

Josué Corujo Rodríguez

Contact Information

Université Paris Est Creteil
UFR des Sciences et Technologie
Laboratoire d'Analyse et de Mathématiques Appliquées
61 Avenue du General de Gaulle, 94010 Créteil, France

@ josue.corujo-rodriquez@u-pec.fr

 <https://josuecorujo.github.io>

ORCID  0000-0002-3997-7391.

ArXiv arxiv.org/a/corujo_j_2.html

 scholar scholar.google.com/citations?user=3QdTmnoAAAAJ

Research Interests

Stochastic Processes: Markov processes, interacting particle systems, branching processes, long time convergence and mean-field limit, cutoff phenomenon

Quasi-stationary distributions : Moran (or Fleming – Viot) particle systems, convergence to the quasi-stationary distribution (QSD)

Population genetics : coalescent processes, structured populations

Random graphs : random graphs, multiplicative coalescent, random forests

Reliability theory : stochastic orders, aging classes, maintenance processes

Education

- 2018-2021 **Ph.D. in Mathematics.**
CEREMADE, Université Paris Dauphine, Paris, France
Title: *Multi-allelic Moran models and quasi stationary distributions*
Advisors: Djalil Chafaï (CEREMADE) and Simona Grusea (INSA-T)
- 2015-2017 **MSc in Mathematics – Probability and Statistics.**
Universidad de La Habana, Havana, Cuba
MSc Thesis: *Stochastic Comparisons between Two-Units Repairable Systems*
Advisor: José E. Valdés
- 2011-2015 **BSc in Mathematics.**
Universidad de La Habana, Havana, Cuba
BSc Thesis: *Analysis of Repairable Systems using Stochastic Orders and Aging Classes*
Advisor: José E. Valdés

Academic Appointments

- 2023– **Assistant Professor (Maître de Conférences)**
LAMA, Université Paris Est Créteil, Créteil, France

2021–2023	Postdoc with Vlada Limic IRMA, Université de Strasbourg, Strasbourg, France
2018–2021	Graduate Teaching Assistant Génie Mathématique et Modélisation, INSA-T, Toulouse, France
2017–2018	Assistant Professor Universidad de La Habana, Havana, Cuba
2015–2017	Junior Professor Universidad de La Habana, Havana, Cuba

Articles and preprints

Preprints

2024	L. Chikhi, W. Rodríguez, C. Paris, M. Ha-Shan, A. Jouniaux, A. Arredondo, C. Noûs, S. Grusea, J. Corujo, I. Lourenço, S. Boitard, O. Mazet, <i>Extending the IICR to multiple genomes and identification of limitations of some demographic inferential methods</i> biorXiv: 10.1101/2024.08.16.608273 J. Corujo, <i>The number of connected components in sub-critical random graph processes</i> arXiv: 2406.06380 HAL-04608655
2023	A. Arredondo, J. Corujo, C. Noûs, S. Boitard, L. Chikhi, O. Mazet, <i>Exact calculation of the expected SFS in structured populations</i> biorXiv: 10.1101/2023.05.10.540112 J. Corujo and V. Limic, <i>A dynamical approach to spanning and surplus edges of random graphs</i> arXiv: 2305.04716 HAL-04092273 J. Corujo and V. Limic, <i>The standard augmented multiplicative coalescent revisited</i> arXiv: 2304.07545 HAL-04074235

Publications in peer reviewed journals

2023	J. Corujo, <i>On the spectrum and ergodicity of a neutral multi-allelic Moran model</i> <i>ALEA</i> 20 (2023), 505–546 arXiv: 2010.08809 HAL-02969874 DOI: 10.30757/ALEA.v20-18 J. Corujo, D. Flores-Peñaloza, C. Huemer, P. Pérez-Lantero, and C. Seara, <i>Matching random colored points with rectangles</i> , <i>J. Comb. Optim.</i> 45 :81, (2023). ¹ DOI: 10.1007/s10878-023-01010-z
2022	B. Cloez and J. Corujo <i>Uniform in time propagation of chaos for a Moran model</i> <i>Stochastic Process. Appl.</i> 154 (2022) 251–285. arXiv: 2107.10794 HAL-03345583 DOI: 10.1016/j.spa.2022.09.006
2021	J. Corujo <i>Dynamics of a Fleming – Viot type particle system on the cycle graph</i>

¹A preliminary version of this work appeared in WALCOM 2020, 14th International Conference and Workshop on Algorithms and Computation, Singapore.

