Wael Bahsoun

Curriculum Vitae

Personal Data

Full Name: Wael Bahsoun
Born in 1975
Citizenship: Lebanese
Marital Status: Married, have two children

Contact Details

School of Mathematics
Loughborough University
Loughborough, Leicestershire
LE11 3TU, UK
Phone +44-(0)1509-222883
E-mail: W.Bahsoun@lboro.ac.uk

Current Position

Lecturer in Mathematics
Loughborough University, UK

Education

(2000-2004) PhD in mathematics, Concordia University, Montreal, Canada.
(1998-2000) MS in mathematics, Concordia University, Montreal, Canada.
(1994-1998) BS in mathematics, American University of Beirut, Lebanon.

Employment History

(2008-present) Lecturer in Mathematics, Loughborough University, UK.
(2006-2008) Samuel Gratrix Fellow, University of Manchester, Manchester, UK.
(2004-2006) PIMS Postdoctoral Fellow, University of Victoria, Victoria, Canada.

Research Interests

- Ergodic Theory and Dynamical Systems.
- Random Dynamical Systems.
- Random Dynamics in Economics and Finance.

PhD Students

• Çisem Bektur (Oct 2009-present).

• Yuejiao Duan (Oct 2010-present).

External Grants

• LMS Grant Scheme 4, value £700 (to support the research visit of Sandro Vaienti to Loughborough, 31 July-05 August 2011).

• IMA Small Grant, value £500 (to partially support participations in ICIAM 2011 in Vancouver, 18-22 July 2011).

• Royal Society Travel Grant, value: £2441 (to support the research visit of Chris Bose to Loughborough, 19 June-09 July 2011).

• LMS Grant Scheme 4, value £260 (to support the research visit of Andrew Ferguson to Loughborough, 21-25 March 2011).

Research Visits

• Centre de Physique Théorique , Marseille, France, (23-31 Jan 2011), (6-13 Feb 2011), (4-7 Dec 2011).

• Laboratoire de Mathématiques de Brest, France, (01-04 Feb 2011).

• FRUMAM, Marseille, France, (02-06 June 2010).

• University of Victoria, Canada, (July-Aug 2007), (May-June 2009), (05-24 April 2010) .

• University of British Columbia, Canada, (15-17 Nov 2004).

• York University, Canada, (15-21 Oct 2004).

Service

• I have refereed articles for the following journals:
Decisions in Economics and Finance; *Ergodic Theory and Dynamical Systems*; *International Journal of Bifurcation and Chaos*; *Journal of Applied Mathematics and Stochastic Analysis*; *Nonlinearity.*

• I write reviews of articles for *Mathematical Reviews.*

• I Supervise MSc students in *Mathematical Processes in Finance*, Loughborough University, UK.

• During 2003-2004, I organized *ISM Graduate Students Seminar*, ISM, Montreal.

• During 2001-2002, I organized *Concordia Graduate Students Seminar*, Concordia University, Montreal.

• During 2001-2002, I was the *Mathematics and Statistics Graduate Students' Representative,* Concordia University, Montreal.

Conference Organization

• W. Bahsoun, C. Bose and G. Froyland, *Open Dynamical Systems: Ergodic Theory, Probabilistic Methods and Applications*, BIRS, Banff, 08-13 May , 2012.

• W. Bahsoun, C. Bose and G. Froyland, *Transport and Metastability in Open and Time-dependent Dynamical Systems*, Contributed Minisymposium at ICIAM2011, Vancouver, 18-22 July, 2011.

• W. Bahsoun, K. T. Santhar and Kristina Loeschner, *ISM Graduate Students Conference*, ISM, Montreal, 10-12 May, 2002.

Conference Talks

• Rigorous and Computable Approximations of Escape Rate Formulae, ICIAM 2011, July 18-22, Vancouver, Canada.

• Nash equilibrium strategies in evolutionary models of asset markets, Journées internationales intérêts comparatifs et problèmes des simulations en sciences exactes et sciences humaines 2010, June 4-5, Marseille, France.

• Quasi-invariant measures and escape rates, 8^{th} AIMS conference 2010, May 25-28, Dresden, Germany.

