NICOLÁS ZALDUENDO VIDAL

Postdoctoral Researcher at UMR Mistea - INRAE Occitanie-Montpellier
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HIGHER EDUCATION

PhD in Applied Mathematics, *Oct 2020 - Dec 2023*
Université de Lorraine and Inria Grand Est, Nancy, France.
Subject: The multi-type bisexual Galton-Watson branching process.
Supervisors: C. Fritsch and D. Villemonais.
My manuscript is here.

Master M2 "Mathématiques de l'Aléatoire", *Sept 2019 - Sept 2020*
Université Paris-Saclay, Orsay, France.
Internship supervisors: C. Fritsch, D. Villemonais (France) and E. Horton (England).
My manuscript is here.

Master of Engineering Sciences in Applied Mathematics, *March 2018 - January 2019*
Universidad de Chile, Santiago, Chile.
Supervisor: D. Remenik.
Graduated with highest honours. My manuscript in Spanish is here.

Mathematical Engineering, *March 2012 - Dec 2017*
Universidad de Chile, Santiago, Chile.
Graduated with highest honours.

Bachelor of Engineering Sciences, Mention Mathematics, *March 2012 - Dec 2015*
Universidad de Chile, Santiago, Chile.

PROFESSIONAL EXPERIENCE

Postdoctoral Position. *UMR Mistea, Inrae Occitanie-Montpellier.* *January 2024 - Today*
Description: Limit theorems for infinite dimensional branching processes.
Supervisor: Bertrand Cloez.

Assistant to Academic Management Direction. *Universidad de O'higgins.* *March - July 2019*
Description: In charge of assisting the academic management director in the coordination of all the courses in the university, through the web platform *UCampus.cl*.

Center for Advance Research on Education. *Universidad de Chile.* *Oct - Nov 2018*
Description: In charge of develop mathematical problems for an intervention to high school teachers in the context of the ARPA program.

Assistant to Executive Teaching Director. *Universidad de Chile.* *July 2015 - April 2017*
Description: In charge of coordinate the supervision, correction and reclamation of the tests and exams on all the mathematical courses of the first two years in the Faculty of Physical and Mathematical Sciences.

PUBLICATIONS AND WORKS IN PROGRESS

Journal Publications:

[2] The Multi-type bisexual Galton-Watson branching process.
C. Fritsch, D. Villemonais and N. Zalduendo (in Ann. Inst. H. Poincaré Probab. Statist. 60(4)). Arxiv. Journal.

[1] Restricted maximum of non-intersecting Brownian bridges.
Y. Yalanda and N. Zalduendo (in ESAIM: PS 28 (2024) 258273). Arxiv. Journal.

Preprints:

[2] Central limit theorem for branching processes under mild assumptions on the mean semigroup.
B. Cloez and N. Zalduendo. PDF.
[1] Quasi-limiting behaviour of the sub-critical bisexual Galton-Watson branching process.
C. Fritsch and D. Villemonais and N. Zalduendo. PDF.

Works in Progress:

[3] About stochastic modelling of niche construction and asymptotic analysis.
N. Champagnat, C. Fritsch, P. Marquet, C. Quiñinao, R. Rebolledo, L. Videla and N. Zalduendo
[2] Product of random transition kernels and weighted branching processes.
D. Villemonais and N. Zalduendo
[1] Asymptotic behaviour of the largest cell in a growth-fragmentation process with linear rates.
B. Cloez, J. Corujo and N. Zalduendo

CONFERENCES ORGANIZATION

Conference on Non-Local Branching Processes. CIRM Luminy, France. *September 2024.*
Organization of a conference for 70 participants.
21st INFORMS Applied Probability Society Conference. Nancy, France. *June 2023.*
Organization of a conference for 450 participants.

SUPERVISIONS

Project 3A (M2) École des Mines de Nancy. Hassan Berrada. *Sept 2022 - Feb 2023*
Subject: Study and simulation of a continuous time bisexual birth and death process. Co-supervised with C. Fritsch.

