

Arnaud Lionnet

Curriculum vitae

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Languages : French (native), English (fluent), German (basic).

Employment.

December 2014 – present : INRIA Postdoctoral Research Fellow (Paris).

September – November 2014 : LMS Postdoctoral Mobility Fellow (Edinburgh, Berlin).

October 2013 – June 2014 : College Lecturer at Lady Margaret Hall (Oxford University).

June – August 2013 : Summer Associate in Quantitative Strategies at Credit Suisse (London).

Education.

2009-2013 : *University of Oxford - Oxford–Man Institute and Mathematical Institute (U.K.)*

- Doctorate in Mathematics

2006-2009 : *Ecole Normale Supérieure de Lyon (France)*

- Master's degree in Mathematics
- Laureate of the 'Agrégation de Mathématiques' (nation-wide, competitive exam in France)
- Internship : mathematical finance, with Dr Zhongmin Qian, at the Oxford–Man Institute, Oxford
- Bachelor's degree in Physics
- Internship : biophysics, with Pr Giovanni Zocchi, at the University of California at Los Angeles

2003-2006 : *Lycée Sainte Geneviève, Versailles (France)*

- Scientific preparatory classes. (Very intense undergraduate program that prepares students in mathematics, physics, chemistry and computing science for the competitive entrance exams to the French top schools/universities).

Research publications and working papers.

- Equilibrium pricing of a market-completing derivative under relative performance concerns.
J. Bielagk, A. Lionnet and G. dos Reis.
Work in progress.
- Convergence of modified explicit schemes for FBSDE with polynomial growth drivers, and positivity preservation.
A. Lionnet, G. dos Reis and L. Szpruch.
Article in preparation, 2015+.
- On BSDEs up to an unbounded stopping time.
S. Cohen and A. Lionnet.
Article in preparation, 2015+.
- Time discretization of FBSDEs with polynomial growth drivers and reaction-diffusion PDEs.
A. Lionnet, G. dos Reis and L. Szpruch.
Annals of Applied Probability, to appear, 2015+. Available on arXiv.
- Some results on general quadratic reflected BSDEs driven by a continuous martingale.
A. Lionnet.
Stochastic Processes and their Applications, vol 124:3, 2014. Journal article (Open Access).
- On Girsanov's transform for BSDEs.
G. Liang, A. Lionnet and Z. Qian.
In revision. Available on arXiv.

Funding, grants and prizes.

Funding obtained based on research projects.

150th Anniversary Postdoctoral Mobility Grant from the London Mathematical Society.

Visits to the University of Edinburgh, as well as Humboldt Universität and the Weierstrass Institute in Berlin.

Funding obtained during my studies.

Lamb and Flag Scholar of St John's College, Oxford.

Ecole Normale Supérieure de Lyon, stipendiary student.

Teaching.

As College Lecturer at Lady Margaret Hall, Oxford (2013–2014).

I ran College Tutorials (groups of 2–3 students) and was also Admission Interviewer for the entrance of undergraduates to Oxford. I was in charge of the 2nd year Applied Maths courses : differential equations 1 & 2, waves and fluids, integration, numerical analysis, multivariate differentiation, calculus of variations.

That year I also supervised a Visiting Student to St Catherine's College on "Monte-Carlo methods for pricing derivatives", based on notes by Mike Giles.

As Class Tutor for the Maths Institute, Oxford (2009–2013).

I ran Classes for the Mathematical Institute (marking and demonstrating, groups of 6–10 students). I covered the following 3rd and 4th year courses : Banach spaces, martingales through measure theory, stochastic differential equations, mathematical models of financial derivatives, practical stochastic calculus, asset pricing and portfolio theory. I also acted as Tutor for 2nd year statistics for Exeter College, Oxford.

As Interview preparator, Lyon (2007–2009).

I was interview preparator in the Lycée aux Lazaristes, conducting weekly mock interviews to prepare students for the entrance exams to the French top schools.universities. Syllabus : all topics in the first two years of mathematics (classes de MP* et PC*).

Organization of events.

I organized the first *Young Researchers Meeting in BSDEs, Numerics and Finance* together with Sam Cohen and Gechun Liang, Oxford, 2-4 July 2012.

Over the year 2012–2013 I ran a *Seminar for dummies* in the Oxford-Man Institute : accessible and interdisciplinary talks and discussions aimed at the PhD students.

From January to May 2014 I co-organized a few workshops of introduction to systematic trading at the Oxford–Man Institute, in partnership with the hedge-fund AHL (part of Man Investment group, main funder of the Institute).

Popularization of the mathematical sciences

I did an intervention in a primary school with Laurent Viennot (INRIA) to initiate children to programming, using Scratch.

I gave a conference talk for 14–16 years old students during the Week of Mathematics, at Université Paris 8, 20th March 2015 (slides and video available on my webpage).

I am currently writing an article on Quants and mathematical finance for the online popularization journal *Interstices*.

Research presentations

- *Stochastic Analysis Seminar*, Oxford, 16th January 2012.
- *Mathematical and Computational Finance Group internal seminar*, Oxford, 8th March 2012.
- *Probability Control and Finance conference* for I. Karatzas' 60th birthday, Columbia University, 4–8th June 2012.
- *Probability Days 2012*, Rennes/Roscoff, 18–22nd June 2012.
- *8th Oxford-Princeton Workshop on Financial Mathematics and Stochastic Analysis*, Oxford, 21–22 March 2014.
- *ILB-SIAM-SMAI Conference on Financial Mathematics: Advanced Modeling and Numerical Methods*, Paris, 17–20 June 2014.
- *7th International Symposium on BSDEs*, Shandong University, 22–27 June 2014.
- *2nd Young Researchers Meeting on BSDEs, Numerics and Finance*, Bordeaux, 7–9 July 2014.
- *Workshop on Stochastic Analysis for Risk Modeling*, CIRM Luminy, 8–12 September 2014.
- *CMAP Seminar*, Ecole Polytechnique, 9 March 2015.
- *MATHRISK Seminar*, INRIA Paris-Rocquencourt, 16 March 2015.

Programming experience.

I programmed in Texas Instruments Basic (coding mini-games for graphic calculators in high school), CamL (for a theoretical computing science course), C (course for physicists), Scilab (for the Agrégation de mathématiques), C++ (graduate working group), Matlab (for my research), R (during my internship at Credit Suisse). I also wrote in HTML & CSS (for my webpage).

I am currently using Matlab for my research on numerical methods. At the INRIA, I have also joined the team developing the software PREMIA, a library of numerical methods for problems of derivatives management and optimal execution, for banks. In that activity I will be using C.

Learned societies.

I have a membership at the Society for Industrial and Applied Mathematics (SIAM) and the French Société pour les Mathématiques Appliquées et Industrielles (SMAI) (since 2012) as well as at the Société Mathématique de France (SMF) (since 2015).