Pablo Martin **RODRIGUEZ** | Curriculum Vitae

Professor and researcher at CCEN/UFPE | Council Member of SBMAC

Institution: Department of Statistics, Federal University of Pernambuco
Research Interests: probability theory, interacting particle systems, stochastic processes, stochastic modelling of complex systems, random structures, stochastic rumors, evolution algebras.

Recife - PE, Brazil
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Summary

Assistant Professor (Professor Adjunto) in the Department of Statistics at the Center for Natural and Exact Sciences of the Federal University of Pernambuco (CCEN/UFPE), located in Recife, Pernambuco State, Brazil. He is a council member and former President of the Brazilian Society of Computational and Applied Mathematics (SBMAC). His current research is divided into three main areas. The primary focus is on using interacting particle systems, percolation models, and specific stochastic processes on graphs to describe the spread of information and similar phenomena in populations. He is also interested in the asymptotic behavior of random structures inspired by biological questions and related topics in discrete mathematics, such as percolation and random graph models. In addition, he has contributed to the study of a class of algebraic structures known as evolution algebras. His interest in this topic is partly motivated by the fascinating connections between evolution algebras, discrete-time Markov chains, and graph theory.

Research Background and Positions Held

Researcher - National Council for Scientific and Technological Development (CNPq) 2024 - present

Research fellowship level: 2. Field: Mathematics and Statistics.

Council - Brazilian Society of Computational and Applied Mathematics (SBMAC) 2024 - present

Full Council Member of SBMAC.

Board of Trustees - Development Support Foundation of the UFPE (Fade-UFPE) 2020 - present

Full Member of FADE Board of Trustees.

Assistant Professor (Prof. Adjunto) - CCEN, Federal University of Pernambuco (UFPE) 2019 - present

Head of the Research Group Stochastic Processes and Random Structures.
Coordinator of the Graduate Program in Statistics (2022-2026).
Deputy Coordinator of the Graduate Program in Statistics (2020-2022).

President - Brazilian Society of Computational and Applied Mathematics (SBMAC) 2020 - 2023

Chair of the Director's Board.

Habilitation - ICMC, University of São Paulo (USP) 2019

Monograph: Topics in Probability and Discrete Mathematics.

Director's Board - Brazilian Society of Computational and Applied Mathematics (SBMAC) 2018 - 2019

Coordinator of the XXXIX Congresso Nacional de Matemática Aplicada e Computacional.
Co-creator and coordinator of the Comitê Latino Americano de Matemática Aplicada, Computacional e Industrial.

Researcher - National Council for Scientific and Technological Development (CNPq) 2017 - 2020

Research fellowship level: 2. Field: Mathematics and Statistics.

Assistant Professor (Prof. Doutor) - ICMC, University of São Paulo (USP) 2012 - 2019

Deputy Coordinator of the Joint Graduate Program in Statistics UFSCar/USP (2017-2019).

Co-creator of the Workshop on Probabilistic and Statistical Methods held annually by USP & UFSCar.

Education and Postdoctoral Positions

FAPESP Postdoctoral Fellow - LPMA, Paris Diderot University (Paris 7) 2015 - 2016

Project: Asymptotic behavior of stochastic processes on graphs and applications.

FAPESP Postdoctoral Fellow - IMECC, University of Campinas (UNICAMP) 2010 - 2011

Project: Systems of random walks and their applications to information diffusion models.

Ph.D. Degree in Statistics - IME, University of São Paulo (USP) 2007 - 2010

Thesis: Limit theorems for general stochastic rumor models. Advisor: Fábio Prates Machado. Co-advisor: Élcio Lebensztayn

Master Degree in Statistics - IME, University of São Paulo (USP) 2005 - 2007

Dissertation: Phase transition for a disk percolation model on graphs. Advisor: Élcio Lebensztayn

Bachelor Degree in Mathematics - National University of Patagonia (UNPSJB) 2000 - 2004

Award and Main Grants

FACEPE Research Grant - APQ-1341-1.02/22 2022 - 2025

Project: Characterization of special stochastic processes and discrete (random) structures (coordinator)