Stochastic Process. Appl. **136** (2021), 57–91.
 arXiv: 2001.08000 | HAL-02447747 | DOI: 10.1016/j.spa.2021.02.001

J. Corujo and J. E. Valdés

Further results on stochastic orderings and aging classes in systems with age replacement

Probab. Eng. Inf. Sci. (2021), 1–30.

HAL | DOI: 10.1017/S0269964821000036

2018

J. M. Corujo, J. E. Valdés and J. C. Laria

Stochastic Comparisons of Two-Units Markovian Repairable Systems

Commun. Stat. - Theory Methods **48** (2019), no. 23, 5820–5838.

arXiv: 1804.03098 | DOI: 10.1080/03610926.2018.1522349

W. Rodríguez, O. Mazet, S. Grusea, A. Arredondo, **J. M. Corujo**, S. Boitard and L. Chikhi

The IICR and the non-stationary structured coalescent: towards demographic inference with arbitrary changes in population structure

Heredity **116** (2016), 362–371.

HAL-02347366 | DOI: 10.1038/s41437-018-0148-0

Publications in peer reviewed conferences

2020

J. Corujo, D. Flores-Peñaloza, C. Huemer, P. Pérez-Lantero and C. Seara

Matching Random Colored Points with Rectangles, In: Rahman M., Sadakane K., Sung WK. (eds) WALCOM: Algorithms and Computation. WALCOM 2020. Lecture Notes in Computer Science, vol 12049. Springer, Cham.

DOI:10/gzm6

Scientific Communications

Dec. 2023

EverEvol – Population dynamics: from rare events to evolution, Grenoble, France

Nov. 2023

Séminaire du LMAC, Compiègne, France

Talk: *Encoding the size of the connected components and number of surplus edges of random graphs*

Oct. 2023

Groupe de travail Probabilités, Créteil, France.

Talk: *Random graphs and the augmented multiplicative coalescent*

Sept. 2023

Journée d'accueil du LAMA, Marne la Vallée, France

Talk: *Random graphs and the augmented multiplicative coalescent*

June 2023

Invited speaker for the session *Quasi-stationary distributions in numerical stochastic methods and statistics* in the 21st INFORMS Applied Probability Society Conference, IECL, Nancy, France

Talk: *Convergence of the empirical measure induced by a Moran type particle system*

Poster: *The standard augmented multiplicative coalescent revisited*

(Best Poster Awards)

