

Miraine DÁVILA FELIPE

- CONTACT INFORMATION** LMAC, GI 114 *Phone: (+33) 3 44 23 44 67*
Département de Génie Informatique *E-mail: miraine.davila-felipe@utc.fr*
Université de Technologie de Compiègne *Web: www.mirainedavila.com*
60205 Compiègne CEDEX
- PERSONAL** Born on December 14, 1984. Cuban and French Citizen.
- RESEARCH INTERESTS** Mathematical modeling in biology: epidemiology, phylogenetics, population dynamics.
Stochastic processes: random trees, branching and coalescent processes, Lévy processes.
Probabilistic and statistical methods to infer populations history from data.
- ACADEMIC APPOINTMENTS**
- 2019 - Assistant Professor (Maîtresse de Conférences)**
Université de Technologie de Compiègne, Compiègne, France.
- 2018 - 2019 Teaching Assistant (A.T.E.R.)**
Université Paris Nanterre, Nanterre, France.
- 2017 - 2018. Postdoc with Olivier Gascuel.**
Evolutionary Bioinformatics Lab, Pasteur Institute, Paris, France.
- 2012 - 2015. Graduate Teaching Assistant.**
Université Pierre et Marie Curie, Paris, France.
- 2007 - 2010. Assistant Professor.**
Universidad de La Habana, La Habana, Cuba
- EDUCATION**
- 2012 - 2016. Ph.D. in Mathematics.**
Université Pierre et Marie Curie (Laboratoire de Probabilités et Modèles Aléatoires) - Collège de France (Center for Interdisciplinary Research in Biology), Paris, France
– Dissertation: “Pathwise decomposition of Lévy processes: applications to epidemiological modeling”. Advisor: Amaury Lambert
- 2010 - 2012. MSc in Applied Mathematics - Mathematical modeling in biology.**
École Polytechnique - UPMC, Paris, France
– MSc thesis at Collège de France: “Phylodynamics of Infectious Disease Epidemics”. Advisors: Amaury Lambert and Bernard Cazelles
– Research internship at TélécomParisTech: “Rare events on epidemiological models. Estimation and simulation”. Advisor: Stéphan Cléménçon
- 2002 - 2007. BSc in Mathematics**
Universidad de La Habana, La Habana, Cuba – BSc thesis: “Parameter estimation on diffusion processes with jumps discretely observed”. Advisor: Alexander Álvarez

PUBLICATIONS

Zhukova, A., Voznica, J., **Dávila Felipe, M.**, To, T.-H., Pérez, L., Martínez, Y., Pintos, Y., Méndez, M., Gascuel, O., Kourí, V. (2020). Cuban history of CRF_19 recombinant subtype of HIV-1. *Submitted*. <https://www.biorxiv.org/content/10.1101/2021.02.15.431210v1>

Dávila Felipe, M., Domelevo Entfellner, J.-B., Lemoine, F., Truszkowski, J., and Gascuel, O. (2018). Distribution and asymptotic behavior of the phylogenetic transfer distance. *J. Math. Biol.*, <https://doi.org/10.1007/s00285-019-01365-0>.

Lemoine, F., Domelevo Entfellner, J.-B., Wilkinson, E., Correia, D., **Dávila Felipe, M.**, De Oliveira, T. and Gascuel, O. (2018). Renewing Felsenstein’s Phylogenetic Bootstrap in the Era of Big Data. *Nature*, **556**, 452–456.

Dávila Felipe, M., and Lambert, A. (2018). Branching processes seen from their extinction time via path decompositions of reflected Lévy processes. *Electron. J. Probab.* 23: no. 98, 1–30.

Dávila Felipe, M., and Lambert, A. (2015). Time reversal dualities for some random forests. *ALEA, Lat. Am. J. Probab. Math. Stat.* 12 (1), 399–426.

Cléménçon, S., Cousien, A., **Dávila Felipe, M.**, and Tran, V.C. (2015). On computer-intensive simulation and estimation methods for rare-event analysis in epidemic models. *Statist. Med.* 34 (28): 3696–713.