• SRB measures for certain Markov processes, 8^{th} AIMS conference 2010, May 25-28, Dresden, Germany.

• Capital growth under transaction costs: An analysis based on the von Neumann-Gale model, SPA 2009, July 27-31, Berlin, Germany.

• Deterministic Representation for Position Dependent Random Maps, New Directions in: Probabilistic Aspects of Skew-Product Dynamics, 2008, September 10-11, University of Manchester, UK.

• Evolutionary Models of Financial Markets, June 1-5, Second Canada-France Meeting, 2008, UQAM, Montreal, Canada.

• Rigorous Numerical Approximation of Escape Rates, Measurable Dynamics: Theory and Applications, 2006, August 5-10, BIRS, Banff, Canada.

• Deterministic Representation for Position Dependent Random Maps, CMS Winter meeting, December 9-12, 2005, Victoria, Canada.

• Absolutely Continuous Invariant Measures for Random Maps and Their Applications in Finance, Young Mathematicians Conference in PDE and Dynamical Systems 2004, January 31 - February 1, The Fields Institute, Toronto, Canada.

• Weakly Convex and Concave Random Maps, CMS summer meeting, 2003, June 14-16, University of Alberta, Edmonton, Canada.

• Exact and Dissipative Inner Functions, ISM Graduate Students Conference, May 10-12, 2002, Concordia University, Montreal, Canada.

Seminar Talks

• Metastability of intermittent and randomly perturbed maps, Dynamical Systems and Statistical Physics, Queen Mary University of London, Oct 18, 2011.

• Metastability of certain intermittent maps, One day Ergodic Theory Meeting, 2011, March 04, University of Surrey, UK.

• Invariant Densities and Escape Rates: Rigorous and Computable Approximations in the L^∞-norm, séminaire d'Analyse et Probabilités, Laboratoire de Mathématiques de Brest, France, Feb 03, 2011.

• Rigorous and Computable Pointwise Approximations of Invariant Densities and Escape Rates, Ergodic Theory and Dynamical Systems Seminar, University of Bristol, UK, Oct 21, 2010.

• Invariant Densities and Escape Rates: Rigorous and Computable Approximations in the L^∞-norm, Dynamics Seminar, University of Warwick, UK, Oct 19, 2010.

• Quasi-invariant measures and escape rates, Seminaire propriétés statistiques des systèmes dynamiques, Marseille, France, June 03, 2010.

• Quasi-invariant measures and escape rates, Dynamics Seminar, University of Victoria, Canada, April 15, 2010.

• Random maps, Skew-products and Existence of Invariant Measures, Dynamics Seminar, Imperial College, UK, Oct 27, 2009.

• Skew-product Representation for Position Dependent Random Maps, Dynamics Seminar, University of Warwick, UK, Oct 14, 2008.

• Evolutionary Dynamics of Financial Markets, Colloquium, University of Victoria, July 12, 2007.

• Rigorous Numerical Approximation of Escape Rates, Dynamics Seminar, University of Manchester, UK, March 14, 2007.

• Rigorous Numerical Approximation of Escape Rates, One day Ergodic Theory Meeting, 2006, November 02, Queen Mary University of London, UK.

• Rigorous Numerical Approximation of Escape Rates, Dynamics Seminar, Imperial College London, UK, February 23, 2006.

• Chaotic Dynamical Systems: A Probabilistic Approach, Two Lectures, Dynamics Seminar, University of Victoria, Jan. 13 and 20, 2006.

• Open Dynamical Systems: Escape Rates and Conditionally Invariant Measures, Operator Theory Seminar, University of Victoria, March 23, 2005.

• Random Dynamics, Two Lectures, Operator Theory Seminar, University of Victoria, Feb 7 and 9, 2005.

• Measurable Dynamics, Three Lectures, Operator Theory Seminar, University of Victoria, November 8, 15 and 23, 2004.

• Position Dependent Random Maps and Generalized Skew Products, Discrete Math. Seminar, University of British Columbia, November 16, 2004.

• Deterministic Representation for Position Dependent Random Maps, Dynamical Systems Seminar, Concordia University, 21 October, 2004.