CAPES Math-AMSUD Research Grant - 88881.197412/20 2019 - 2021

Project: Rare events analysis in multi-component systems with dependent components (coordinator - Brazilian side)

FAPESP Research Grant - 2016/11648-0 2016 - 2018

Project: Limit theorems and phase transition results for information propagation models (coordinator)

FAPESP Research Grant - 2013/03898-8 2013 - 2015

Project: Stochastic modeling of information diffusion on interacting systems (coordinator)

CNPq Universal Research Grant - 479313/2012-1 2012 - 2015

Project: Stochastic models of information diffusion (coordinator)

Manuel Balanzat Prize - Argentine Mathematical Union 2003

First Place in Competition of Undergraduate Monographs

Main Refereeing Service

- Editor of the following journals:
  - Mathematical and Computational Applications (ISSN 2297-8747). Editorial Board Member (2022-present).
  - PLOS ONE (ISSN: 1932-6203). Academic Editor (2021-present).
  - Pesquisa Operacional para o Desenvolvimento (ISSN: 1984-3534, journal of the Brazilian Operations Research Society). Associate Editor (2021-present).

- Referee for the following Journals:
  - Applied Mathematical Modelling,
  - Brazilian Journal of Physics,
  - Brazilian Journal of Probability and Statistics,
  - Computational & Applied Mathematics,
  - Discrete and Continuous Dynamical Systems Series B,
  - Electronic Communications in Probability,
  - European Journal of Control,
  - Europhysics Letters,
  - IEEE Access,
  - INFORMS Journal on Computing,
  - Journal of Algebraic Combinatorics,
  - Journal of Complex Networks,
  - Journal of Mathematical Biology,
  - Journal of Statistical Mechanics,
  - Journal of Statistical Physics,
  - Markov Processes and Related Fields,
  - Mathematical and Computational Applications,
  - Mathematical Methods in the Applied Sciences,
  - Mathematics,
  - Physica A: Statistical Mechanics and its Applications,
  - Physica Scripta,
  - PLoS One,
  - Proceedings 52nd IEEE Conf. on Decision and Control,
  - São Paulo Journal of Mathematical Sciences,
  - Scientific Reports,
  - Statistics & Probability Letters,
  - Tendências em Matemática Aplicada e Computacional.
- Referee for the following Agencies:
  - Amazonas Research Foundation - FAPEAM (Brazil),
  - Brazilian Federal Agency for Support and Evaluation of Graduate Education - CAPES (Brazil),
  - Italian National Agency for the Evaluation of the University and Research Systems - ANVUR (Italy),
  - National Council for Scientific and Technological Development - CNPq (Brazil),
  - São Paulo Research Foundation - FAPESP (Brazil).

Publications

1. How far can a rumor travel without shortcuts? (with A. Diaz Bacca and C. Rúa-Álvarez). Chaos, Solitons & Fractals 205 (2026): 117871.
2. On the mean absorption time of multiple coalescing particles with removal at previously visited vertices (with M. Estrada and A. Ramos). Statistics & Probability Letters 227 (2026): 110523.
3. The maximum proportion of spreaders in stochastic rumor models (with E. Lebensztayn). Computational and Applied Mathematics 44 (2025): 405.
4. Critical thresholds in stochastic rumors on trees (with J. Puerres and V. V. Junior). Chaos, Solitons & Fractals 201 (2025): 117373.
5. Hilbert evolution algebras, weighted digraphs, and nilpotency (with P. Cadavid and S. Vidal). Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Matemáticas 118 (2024): 117.
6. The impact of effective participation in stopping a misinformation: an approach based on branching processes (with V. Vargas and L. M. Gomez). Journal of Statistical Mechanics: Theory and Experiment 2024 (2024): 033402.
7. Multistability, intermittency and hybrid transitions in social contagion models on hypergraphs (with G. Ferraz de Arruda, G. Petri and Y. Moreno). Nature Communications 14 (2023): 1375.
8. On the role of reduced habitat in the phase transition of a stochastic model for seed dispersal (with C. Coletti and N. Maric). Mathematical Methods in the Applied Sciences 46 (2023): 10540-10553.
9. Hilbert evolution algebras and its connection with discrete-time Markov chains (with Vidal and Cadavid). Indian Journal of Pure and Applied Mathematics 54 (2023): 883-894.
10. The Bell-Touchard counting process (with T. Freud). Applied Mathematics and Computation 444 (2023): 127741.