June 2023	Journées de Probabilité 2023, Angers, France. Talk: The standard augmented multiplicative coalescent revisited
June 2023	Chalk Talk, Instituto Gulbenkian de Ciência, Lisbon, Portugal.
April 2023	Seminar Mathématiques pour la Biologie, Institut de Mathématiques de Toulouse, France. Talk: <i>Large population limits for a mutation-selection Moran model</i>
Oct. 2022	Séminaire de Probabilités y Statistique, IECL, Nancy, France Talk: <i>A dynamical approach to spanning and surplus edges of random graphs</i>
Oct. 2022	ITI IRMIA++ Day, Strasbourg, France Talk: <i>Some recent advances in the multiplicative coalescent and near-critical random graphs</i>
Oct. 2022	Journées Math Bio Santé 2022, Besançon, France Poster: <i>IICR of structured populations with size change: strong and weak migration</i>
May 2022	Summer School Mathematics of Large Networks, Budapest, Hungary
April 2022	Recent progress in probabilistic modelling of population genetics Royal Statistical Society, UK Talk: Spectrum and ergodicity of a neutral multi-allelic Moran model
April 2022	Séminaire (de calcul) stochastique de Strasbourg, Strasbourg Présentation orale : A neutral multi-allelic Moran model: spectral elements and cutoff
Mar. 2022	Worskshop ANR QuAMProcs, Inria Paris, France Talk: <i>Speed of convergence to the mean-field limit for a mutation-selection particle system</i>
Dec. 2021	GDR MAMOMVI 2021, École polytechnique, France Talk: <i>Propagation of chaos for a multi-allelic Moran model</i>
Jun. 2021	Seminario de Probabilità, Analisi Stocastica e Statistica, Università di Pisa, Italy Talk: <i>Spectrum and ergodicity of a neutral Moran model</i>
Feb. 2021	Journée de doctorants en Probabilités, Institut de Mathématiques de Toulouse, France Talk: <i>Spectrum of the neutral Moran model and its long time behaviour</i>
Dec. 2020	Séminaire de Probabilité, Institut de Mathématiques de Toulouse, France Talk: <i>On the spectrum of a neutral multi-allelic Moran model.</i>
Nov. 2020	Séminaire de Probabilité et Statistique, Montpellier, France Talk: <i>Spectral properties of a neutral multi-allelic Moran model</i>
Mar. 2020	14th International Conference on Operations Research, Havana, Cuba Talk: <i>Convergence of a Fleming–Viot type particle system on the cycle graph.</i>

Feb. 2020	Séminaire “Mathématiques pour la Biologie”, Institut de Mathématiques de Toulouse, France Talk: <i>On a multi-allelic Moran type model with mutation matrix corresponding to a cycle graph</i>
Feb. 2020	Research school “EDP et probabilité pour la biologie” CIRM, Marseille, France Poster: <i>Quantitative results on a multi-allelic Moran type model with mutation</i>
Dec. 2019	Workshop on Models and Inference in Population Genetics, Warwick, UK. Poster: <i>Quantitative results on a multi-allelic Moran type model with mutation</i>
Nov. 2019	Journée des doctorant.e.s et post-doc, Institut de Mathématiques de Toulouse, France Talk: <i>Quantitative results on a multi-allelic Moran type model with mutation</i>
Sep. 2019	GDR MAMОВI 2019, Université de Tours, France Talk: <i>Quantitative results for a Moran type particle process in the cycle graph</i>
Sep. 2019	Journée de rentrée, INSA de Toulouse, France Talk: <i>Quantitative results for a Fleming-Viot type particle process in the cycle graph</i>
Jul. 2019	Summer school “Data and Models in Ecology and Evolution”, Institut Pascal, Université Paris-Saclay, France Talk: <i>Quantitative results for a Moran type particle process in the cycle graph</i>
Feb. 2019	Master Course from Cooperation project in Mathematics France – Cuba (lectures by Miraine Dávila Felipe) Universidad de La Habana, Cuba Title : “Stochastic processes applied to Biology”
Jul. 2017	10th International Conference on Mathematical Methods in Reliability, Grenoble, France Talk: <i>Stochastic Comparisons of Two-Units Markovian Repairable Systems</i>

Honor and Awards

2023	Best Poster Award, in the Informs APS-23 conference.
2022	<u><i>Prix solennels de thèse</i></u> , from La Chancellerie des Universités de Paris
2021	Postdoctoral Fellowship funded the Labex IRMIA, Strasbourg, France
2015	Scientific Merit Award from the Rector of the Universidad de La Habana
2015	Graduated Summa Cum Laude in Mathematics from Universidad de La Habana

Computational Skills

MATLAB, , Python , Wolfram Mathematica, Maple , \LaTeX , git

Languages

Spanish	Native Language
English	Professional Proficiency

French

Professional Proficiency