• Random Dynamics and Applications to Finance, Applied Math Seminar, University of Victoria, September 14, 2004.

• Position Dependent Random Maps in One and Higher Dimensions, CRM, October 2002.

• Weakly Convex and Concave Random Maps with Position Dependent Probabilities, ISM Graduate Students Seminar, Concordia University, January, 2003.

• Absolutely Continuous Invariant Measures for Position Dependent Random Maps, Concordia Graduate Students Seminar, February 2003.

• Julia Set and Ergodicity of Inner Functions, ISM Graduate Students Seminar, McGill University, November 2001.

• Wieirstrass $\wp$-Function and Lattes Example, Concordia Graduate Students Seminar, July 2001.

• The Poincare Recurrence Theorem and Smooth Julia Sets, Concordia Graduate Students Seminar, May 2001.

• The Goals of Dynamical Systems, ISM Graduate Students Seminar, McGill University, November 2000.

Conferences Attended

• Piecewise and low-dimensional dynamics, 2011, July 04-06, University of Warwick, UK.

• Statistical properties of rare events, 2010, September 27-28, University of Exeter, UK.

• MITACS-IFM2 Workshop on Recent Advances in Financial and Insurance Risk Management: Stochastic and Statistical Models, 2008, June 2-3, UQAN, Montreal, Canada.

• Workshop on Ergodic Theory and Geometry, 2008, April 1-4, University of Manchester, UK.

• North West Dynamics Day, 2007, April 25, Liverpool University, UK.

• Northwest Dynamics Symposium, 2005, Aug 15-19, University of Victoria, Canada.

• PIMS Summer School in Aperiodic Order, 2005, Aug 8-13, University of Victoria, Canada.

• Mathematical Issues in Molecular Dynamics, 2005, June 4-9, BIRS, Banff, Canada.

• Conference in Honor of Paul Koosis, October 2003, CRM Montreal Canada.

• Holomorphic Iteration, Non-Uniform Hyperbolicity, May 22-25, 2002, Banach Center, Warsaw Poland.

• Adrien Douady's 60th Birthday, 20-21 October 2000, CRM, Montreal Canada.

• Canadian Mathematical Society Meeting, 2000, McMaster University, Hamilton Canada.

• Holomorphic Dynamics, Conformal and Invariant Measures, November 22-27, 1999, Banach Center, Warsaw Poland.

Teaching Experience

(2011-present) *Geometry Vectors and Complex Numbers*, Loughborough University, UK.

(2008-present) *Discrete Stochastic Methods in Finance, Continuous Stochastic Methods in Finance*, Loughborough University, UK.

(2006-2008) *Mathematical Finance, Mathematical Economics, Further Mathematics for Economists*, University of Manchester, UK.

(2005-2006) *Finite Mathematics*, University of Victoria, Canada.

(2001-2003) *Algebra and Functions, Calculus for Business and Social Sciences*, Concordia University, Canada.

Administrative Duties

(2010-present) Programme tutor for *Financial Mathematics, Mathematics with Economics*, Loughborough University, UK.

List Of Publications

Articles published in refereed journals

• Bahsoun, W. and Vaienti, S., *Metastability of certain intermittent maps*, Nonlinearity 2012, vol. 25, 107-124.

• Bahsoun, W. and Bose, C., *Invariant Densities and Escape Rates: Rigorous and Computable Approximations in The L^∞-norm*, Nonlinear Analysis, 2011, vol. 74, 4481-4495.

• Bahsoun, W. and Góra, P., *SRB Measures for Certain Markov Processes*, Discrete Contin. Dynam. Systems, 2011, vol. 30, no. 1, 17-37.

• Bahsoun, W., Evstigneev, I. and Xu, L., *Almost sure Nash equilibrium strategies in evolutionary models of asset markets*, Math. Methods Oper. Res., 2011, vol. 73, 235-250.

• Bahsoun, W. and Bose, C., *Quasi-Invariant Measures, Escape Rates and The Effect of The Hole*, Disc. Cont. Dynam. Sys. A, 2010, vol. 27, no. 3, 1107-1121.

