Branda Goncalves, PhD

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Current Laboratory

Modal'X Paris Nanterre

Current function

ATER (Temporary Teaching and Research Assistant) at university Paris Nanterre

Research

Population dynamics	I use stochastic processes, especially Markov ones, to model populations that are subject to catastrophes. I focus in the behavior of these processes, their convergence, their recurrence, etc., in discrete and continuous time.
The Particle Systems	In interacting biological neural networks, in finite or infinite dimension. I use different techniques such as perfect simulation, contour method to build graphically a particle system.

Education

2019 – 2022	**PhD, CY Cergy Paris University** in applied Mathematics. - **Thesis' Title:** *growth/collapse and decay/surge Markov processes: from population dynamics to systems of interacting neurons.* - **Advisors:** Eva Löcherbach, Thierry Huillet and Jean Avan
2017 – 2019	**Master, University of Cergy-Pontoise** in Mathematics. - **Thesis' title:** *On population processes with Markov chain involving partial or total catastrophes.* - **Advisors:** Eva Löcherbach and Thierry Huillet
2015 – 2017	**Bachelor (L2, L3), University of Cergy-Pontoise** in Mathematics.
2013 – 2015	**Bachelor (L1, L2), UAC Benin** in Mathematics.

Skills

Languages	French: Mother tongue, Fon: Mother tongue, English: Intermediate level
Programing skills	code R for statistics , LaTeX, …

Courses and training

01-2021   ▮   **Mathematical modeling in neuroscience,** online.

10-2020   ▮   **Time series in econometrics and population dynamics,** Cergy, France.

01-2020   ▮   **Teaching : Supporting teachers new to higher education,** Cergy, France

Organizing duties

2019 – 2024   ▮   **Member of the Ecodep project,** supported by Paul Doukhan.

2019 – 2020   ▮   **Co-organizer of the LPTM doctoral students' seminar**.

Teaching

2022 – 2023   ▮   **Analysis 1, L1,** University of Paris Nanterre.(80h/year)

                 ▮   **Analysis 2, L1,** University of Paris Nanterre.(64h/year)

                 ▮   **Statistics, L1,** University of Paris Nanterre.(48h/year)

2019 – 2022   ▮   **Probability and statistics, L3,** Paris 1 Panthéon-Sorbonne. (36h/year)

                 ▮   **Probability, L1,** Paris 1 Panthéon-Sorbonne. (28h/year)

Travaux de recherche

Publications preprints

1   Goncalves, B. (2022). An interacting neuronal network with inhibition: Theoretical analysis and perfect simulation. *MathematicS In Action (To be appear)*.

2   Goncalves, B., & Gresland, P. (2022). Perfect simulation for interacting Hawkes processes with length memeory. *Submitted*.

3   Goncalves, B., Huillet, T., & Löcherbach, E. (2022a). On decay–surge population models. *Advances in Applied Probability*, 1–29. 🔗 doi:`10.1017/apr.2022.30`

4   Goncalves, B., Huillet, T., & Löcherbach, E. (2022b). On population growth with catastrophes. *Stochastic Models, 0*(0), 1–36.

5   Goncalves, B., & Huillet, T. (2021a). A generating function approach to Markov chains undergoing binomial catastrophes. *Journal of Statistical Mechanics: Theory and Experiment, 2021*(3), 033402.

6   Goncalves, B., & Huillet, T. (2021b). Keeping random walks safe from extinction and overpopulation in the presence of life-taking disasters. *Mathematical Population Studies*, 1–30.

7   Goncalves, B., & Huillet, T. (2020). Scaling features of two special Markov chains involving total disasters. *Journal of Statistical Physics, 178*(2), 499–531.

Work in progress

1   Goncalves, B., & Tchouanti, J. (2023). *Population dynamics with catastrophes and migrations.*

Conferences, Workshops, Seminars

Conferences and Workshops (with talk)

06/2023   🔖   **Workshop: Probability meets Biology,** Bath, England. (Guest)

10/2022   🔖   **Workshop: Junior Female Researchers in Probability,** Berlin, Allemagne (grant).

09/2022   🔖   **Parabolic and kinetic models in population dynamics,** Toulouse, France (grant).

08/2022   🔖   **Journées Mas,** Rouen, France. (Poster)

06/2022   🔖   **Workshop: New trends on Hawkes processes,** Toulouse, France (guest).

02/2022   🔖   **Les probabilités de demain,** Paris, France.

12/2021   🔖   **Forum des jeunes mathématiciens,** Besançon, France.

10/2021   🔖   **Colloque JPS,** Oléron, France.

09/2021   🔖   **Ecodep Conference,** en ligne , Poster.

06/2021   🔖   **Journées de probabilités,** Guidel, France.

Conferences and Workshops (without talk)

07/2022   🔖   **Probability summer school,** Saint-Flour, France.

02/2022   🔖   **Workshop: Mathematical modeling and statistical analysis in neuroscience,** IHP, France.

10/2021   🔖   **Rencontres de probabilités,** Rouen, France.

07/2021   🔖   **Journées Hawkes,** Paris, France.

Seminars

06/2022   🔖   **PhD students' seminar, SAMM,** Cergy, France.

05/2022   🔖   **PhD students' seminar, AGM,** Cergy, France.

01/2022   🔖   **SAMM Seminar,** Paris, France.

11/2021   🔖   **LPTM/Warwick Seminar,** Pontoise, France.