11. On Hilbert evolution algebras of a graph (with Vidal and Cadavid). Siberian Mathematical Journal 63 (2022): 995-1011.

12. Stochastic rumors on random trees (with V. V. Junior and A. Speroto). Journal of Statistical Mechanics: Theory and Experiment 2021 (2021): 123403.

13. On the fractional queueing model with catastrophes (with M. O. Souza). Applied Mathematics and Computation 410 (2021): 126468.

14. The role of multiple repetitions on the size of a rumor (with A. Rada, C. F. Coletti and E. Lebensztayn). SIAM Journal on Applied Dynamical Systems 20 (2021): 1209-1231.

15. On the characterization of the space of derivations in evolution algebras (with Cabrera, Cadavid and Rodiño). Annali di Matematica Pura ed Applicata 200 (2021): 737-755.

16. On the isomorphisms between evolution algebras of random walks and graphs (with P. Cadavid and M. L. Rodiño). Linear & Multilinear Algebra 69 (2021): 1858-1877.

17. The Maki-Thompson rumor model on infinite Cayley trees (with V. V. Junior and A. Speroto). Journal of Statistical Physics 181 (2020): 1204-1217.

18. A note on a stage-specific predator-prey stochastic model (with C. Pimentel and A. Valencia). Physica A: Statistical Mechanics and its Applications 553 n.1 (2020): 124575.

19. An improved lower bound for the critical parameter of the Stavskaya's process (with A. Ramos, C. Sousa and P. Cadavid). Bulletin of the Australian Mathematical Society 102 (2020): 517-524.

20. Galton-Watson processes in varying environment and accessibility percolation (with D. Bertacchi and F. Zucca). Brazilian Journal of Probability and Statistics 34 n.3 (2020): 613-628.

21. Limit theorems for a stochastic model of adoption and abandonment innovation on homogeneously mixing populations (with K. Oliveira). Journal of Statistical Mechanics: Theory and Experiment 2020 n.3 (2020): 033404.

22. The connection between evolution algebras, random walks, and graphs (with P. Cadavid and M. L. Rodiño). Journal of Algebra and Its Applications 19 (2020): 2050023.

23. Characterization theorems for the space of derivations of evolution algebras associated to graphs (with P. Cadavid and M. L. Rodiño). Linear & Multilinear Algebra 68 n.7 (2020): 1340-1354.

24. Asymptotic behavior for a modified Maki-Thompson model with directed inter-group interactions (with C. Grejo). Journal of Mathematical Analysis and Applications 480 (2019): 123402.

25. Frog models on trees through renewal theory (with S. Gallo). Journal of Applied Probability 55 n.3 (2018): 887-899.

26. Comment on "Nodal infection in Markovian susceptible-infected-susceptible and susceptible-infected-removed epidemics on networks are non-negatively correlated" (with A. Roldan and A. Valencia). Physical Review E 98 (2018): 026301.

27. A General Markov Chain Approach for Disease and Rumor Spreading in Complex Networks (with G. Arruda, E. Cozzo, Y. Moreno and F. Rodrigues). Journal of Complex Networks 6 n.2 (2018): 215-242.

28. Evolution of a modified binomial random graph by agglomeration (with M. Kang and A. Pachón). Journal of Statistical Physics 170 n.3 (2018): 509-535.

29. On the existence of accessibility in a tree-indexed percolation model (with C. Coletti and R. Gava). Physica A: Statistical Mechanics and its Applications 492 (2018): 382-388.

30. Phase transition for the MT rumor model on a small-world network (with Agliari, Pachón, and Tavani). Journal of Statistical Physics 169 n.4 (2017): 846-875.

31. A stochastic two-stage innovation diffusion model on a lattice (with C. Coletti and K. Oliveira). Journal of Applied Probability 53 n.4 (2016): 1019-1030.

32. A process of rumor scotching on finite populations (with G. Arruda, E. Lebensztayn and F. Rodrigues). Royal Society Open Science 2 (2015): 150240.

