Arturo Jaramillo Gil

CONTACT
INFORMATION

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EDUCATION

Esch-sur-Alzette, Luxembourg.

Université du Luxembourg	3/2020 - present
Postdoctoral researcher, Mathematics,	7/2018 - 3/2019

Singapore.

National University of Singapore	4/2019 - 2/2020
Postdoctoral researcher, Mathematics,	

Lawrence, Kansas, United States.

University of Kansas (KU)	3/2016 - 5/2018
Ph.D. Student, Mathematics,	

- Grade Point Average: A
- Thesis topic:
  Limit distributions for functionals of Gaussian processes;
  with emphasis on local times, fractional Brownian motion,
  limit theorems, Malliavin calculus and random matrices.
- Advisor: Prof. David Nualart   nualart@ku.edu

University of Kansas (KU)	1/2014 - 2/2016
M.A., Mathematics.	

Guanajuato, Guanajuato, Mexico.

Centro de Investigación en Matemáticas (CIMAT)	8/2011 - 7/2013
M.Sc., Probability and Statistics,	

- Grade Point Average: 9.2/10
- Thesis Topic:
  Convergence in Law of Multiple Skorohod Integrals[1]
- Advisor: Prof. Juan Carlos Pardo Millán   jcpardo@cimat.mx

Universidad de Guanajuato (UGTO)	8/2006 - 6/2011
B.A.Sc., Mathematics,	

- Grade Point Average: 8.17/10
- Thesis Topic:
  Invariant Manifolds and Finite Dimensional Realizations[2]
- Advisor: Prof. Daniel Hernández Hernández   dher@cimat.mx

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[1]Consist in establishing criteria for the convergence in law for a sequence of Skorohod integrals, as well as analyzing the convergence of the Hermite variations of the fractional Brownian motion. It is based on the work of D. Nualart and I. Nourdin.

[2]This work was devoted to model the curve of interest rates by means of a infinite-dimensional diffusion over a manifold. It is based on the work of T. Bjork.

Postdoctoral researcher
During my postdoc, in collaboration with Ivan Nourdin, Giovanni Peccati, Adrian Röellin y Louis Chen, I have conducted research in the following topics:
- Approximations of local times.
- Stein's method.
- Probabilistic number theory.
- Random matrices (in collaboration with Mario Díaz Torres and Juan Carlos Pardo).

Doctoral research
During my PhD program, at the University of Kansas, I developed research, jointly with David Nualart, Daniel Harnett, Juan Carlos Pardo, José Luis Pérez Garmendia, on the following topics
- Limit theorems and Malliacin calculus.
- Local times.
- Stochastic integration for Gaussian processes.
- Random matrices.

Activities as advisor
- As thesis advisor   3/2020 - present
I participate as thesis advisor at undergraduate level at the
University of Luxembourg, serving as mentor in
the study of "Erdös-Kac theorem".

- As research advisor

- Participation as advisor in the BASI seminar[3]   1/2019 - 6/2019
  at the University of Luxembourg, where I served as advisor
  in the topic "Card shufflings and stopping times"

- I participate as "reading course" advisor   3/2020 - present
  at the University of Luxembourg, where I supervise
  a student in the topic "Introduction to queuing theory".

Research Assistant
Assisted Prof. David Nualart on the topics
- Collision of the Eigenvalues of matrix-valued   7/2017 - 8/2017
  Gaussian processes.
- Symmetric Stochastic Integrals With Respect to a Class 7/2016 - 8/2016
  of Self-similar Gaussian Processes.
- Derivative of Self Intersection Local Time for the   7/2015 - 8/2015
  Fractional Brownian motion.
- Self Intersection Local Time for the Fractional Brownian 1/2014 - 8/2014
  Motion.

Assisted Prof. Daniel Hernández Hernández on the topics:
- Forward force of Mortality and Invariant Manifolds.   8/2013 - 12/2013
- Interest Rate Surfaces.   8/2009 - 7/2010

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[3]A program designed to give a first approach to research activities to students specialized in mathematics

AWARDS	- *Paul Conrad Scholarship.* Was established in 2008 in memory of Professor Conrad to provide awards for deserving graduate students in mathematics. University of Kansas, 2016.
	- *Himmelberg award.* The award is used to support graduate student with merit in the Mathematics Department. University of Kansas, 2017.

RESEARCH

Publications

- A. Jaramillo, D. Nualart. Collision of eigenvalues for matrix-valued processes. Random matrices: Theory and Applications (to appear).

- A. Jaramillo, JC. Pardo, JL Pérez. Convergence of the empirical spectral distribution of Gaussian matrix-valued processes. Electronic Journal of Probability (2019) 10.

- A. Jaramillo, D. Nualart. Functional limit theorem for the self-intersection local time of the fractional Brownian motion. Annales de l'institut Henri Poincaré (2019) 22, 481-528.

- D. Harnett, A. Jaramillo, D. Nualart. Symmetric stochastic integrals with respect to a class of self-similar Gaussian processes. Journal of Theoretical Probability (2019) 3, 1105-1144.

