709.01310, 33 pages.

Book Reviews

- M. S. Pakkanen (2018): Review of "Quantitative Trading: Algorithms, Analytics, Data, Models, Optimization" by X. Guo, T. L. Lai, H. Shek and S. P. Wong. *The American Statistician*, to appear.

Selected Presentations

Invited Talks at Conferences and Workshops

Jim Gatheral's 60th Birthday Conference, Courant Institute, NYU, New York, USA, Oct 2017.

Second Conference on Ambit Fields and Related Topics, Aarhus, Denmark, Aug 2017.

Recent Developments in Numerical Methods with Applications in Statistics and Finance, Mannheim, Germany, Jun 2017.

Fractional Brownian Motion and Rough Models, Barcelona GSE Summer Forum, Barcelona, Spain, Jun 2017.

Advances in Financial Mathematics, Paris, France, Jan 2017.

Rough Volatility Meeting, London, United Kingdom, Oct 2016.

Conference on Ambit Fields and Related Topics, Aarhus, Denmark, Aug 2016.

At the Frontiers of Quantitative Finance, ICMS, Edinburgh, United Kingdom, Jun 2016.

London–Paris Bachelier Workshop on Mathematical Finance 2015, London, United Kingdom, Sept 2015.

Aarhus Conference on Probability, Statistics and Their Applications, Aarhus, Denmark, Jun 2015.

The 4th Finnish-Estonian Mathematical Colloquium & Finnish Mathematical Days 2014, Helsinki, Finland, Jan 2014.

AHOI Workshop for Ambit Stochastics and Applications, London, United Kingdom, Mar 2013.

CREATES Annual Meeting, Sandbjerg, Denmark, Aug 2012.

Workshop on Ambit Processes, Non-Semimartingales and Applications, Sandbjerg, Denmark, Jan 2010.

Finnish Mathematical Days 2010, Jyväskylä, Finland, Jan 2010.

Seminars

London Mathematical Finance Seminar, London, United Kingdom, Oct 2016.

Séminaire de Probabilités, IMT/Université Paul Sabatier, Toulouse, France, Dec 2015.

Groupe de Travail: Finance mathématique, probabilités numériques et statistique des processus, LPMA/Université Paris Diderot, Paris, France, Nov 2015.

Finance and Stochastics Seminar, Imperial College London, London, United Kingdom, May 2014.

Oberseminar zur Stochastik, Saarland University, Saarbrücken, Germany, Sept 2013.

Statistics Seminar, Heidelberg University, Heidelberg, Germany, Oct 2012.

Contributed Talks at Conferences and Workshops

WPI Mini-Workshop on Random Fields in Energy and Weather Finance, Vienna, Austria, Apr 2014.

OMI-SoFiE Financial Econometrics Summer School, Oxford, United Kingdom, Jul 2012.

The 73rd Annual Meeting of the Institute of Mathematical Statistics, Gothenburg, Sweden, Aug 2010.

The 33rd Conference on Stochastic Processes and Their Applications, Berlin, Germany, Jul 2009.

Non-Semimartingale Techniques in Mathematical Finance, Espoo, Finland, May 2009.

Workshop on Mathematical Finance for Young Researchers, Berlin, Germany, Oct 2008.

Teaching

Experience as an Instructor

Financial Market Volatility (MSc in Economics and Management, Aarhus University, Spring 2013, Spring 2014).

Quantitative Risk Management (MSc in Mathematics and Finance, Imperial College London, Autumn 2014, Autumn 2015, Autumn 2016, Autumn 2017).

Pricing and Hedging in Financial Markets (MSc in Statistics, Imperial College London, Spring 2015, Spring 2016, Spring 2017, Spring 2018).

Financial Econometrics (MSc in Statistics, Imperial College London, Spring 2016, Spring 2017, Spring 2018).

Experience as a Teaching Assistant

Mathematical Finance (MSc in Applied Mathematics, University of Helsinki, Autumn 2007).

Stochastic Analysis (MSc in Applied Mathematics, University of Helsinki, Spring 2008).

Statistical Inference (BSc in Statistics, University of Helsinki, Autumn 2008 – Spring 2009).

Advanced Statistical Inference (MSc in Statistics, University of Helsinki, Autumn 2009).

Teaching Qualifications

Pedagogical training course for assistant professors and post docs at Aarhus University ("adjunktpædagogikum"), Aug 2012 – Jan 2013.

Fellow of the Higher Education Academy (FHEA), since Oct 2017.

Supervision

Research Postgraduate Students

Maxime Morariu-Patrichi (MRes + PhD student, Imperial College London), Oct 2014 – Present.

Henry Stone (MRes + PhD student, Imperial College London, joint with Antoine Jacquier), Oct 2015 – Present.

Ryan McCrickerd (MRes + PhD student, Imperial College London), Oct 2016 – Present.

Additionally, one part-time PhD student under supervision since Oct 2015.

Taught Postgraduate and Undergraduate Students

Supervised 1 BSc (M3R), 5 MSci (M4R), and 20 MSc final projects (of which 11 joint with external partners) at Imperial College London since Nov 2014.

Other Activities

Referee for *The Annals of Applied Probability*, *The Annals of Statistics*, *Bernoulli*, *Biometrika*, *Mathematical Finance*, *Mathematics and Computers in Simulation*, *Probability and Mathematical Statistics*, *Probability Theory and Related Fields*, *Quantitative Finance*, *SIAM Journal on Financial Mathematics*, *Stochastic Analysis and Applications*, *CRC Press (book proposal)*.

Reviewer for *Zentralblatt MATH*, 2011 – 2016.

Member of *Bernoulli Society*.

Co-organiser of the *AHOI Workshop on Tempo-Spatial Stochastic Processes and Stochastic Volatility*, London, 23 – 24 Feb 2015.

Co-organiser of the *International Workshop on Spatio-Temporal Statistics*, London, 18 – 20 Apr 2016.

Member of scientific committee, *Conference on Mathematical Modelling in Finance*, London, 30 Aug – 2 Sept 2017.

Co-organiser of the *Finance and Stochastics Seminar* at Imperial College London, Nov 2014 – Present.

Leader of the *Imperial Network of Excellence in Probabilistic Methods and Modelling* at Imperial College London, 2017 – Present.

Non-Academic Experience

National service in the Finnish Defence Forces (including 5 months of work on operations research at the Defence Forces' Technical Research Centre, PVTT), Jan 2011 – Jan 2012.

Internships at Pellervo Economic Research Institute, Helsinki, Finland, Summer 2004 and Summer 2005.

(Updated: 30 March 2018)