TEACHING EXPERIENCE

Some of the material that I have produced over the years can be found here

École des Mines de Nancy: as *Chargé de TD (20 hrs each)* in the courses:
-Probabilités I. *Sept - Dec 2023*
-Probabilités I. *Sept - Dec 2022*
-Analyse Numérique. *Sept - Dec 2022*
-Probabilités I. *Sept - Dec 2021*
-Analyse Numérique. *Sept - Dec 2021*
-Probabilités II. *Sept - Dec 2020*
Universidad de Chile: (this course was taught online)
Lecturer (45 hrs), Introduction to Algebra. *March - June 2021*
Universidad de O'higgins
Lecturer (45h), Mathematics for Public Administration. *March - June 2019*
Universidad Técnica Federico Santa María
Lecturer (45 hrs), Stastistics. *March - June 2019*
Universidad de Chile: Summer School for High School students.
Lecturer (40 hrs), Basics of Linear Algebra. *January 2019*
Universidad Andrés Bello
Lecturer (45 hrs), Probabilities and Statistics. *June - Dec 2018*
Universidad Santo Tomás
Assistant Professor (20 hrs), Linear Algebra. *March 2017 - June 2017*

Universidad de Chile: as *Assist. Professor (30 hrs each)* in the courses: *March 2014 - June 2019*
-Stochastic Calculus *(2 times)*.
-Abstract Algebra *(1 time)*.
-Markov Processes *(2 times)*.
-Probabilities *(2 times)*.
-Probabilities and Statistics *(3 times)*.
-Linear Algebra *(9 times)*.
-Advanced Calculus and Applications *(1 time)*.
-Introduction to Algebra *(2 times)*.
-Multivariable Calculus *(1 time)*.
-Differential and Integrable Calculus *(2 times)*.
-Introduction to Calculus *(1 time)*.

PREVIOUS AND UPCOMING TALKS

Besançon Meeting on Probability, Ecology & Evolution. *December 2024*
Invited Speaker. Besançon, France.
Discrete Randomness Conference. *December 2023*
Invited Speaker. Créteil, France.
Workshop L^2 in Probability and Statistics. *September 2023*
Invited Speaker. Metz, France.
21st INFORMS Applied Probability Society Conference. *June 2023*
Nancy, France.
Mathematical Models in Ecology and Evolution. *July 2022*
Reading University, England.
Journées de Probabilitiés. *June 2022*
Orbey, France.
Etheridge Group Seminar. *July 2021*
Oxford University, England.
École de Recherche de la Chaire MMB. *June 2021*
Aussois, France.

DISTINCTIONS

Master Scholarship. *Sophie Germain Excellence Student Scholarship.* *Sept 2019 - Aug 2020*
Fondation Mahtématique Jacques Hadamard, Paris, France.
Graduated with the highest honours. *January 2019*
Master of Engineering Sciences in Applied Mathematics.
Graduated with the highest honours. *January 2019*
Mathematical Engineering.
Outstanding Student Award. *December 2017*
Faculty of Physical and Mathematical Sciences. Santiago, Chile.
Outstanding Student Award. *December 2012*
Faculty of Physical and Mathematical Sciences. Santiago, Chile.

EXTRACURRICULAR ACTIVITIES

Member of the Unit Council, MISTEA, INRAE Montpellier. *Oct 2024 - Today*
Charge: Postodoctoral Representative.

Member of the faculty council. *Dec 2017 - Dec 2018*
Charge: Undergraduate Representative.

Member of the faculty students centre directive board. *March - Dec 2017*
Charge: Teaching Representative.

Member of the mathematical engineering students centre. *March 2016 - March 2017*
Charge: Teaching Representative.

SOFTWARE SKILLS

Python.
MatLab.
R.
LaTeX.

LANGUAGE SKILLS

English. *Advanced*
French. *Advanced*
Spanish. *Native*