- A. Jaramillo, D. Nualart. Asymptotic properties of the derivative self-intersection local time of fractional Brownian motion. Stochastic Processes and Their Applications (2017) 127, 669-700.

- O. Arizmendi, A. Jaramillo. Convergence of the fourth moment and Infinite Divisibility: Quantitative Estimates. Electronic Communications in Probability (2014) 19, 1-12.

- A. Jaramillo, I. Nourdin, G. Peccati. Approximation of local times: zero energy and weak derivatives (accepted subject to revision in the Annales of Applied Probability).

Preprints

- M. Diaz, A. Jaramillo, JC. Pardo. Fluctuations of matrix-valued Gaussian processes.

Referee activity for

- Stochastics.
- Bernoulli.
- Electronic Journal of Statistics.
- Journal of Mathematical Analysis and Applications.
- Acta applicandae mathematicae.

RESEARCH INTERESTS

I am most interested in the following topics
- Malliavin Calculus.
- Stein's method and limit theorems.
- Gaussian processes, with emphasis on fractional Brownian motion.
- Local times.
- Random matrices and free probability.
- Probabilistic number theory.

WORK EXPERIENCE	**Principal instructor**	
	• At the University of Luxembourg. Complex analysis	2/2020-present

Teaching Assistant

- At University of Kansas (KU).

Calculus III math 127	1/2017 - 7/2018
Calculus III math 127	7/2017 - 12/2017
Calculus III math 127	1/2017 - 7/2017
Calculus II math 126	8/2016 - 12/2016
Calculus I math 115	1/2016 - 7/2016
Calculus I math 115	8/2015 - 12/2015
Algebra I math 104	1/2015 - 7/2015
Calculus I math 115	8/2014 - 12/2014

- At Centro de Investigación en Matemáticas (CIMAT)

Statistical Models I	8/2013 - 12/2013
Stochastic Models I	8/2013 - 12/2013
Stochastic Models II	1/2013 - 7/2013
Probability and Statistics	8/2012 - 12/2012

SKILLS

- Computational Skills: C/C++, MatLab, R.
- Applications: LaTeX, MS Office.
- Languages:
  - Spanish: Native language.
  - English: Full domain of the language; with 6 years of experience teaching and doing research in the United States, Luxembourg and Singapore.

ACADEMIC ACTIVITIES

Talks Given

Some of my recent talks are presented next (the slides can be found here).

- Seminario de probabilidad.   5/2020.
  Universidad Autónoma de México.
  - Quantitative Erdös-Kac theorem for additive functions.

- Research Unit Seminar.   3/2020.
  Technische universität Berlin.
  - A self-contained perspective for Erdös-Kac theorem.

- Probability research seminar.   11/2019.
  National University of Singapore.
  - Probabilistic Kubilius theorem.

- Gaussian multiplicative chaos seminar.   9/2019.
  National University of Singapore.
  - A first approach to Gaussian Multiplicative chaos.

- Probability seminar of the University of Luxembourg.
  Université du Luxembourg.

- Fluctuations of the spectrum of matrix-valued   September 2018.
  Gaussian processes.

- XIII Simposio de Probabilidad y Procesos Estocásticos. Universidad Autónoma de México (UNAM).

  - Collision of the eigenvalues of matrix-valued Gaussian   December 2017.
    processes.

- Probability Seminar. The University of Kansas (KU).

  - Convergence of the empirical spectral distribution   March 2017.
    of Gaussian matrix processes.

- Free Probability Seminar. Centro de Investigación en Matemáticas (CIMAT).

  - Infinite Divisibility, convergence theorems   Jan 2017.

- Combinatorics Seminar. The University of Kansas (KU).

  - Cumulants and moments for products of free random variables.   April 2017.
  - Relations Between Cumulants in non Commutative Probability.   Nov 2016.

- Graduate Student Organization Seminar. The University of Kansas (KU).

  - A Geometric view of interest rate theory   Feb 2017.
  - The Five Natural Notions of Independence   Nov 2016.

- Students Seminar of Probability, Centro de Investigación en Matemáticas (CIMAT).

  - Cumulants and the Fourth Moment Theorem   Oct. 2013.
  - The Geometry of the Forward Rate Curve   Nov. 2012.

- Seminar of Finance, Centro de Investigación en Matemáticas (CIMAT).

  - Forward Froce of Mortality   Oct. 2013.

Posters Presented

- Workshop on Self-Similarity, Long-Range Dependence and Extremes 2018.
  Banff International Research Station and Casa Matemática Oaxaca
  - Symmetric stochastic integrals for self-similar Gaussian processes.   June 2018.

- Seminar on Stochastic Processes 2017. The University of Virginia.
  - Asymptotic properties of the derivative self-intersection
    local time of fractional Brownian motion.   March 2017.

Other activities

- I have participated as member of the graduate student organization at the department of mathematics in KU. Some of the roles of such organization, consists on coordinating a weakly seminar in which the graduate students can participate, and to organize recreational events, in which new first year students meet and socialize in a setting

outside of the department.