

# PATRICIA ALONSO RUIZ

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- APPOINTMENTS Assistant Research Professor, *University of Connecticut*, August 2016 - present.
- PROFESSIONAL Postdoc, *Ulm University*, Germany, 2013 - 2016.
- PREPARATION Ph.D. in mathematics, *University of Siegen*, Germany, 2013.  
Graduate student, *Ludwig Maximilians University Munich*, 2010 - 2011.  
Licenciatura en Ciencias Matemáticas (M.Sc.), *Universidad Complutense Madrid*, Spain, 2009.  
Erasmus exchange program, *Ludwig Maximilians University Munich*, Germany, 2007 - 2008.
- SELECTED Feodor Lynen fellowship, Alexander von Humboldt Foundation, October 2016 - August 2018.
- AWARDS Research and travel grant for female scientists, *Ulm University*, October 2015 - April 2016.  
DAAD travel grant, July 2014.  
DAAD graduate fellowship, September 2009 - April 2012.
- RESEARCH Stochastic processes, Dirichlet forms and heat kernels on metric measure spaces, fractals and  
INTERESTS graphs, limit theorems in stochastic geometry, random fields, exchangeability.
- PUBLICATIONS [13] *BV functions and Besov spaces associated with Dirichlet spaces*, with F. Baudoin, L. Chen,  
PREPRINTS N. Kajino, L. Rogers, N. Shanmugalingam and A. Teplyaev, submitted (2018).  
arXiv:1806.03428.
- [12] *Analysis on hybrid fractals*, with Y. Chen, H. Gu, R. S. Strichartz and Z. Zhou, submitted  
(2018). arXiv:1804.05434.
- [11] *Canonical diffusions on pattern spaces of aperiodic Delone sets*, with M. Hinz, A. Teplyaev  
and R. Treviño, submitted (2018). arXiv:1801.08956.
- [10] *Explicit formulas for heat kernels on diamond fractals*, arXiv:1712.00385. To appear in:  
Comm. in Mathematical Physics (2018).
- [9] *Completely symmetric resistance forms on the Stretched Sierpinski gasket*, with U. Freiberg  
and J. Kigami, *Journal of Fractal Geometry* **5** (2018), no. 3, 227–277.
- [8] *Entropy-based inhomogeneity detection in fiber materials*, with E. Spodarev, *Methodology  
and Computing in Applied Probability* (2017), 1–17 (electronic).
- [7] *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.
- [5] *Weyl asymptotics for Hanoi attractors*, with U. Freiberg, *Forum Mathematicum* **29** (2017),  
no. 5, 1003–1022.

- [4] *The limit theorem for maximum of partial sums of exchangeable random variables*, with A. Rakitko. *Statistics and Probability Letters* **119** (2016), 357–362.
- [3] *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).
- [2] *Dirichlet forms on Hanoi attractors*, with U. Freiberg, *Int. J. Applied Nonlinear Science*, **1** (2014), no. 3, 247–274.
- [1] *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.

CONFERENCE  
TALKS

*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.

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

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

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

SEMINAR TALKS

*Oberseminar Stochastik*, University of Tübingen, Germany, July 2018.

*Oberseminar Stochastik und Anwendungen*, University of Stuttgart, Germany, July 2018.

*Mathematics Seminar*, Seoul National University, Seoul, South Korea, June 2018.

*Probability Seminar*, Michigan State University, East Lansing, MI, April 2018.

*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.

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

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

*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.

*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.

PROFESSIONAL  
ACTIVITIES

Co-organizer (with P. Mariano): AMS Special Session in Stochastic processes, random walks and heat kernels. Spring Eastern Sectional meeting, Hartford, April 2019.

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

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. S. Strichartz): REU project, Cornell University, Summer 2017.

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

Co-organizer (with U. R. Freiberg and P. Arzt): Mini-Workshop *Dirichlet forms, Riemannian structures and spectral analysis on fractals*, University of Siegen, Germany, June 2012.

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

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

SUPERVISION

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

TEACHING  
EXPERIENCE

At the University of Connecticut:

*Probability*, undergraduate course, Fall 2018.

*Differential equations*, undergraduate course, Fall 2018.

*Probability*, undergraduate course, Fall 2017.

*Probability*, (two sections) undergraduate course, Fall 2016.

At 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.

At the 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.

At the 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.

At the Ludwig-Maximilians University Munich:

*Analysis I*, Mathematics undergraduate course TA, Fall 2010.

*Ordinary Differential Equations*, Mathematics undergraduate course TA, Spring 2010.

At the Universidad Complutense Madrid:

*Introductory course in Mathematics*, Mathematics undergraduate course TA, Fall 2009.

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