33. The role of centrality for the identification of influential spreaders in complex networks (with G. Arruda, A. Barbieri, F. Rodrigues, Y. Moreno and L. Costa). Physical Review E 90 (2014): 032812.

34. Rumor processes on N and discrete renewal processes (with S. Gallo, N. Garcia and V. Vargas). Journal of Statistical Physics 155 n.3 (2014): 591-602.

35. A connection between a system of random walks and rumor transmission (with E. Lebensztayn). Physica A: Statistical Mechanics and its Applications 392 n.23 (2013): 5793-5800.

36. A spatial stochastic model for rumor transmission (with C. F. Coletti and R. B. Schinazi). Journal of Statistical Physics 147 n.2 (2012): 375-381.

37. Limit theorems for a general stochastic rumour model (with E. Lebensztayn and F. P. Machado). SIAM Journal on Applied Mathematics 71 n.4 (2011): 1476-1486.

38. On the behaviour of a rumour process with random stifling (with E. Lebensztayn and F. P. Machado). Environmental Modelling and Software 26 n.4 (2011): 517-522.

39. The disk-percolation model on graphs (with Lebensztayn). Statistics and Probability Letters 78 n.14 (2008): 2130-2136.

Students & Postdocs

He has supervised, or is currently supervising, projects in the following graduate programs:

- Graduate Program in Applied Statistics, UDENAR, Colombia (EA/UDENAR), Pasto, Colombia.
- Graduate Program in Statistics, UFPE (PPGE/UFPE), Recife, Brazil.
- Joint Graduate Program in Statistics UFSCar/USP (PIPGES/UFSCar-USP), São Carlos, Brazil.
- Graduate Program in Computer Science and Computational Mathematics (CCMC/USP), São Carlos, Brazil
- Professionalizing Master's Program in Mathematics ICMC-USP/SBM (PROFMAT/USP-SBM), São Carlos, Brazil.

In addition, he has supervised, or is currently supervising, undergraduate projects by students from various universities, including Universidade de São Paulo (Brazil), Universidad Nacional de la Patagonia (Argentina), Universidad de Nariño (Colombia), Universidad de Antioquia (Colombia), and Universidad Católica San Pablo (Peru).

Current Students & Postdoc

Ph.D. - 3 current students

· *José Manuel Jaramillo Toro, Mar 2025 - present (FACEPE), PPGE/UFPE.*

· *Maria Mariana Alves de França, Aug 2024 - present (FACEPE), PPGE/UFPE.*

· *Jhon Puerres, Aug 2023 - present (FACEPE), PPGE/UFPE.*

Master - 2 current students

· *Renato Silva, Aug 2024 - present (FACEPE), PPGE/UFPE.*
· *Frandeiker Castro Julio, Ago 2025 - present (FACEPE), PPGE/UFPE.*

Undergraduate - 1 current student

· *Mariana Cáceres Urquizo, May 2024 - present (co-advisor), Computer Science, Univ. Católica San Pablo, Arequipa, PER.*

Former Students & Researchers Supervised

Postdoctoral - 3 researchers

· *Luz Marina Gomez, Apr 2024 - May 2024 (BFP/FACEPE), PPGE/UFPE.*
· *Mario Estrada, Apr 2020 - Aug 2021 (CAPES/FACEPE), PPGE/UFPE.*
· *Carolina Bueno Grejo, Oct 2017 - Fev 2019 (CAPES), PIPGES/UFSCar-USP.*

Ph.D. - 4 former students

· *Jean Carlos Cardoso, Nov 2023 (FACEPE), PPGE/UFPE.*
· *Adalto Speroto, Apr 2021 (CAPES), PIPGES/UFSCar-USP.*
· *Carlos Hirth, Jan 2020 (CAPES), PIPGES/UFSCar-USP.*
· *Karina Emboaba de Oliveira, Apr 2019 (CAPES and FAPESP), PIPGES/UFSCar-USP.*