• Bahsoun, W., Bose, C. and Quas, A., *Deterministic Representation of Position Dependent Random Maps*, Disc. Cont. Dynam. Sys. A, 2008, vol. 22, no. 3, 529-540.

• Bahsoun, W., Evstigneev, I. and Taksar, M., *Rapid Paths in the von-Neumann-Gale Dynamical Systems*, Stochastics, 2008; vol. 80, no. 2-3, 129-141.

• Bahsoun, W., Góra, P., Mayoral S., and Morales, M., *Random Dynamics and Finance: Constructing Implied Binomial Trees from a Predetermined Stationary Density*, Appl. Stochastic Models Bus. Ind., 2007; vol. 23, no. 3, 181-212.

• Bahsoun, W., *Rigorous Numerical Approximation of Escape Rates*, Nonlinearity, 2006, vol. 19, 2529-2542.

• Bahsoun, W. and Góra, P., *Invariant Densities For Position Dependent Random Maps on the Real Line: Existence, Approximation and Error Bounds*, Stochastics and Dynamics, 2006, vol. 6, no. 2, 155-172.

• Góra, P., Boyarsky, A., Islam, S. and Bahsoun, W., *Absolutely Continuous Invariant Measures That Cannot Be Observed Experimentally*, SIAM J. App. Dynam. Sys., 2006, vol. 5, no. 1, 84-90.

• Bahsoun, W. and Góra, P., *Invariant Measures for Position Dependent Random Maps of an Interval With Holes*, IJBC, 2006, vol. 16, no. 2, 437-444.

• Góra, P., Boyarsky, A. and Bahsoun, W., *Folding Maps and Functional Equations*, Dynam. Sys., 2006, vol. 21, no. 2, 235 - 243.

• Bahsoun, W. and Góra, P. *Random β-transformations*, IJBC, 2006, vol. 16, no. 4, 1079-1081.

• Bahsoun, W., Góra, P. and Boyarsky A., *Markov Switching for Position Dependent Random Maps with Application to Forecasting*, SIAM J. App. Dynam. Sys., 2005, vol 4, no. 2, 391-406.

• Bahsoun, W. and Góra, P., *Position Dependent Random Maps in One and Higher Dimensions*, Studia Math., 2005, 166, 271-286.

• Bahsoun, W. and Góra, P., *Dissipative and Exact Inner Functions*, Complex Var., 2004, vol. 49, no. 5, 331-338

• Bahsoun, W., Góra, P. and Boyarsky A., *Small Stochastic Perturbations of Random Maps with Position Dependent Probabilities*, Stochastic Anal. Appl., 2004, vol 22, no. 4, 1121-1130.

• Thirulogasanthar, K. and Bahsoun, W., *Frames Built on Fractal Sets*, J. Geom. Phy., 2004, vol. 50, 79-98.

• Thirulogasanthar, K. and Bahsoun, W., *Continuous and Discrete Frames on Julia Sets*, J. Geom. Phy., 2004, vol. 51, 183-195.

• Bahsoun, W., Góra, P. and Boyarsky A., *Stochastic Perturbations of Position Dependent Random Maps*, Stochastics and Dynamics, 2003, vol. 3, no. 4, 545-557.

• Bahsoun, W., Góra, P., Boyarsky A. and Ebrahimi, M., *Filtering Entropy*, Physica D., 2003, vol. 183, no. 3-4, 260-272

• Bahsoun, W. and Góra, P., *Weakly Convex and Concave Random Maps with Position Dependent Probabilities*, Stoch. Anal. App., 2003, vol. 21, no. 5, 983 - 994.

• Bahsoun, W., *Julia Set and Ergodicity of Meromorphic Functions*, Adv. Stud. in Cont. Math, 4, 2002, no. 2, 103-109.

Books and chapters in books

• Bahsoun, W., Evstigneev, I. and Taksar, M., *Growth-optimal investments and numeraire portfolios under transaction costs*, Handbook of the Fundamentals of Financial Decision Making (S. Browne, L.C. MacLean and W.T. Ziemba, eds.), 2012.