SCIENTIFIC
PRESENTATIONS

Jan. 2020 - Statistical Methods for Post Genomic Data (SMPGD). *Pasteur Institute, Paris*. Invited talk: “Phylogenetic bootstrap based on the transfer distance: applications to (large) pathogen datasets”

Dec. 2019 - Lab seminar at Laboratoire Manceau de Mathématiques (LMM). *Le Mans Université, Le Mans*. Talk: “Distribution and asymptotic behavior of the phylogenetic transfer distance”

Oct. 2019 - School “Behind Evolutionary Trees: Mathematics and Algorithms in Phylogenetics”. *Pasteur Institute, Montevideo, Uruguay*. Lecturer.

Oct. 2019 - Autumn School “Mathematical and Computational Methods for Phylogenetics and Evolutionary Epidemiology”. *Institute of Tropical Medicine Pedro Kourí (IPK), La Habana, Cuba*. Lecturer.

Sept. 2019 - GDR MAMOVI. *Université de Tours*. Invited talk : “Distribution and asymptotic behavior of the phylogenetic transfer distance”

May 2019 - Modal’X lab seminar . *Université Paris Nanterre*. Talk : “Time reversal dualities for branching processes: applications to epidemiological modeling”

Feb. 2019 - Master Course from Cooperation project in Mathematics France - Cuba. *Universidad de La Habana, Cuba*. Title : “Stochastic processes applied to Biology” .

June 2018 - Mathematical and Computational Evolutionary Biology Conference. *Montpellier - France*. Poster: “Distribution and asymptotic behavior of the phylogenetic transfer distance” .

June 2017 - Workshop Algebraic and combinatorial phylogenetics, *Barcelona, Spain*. Poster: “Mathematical properties of the transfer distance between bipartitions and trees”.

May 2016 - Workshop Mathematical models for Epidemiology and Phylogenetics, *Lille, France*. Talk: “Branching processes forward and backward in time: epidemic prevalence and reconstructed transmission tree”.

Sept. 2014 - XIII CLAPEM - Latin American Congress of Probab. and Math. Statist., *Cartagena de Indias, Colombia*. Talk: “A time reversal duality for branching processes and applications”.

Apr. 2014 - Spring School ANR MANEGE, *Aussois, France*. Talk: “A time reversal duality for branching processes and applications”.

Sept. 2013 - Journée doctorants DIM RDM-IdF 2013, IHP, *Paris, France*. Talk: “Multiscale epidemiological modeling and reconstruction of epidemic dynamics”.

Oct. 2013 - Junior female researchers in probability workshop. *Berlin - Germany*. Poster: “Inferring epidemic dynamics from: viral phylogenies and incidence time series”.

May 2013 - Math. and Comput. Evolutionary Biology Conference. *Montpellier - France*. Poster: “Inferring epidemic dynamics from: viral phylogenies and incidence time series”.

OTHER SCIENTIFIC EVENTS

July 2015. Mathematical Models in Ecology and Evolution 2015 - *Collège de France, Paris*.

June 2015. CIRM Conference - Probability and Biological Evolution - *Marseille, France*.

July 2014. Summer School - Probabilistic Structures in Evolution - *Blaubeuren, Allemagne*.

Aug. 2013. Workshop on Random Trees - Centre de recherches math., *Montreal, Canada*.

Apr. 2013. École de Probas et Biologie évolutionnaire, ANR - MANEGE, *Aussois, France*.

Sept. 2012. École d'Été - Modélisation en dynamique des populations et Évolution : Probabilités et EDP's. *La Londe les Maures, France*.

HONORS AND AWARDS

2012. PhD. Scholarship “Réseau de Recherche Doctoral Math.”, *Région Île-de-France*.

2011 - 2012. Scholarship “Bourse d'excellence”, *Fondation de l'École Polytechnique*.

2007. Graduated Summa Cum Laude in Mathematics from *Universidad de La Habana*.

LANGUAGES

Spanish (native), French (bilingual proficiency), English (full professional proficiency)

TECHNICAL SKILLS

- Statistical Packages: R.
- Languages: C, Matlab, \LaTeX

SHARING
SCIENCE

**2014 - 2015. Short film related to the Ph.D. (co-realization with F. Gascuel):
“Alice et l’énigmatique arbre des lapins”.**

- Festival “Les chercheurs font leur cinéma” (http://leschercheursfontleurcinema.doc-up.info/?page_id=958).

- 2nd place winner at NESCent Evolution Film Festival organized by the National Evolutionary Synthesis Center, *USA*. (<https://vimeo.com/129265142>)