Master - 16 former students

· *Christian Pistala, Jun 2025, EA/UDENAR.*
· *José Manuel Jaramillo Toro, Fev 2025 (FACEPE), PPGE/UFPE.*
· *Maria Mariana Alves de França, Ago 2024 (CAPES), PPGE/UFPE.*
· *Débora Cordeiro, Apr 2024 (FACEPE), PPGE/UFPE.*
· *Ana Diaz Bacca, Apr 2024 (FACEPE), PPGE/UFPE.*
· *Jhon Puerres, Jul 2023 (CAPES), PPGE/UFPE.*
· *João Antônio Miranda Gondim, Jul 2023, PPGE/UFPE.*
· *Luciano Soares Mendes Júnior, Aug 2022 (FACEPE), PPGE/UFPE.*
· *Diego da Silva Santos, Feb 2022 (CAPES), PPGE/UFPE.*
· *Thomás Freud de Morais Gonçalves, Feb 2022 (CAPES), PPGE/UFPE.*
· *Ricardo Caldas, Fev 2020, PIPGES/UFSCar-USP.*
· *Dimas Rocha, Fev 2018 (CAPES), PROFMAT/USP-SBM.*
· *Elizbeth Chipa Bedia, Mar 2016 (CAPES, co-advisor), PIPGES/UFSCar-USP.*
· *Eduardo Sartoretto, Mar 2016 (CNPq), CMCC/USP.*
· *Cristel Ecaterin Vera Tapia, Mar 2015 (CAPES), PIPGES/UFSCar-USP.*
· *Karina Emboaba de Oliveira, Jan 2015 (FAPESP), CMCC/USP.*

Undergraduate Monograph (TCC) - 5 former students

· *Ana Diaz Bacca, Mathematics, Universidad de Nariño, Pasto, COL, Feb 2022 (co-advisor).*
· *Jose Jaramillo, Mathematics, Universidad de Antioquia, Medellín, COL, May 2022 (co-advisor).*
· Matheus Oliveira de Souza, Statistics ICMC-USP, Jul 2019 (CNPq), USP.
· Caio Moura Quina, Statistics ICMC-USP, Nov 2017 (FAPESP), USP.
· Emanuel Rodriguez, Informatics, Univ. Nacional de la Patagonia, Comodoro Rivadavia, ARG, Sep 2016 (co-advisor).

Selected Invited Lectures and Talks for Meetings (last 10 years)

Probability on graphs and stochastic rumors (in Spanish) - Plenary conference — Nov 2025

Seminario ALTENUA: Cuartas Jornadas de Álgebra, Teoría de Números y sus Aplicaciones, Pasto, Nariño, Colombia.

On the phase transition of two branching processes with selection - Talk — Jan 2024

Workshop Probability in South America, Pontificia Universidad Católica de Chile, Santiago, Chile.

Introduction to probabilistic models on graphs (in Spanish) - Course — Oct 2023

Universidad Católica San Pablo, Arequipa, Perú.

Probabilistic models to illustrate the spread of information (Spanish) - Opening Plenary — Aug 2021

X Congreso Internacional de Matemática Aplicada y Computacional, SPMAC, Perú.

On branching processes and percolation models on trees (in Spanish) - Webinar — Jan 2021

IV Mini Escuela de Verano en Probabilidades, Chile. Link: `https://youtu.be/RciLBpU7AvY`

Probabilistic models to the propagation of information (in Spanish) - Webinar — Oct 2020

IV Seminario Virtual de Estadística "Análisis y modelos estadísticos", UNAD, Colombia. Link: `https://youtu.be/0JSqtuFw95g`

Stochastic rumors (in Portuguese) - Plenary Conference — Nov 2019

ERMAC, Univasf, Petrolina, PE, Brazil

Probabilistic Models (in Spanish) - Course — Jun 2019

XV Congreso Dr. Antonio Monteiro, UNS, Bahía Blanca / EMALCA 2019, UNPSJB, Comodoro Rivadavia, Argentina

Probabilistic Models and their Applications (in Spanish) - Course — May - Jun 2017

MACI 2017, UNPSJB, Comodoro Rivadavia, Argentina / EMALCA 2017, UdeA, Medellín, Colombia

He has also presented seminars at:

