Patricia Alonso Ruiz

Department of Mathematics, University of Connecticut
341 Mansfield Rd Unit 1009
Storrs, Mansfield CT 06269
Phone: +1 860-486-8127

Email: patricia.alonso-ruiz@uconn.edu
website: www.math.uconn.edu/∼alonsoruiz/

Appointments

Research Assistant Professor, *University of Connecticut*, August 2016 - present.

Professional preparation

Licenciatura en Ciencias Matemáticas (M.Sc.), *Universidad Complutense Madrid*, Spain, 2004 - 2009.
Erasmus exchange program, *Ludwig Maximilians University Munich*, Germany, 2007 - 2008.
Graduate student, *Ludwig Maximilians University Munich*, 2010 - 2011.
Ph.D. in mathematics, *University of Siegen*, Germany, 2011 - 2013.
Postdoc, *Ulm University*, Germany, 2013 - 2016.

Selected awards

Feodor Lynen fellowship, Alexander von Humboldt Foundation, October 2016 - August 2018.
Research and travel grant for female scientists, *Ulm University*, October 2015 - April 2016.
DAAD graduate fellowship, September 2009 - April 2012.

Research interests

Analysis and stochastic processes on rough spaces, fractals, limit theorems in stochastic geometry, random fields, exchangeability.

Publications & preprints

[1] *Canonical diffusions on pattern spaces of aperiodic Delone sets*, with M. Hinz, A. Teplyaev and R. Treviño. arXiv:1801.08956.

[2] *Explicit formulas for heat kernels on diamond fractals*, submitted, arXiv:1712.00385.

[3] *Entropy-based inhomogeneity detection in porous media*, with E. Spodarev, arXiv:1611.02241. To appear in: Methodology and Computing in Applied Probability (2017).

[4] *Completely symmetric resistance forms on the Stretched Sierpinski gasket*, with U. Freiberg and J. Kigami, arXiv:1606.08582. To appear in: Journal of Fractal Geometry (2017).

[5] *Power dissipation in fractal Feynman-Sierpinski AC circuits*, Journal of Mathematical Physics, **58** (2017), no. 7, 073503.

[6] *Nonparametric estimation of entropy for marked Poisson point processes*, with E. Spodarev, Advances in Applied Probability, **49** (2017), no. 1, 258–278.

[7] *Weyl asymptotics for Hanoi attractors*, with U. Freiberg, Forum Mathematicum **29** (2017), no. 5, 1003–1022.

[8] *The limit theorem for maximum of partial sums of exchangeable random variables*, with A. Rakitko. Statistics and Probability Letters **119** (2016), 357–362.

[9] *Energy and Laplacian on Hanoi-type fractal quantum graphs*, with D. Kelleher, and A. Teplyaev, Journal of Physics A: Mathematical and Theoretical **49** (2016), no. 4, 1501–1533 (electronic).

[10] *Dirichlet forms on Hanoi attractors*, with U. Freiberg, Int. J. Applied Nonlinear Science, **1** (2014), no. 3, 247–274.

[11] *Hanoi attractors and the Sierpiński Gasket*, with U. Freiberg, Special issue of Int. J. Math. Model. Numer. Optim. on Fractals, Fractal-based Methods and Applications **3** (2012), no. 3, 251–265.

Invited Talks

Norbert Wiener Center Seminar, University of Maryland, Washington DC, MD, February 2018.

15th Northeast Probability Seminar, Columbia University, New York, November 2017.

Nonsmooth Analysis Workshop, University of Connecticut, Storrs, CT, November 2017.

AMS Special Session on Analysis and Geometry of Fractals, UC Riverside, CA, November 2017.

Analysis and Geometry on Graphs and Manifolds, University of Potsdam, Germany, August 2017.

6th Cornell Conference on Analysis, Probability, and Mathematical Physics on Fractals, Cornell University, Ithaca, NY, June 2017.

Women's Intellectual Network Research Symposium, Brown University, RI, March 2017.

Lehigh Math Colloquium, Lehigh University, Bethlehem, PA, February 2017.

Analysis Seminar, Cornell University, Ithaca, NY, January 2017.

German Probability and Stochastic Days, University of Bochum, Germany, March 2016.

Mathematisches Kolloquium, University of Bremen, Germany, June 2015.

Workshop:"Probability, Analysis and Geometry", Moscow State University, Russia, October 2014.

The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Universidad Autónoma de Madrid, Spain, July 2014.

5th Cornell Conference on Analysis, Probability, and Mathematical Physics on Fractals Cornell University, Ithaca, NY, June 2014.

Stochastics Seminar, Moscow State University, Russia, April 2014.

Fractal geometry and Stochastics V, Tabarz, Germany, March 2014.

Probability Seminar, University of Essen, Germany, November 2013.

Workshop: Probability, Analysis and Geometry, Ulm University, Germany, September 2013.

Mathematisches Kolloquium, University of Bremen, Germany, July 2013.

Analysis and Probability Seminar, University of Connecticut, Storrs, CT, March 2013.

International Conference of Advances on Fractals and Related Topics, Hong Kong University, Hong Kong, December 2012.

Supervision

Co-advisor (with E. Spodarev): B. Sc. Thesis *Estimation of entropy of directional distributions* by Jakob Schwarz, Spring 2016, Ulm University.

Professional activities

Co-organizer (with J. P. Chen, L. Rogers, A. Teplyaev and R. Strichartz): Special Session on Analysis on Fractals, Joint Mathematics Meetings, Baltimore 2019 (planned).

Co-writer and developer (with UConn's Mathematics department) of an open-source learning platform for the undergraduate probability courses, University of Connecticut, Fall 2017 to present.

Co-director (with R. Strichartz): REU project, Cornell University, Summer 2017.

Co-editor (with J. P. Chen, L. Rogers, A. Teplyaev and R. Strichartz): Proceedings volume for the 6th Cornell Conference on Analysis, Probability and Mathematical Physics on Fractals 2017.

Referee: Monatshefte für Mathematik, Statistics & Probability Letters, Stochastic Processes and their Applications.

Member of: Association of Women in Mathematics, Women in Probability Group.

Teaching

University of Connecticut:
Probability, undergraduate course, Fall 2017.
Probability, (two sections) undergraduate course, Fall 2016.

Ulm University:
Random fields, Mathematics M. Sc. course, Spring 2016.
Stochastic for Economic Sciences, undergraduate service course, Fall 2014.
Stochastic Geometry and its Applications, undergraduate seminar organization, Spring 2014.

Academy of Sciences, Finance and Technology, Ulm:
Stochastic risk modeling and statistical methods, distance course TA, Spring 2015.
Stochastic risk modeling and statistical methods, distance course TA, Spring 2014.
Insurance claim mathematics, distance course TA, Spring 2014.

University of Siegen:
Fractal Geometry, Mathematics M. Sc. course TA, Spring 2013.
Mathematics III for engineers, undergraduate service course TA, Spring 2013.
Linear Algebra I, Mathematics undergraduate course TA, Fall 2012.
Fractal Geometry, Mathematics M. Sc. course TA, Spring 2012.
Discrete Mathematics for Computer Sciences, undergraduate service course TA, Fall 2011.

Ludwig Maximiliam University, Munich:
Analysis I, Mathematics undergraduate course TA, Fall 2010.
Ordinary Differential Equations, Mathematics undergraduate course TA, Spring 2010.

Universidad Complutense Madrid:
Introductory course in Mathematics, Mathematics undergraduate course TA, Fall 2009.

LANGUAGES Spanish (Native), English (Fluent), German (Fluent), French (Good).