- Universidade Federal de Alagoas - UFAL
- Universidad Católica San Pablo (PER)
- Universidade Federal de Mato Grosso do Sul - UFMS
- Universidade Federal de Rio de Janeiro - UFRJ
- Universidad Nacional Abierta y a Distancia (COL)
- Universidade de Brasilia - UNB
- Universidade Estadual Paulista - UNESP, Botucatu
- Universidade Federal de Goiás - UFG
- Universidad del Valle (COL)
- Università di Milano-Bicocca (ITA)
- Università di Torino (ITA)
- Collège de France (FRA)
- Université Paris Diderot (FRA)
- Universidade Federal de Santa Catarina - UFSC
- FFCLRP / Universidade de São Paulo - USP
- ICMC / Universidade de São Paulo - USP
- Universidad Nacional de la Patagonia (ARG)
- IME / Universidade de São Paulo - USP
- Universidade Federal do ABC - UFABC
- IMECC / Universidade Estadual de Campinas - UNICAMP
- Universidade Federal de Pernambuco - UFPE
- Universidad de Buenos Aires (ARG)

Conferences, sessions, and other scientific activities coordinated

Discrete Stochastic Models and Applications - Co-chair — Jul 2025

Special Session at Mathematical Congress of the Americas 2025, Miami, FL, EUA

XLIII Congresso Nacional de Mat. Aplicada e Comput. (CNMAC) - Local Chair — Sep 2024

Annual Congress of SBMAC joining together around 700 participants. Porto de Galinhas, PE

Latin American Congress on Industrial and Applied Mathematics (LACIAM) - Co-chair — Jan 2023

EMAp-FGV, Rio de Janeiro, RJ

Mathematical and Comp. Modeling of Rare Events in Complex Systems - Chair — Nov 2019

Workshop at UFPE related to our CAPES Math-AMSUD Research Project, Recife, PE

XXXIX Congresso Nacional de Mat. Aplicada e Comput. (CNMAC) - National Chair — Sep 2019

Annual Congress of SBMAC joining together around 600 participants. UFU, Uberlândia, MG

Evolution Algebras and non associative algebraic structures - Co-chair — Jul 2019

Contributed Mini Symposium at ILAS 2019, FGV, Rio de Janeiro, RJ

Latin American School of Mathematics - Chair — Aug/Sep 2018

CMCC-UFABC, Santo André, SP

Mathematical modeling of random structures and complex systems - Chair — May 2017

Mini-symposium organized at the VI MACI. UNPSJB, Comodoro Rivadavia, Chubut, Argentina

Stochastic processes in random environment and applications - Chair — Aug 2016

Special Session organized in the First Joint Meeting Brazil - Italy in Mathematics. IMPA, Rio de Janeiro, RJ

4th Workshop in Stochastic Modeling - Chair — Nov 2014

Meeting organized by the members of the São Paulo Research Foundation thematic project/grant titled "Stochastic Modeling of Interacting Systems". ICMC-USP & UFSCar, São Carlos, SP

Probability and Complex Systems Seminar - Chair — Apr 2014 to Jul 2015

Sequence of seminars organized weekly by the Probability Research Group from the Joint Graduate Program in Statistics USP/UFSCar. ICMC-USP & UFSCar, São Carlos, SP

Probability and Stochastic Processes - Chair — Jul 2014

Thematic Session 21 SINAPE, Natal, RN

2nd Workshop on Probabilistic and Statistical Methods - Chair — Fev 2014

Meeting organized by the Join Graduate Program in Statistics UFSCar/USP (PIPGEs). UFSCar, São Carlos, SP

Workshop on Probabilistic and Statistical Methods - Chair — Jan 2013

ICMC-USP, São Carlos, SP

2013 (2014) Summer Program in Statistics USP/UFSCar - Chair — Jan/fev 2013 (2014)

ICMC-USP & UFSCar, São Carlos

Mathematical Modeling of Epidemic-like Processes - Chair Sep 2012

Mini-symposium organized at the CNMAC 2012, Águas de Lindóia, SP

Languages

· Spanish. Fluent (native language)
· Portuguese. Fluent (Speaking, reading, and writing)
· English. Intermediate (Speaking, reading, and writing)

RODRIGUEZ, Pablo Martin.
Recife, PE, Brazil. February 12th, 2026.