Dr. Martín López-García

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scholar.google.com/citations?user=U4VkcxYAAAAJ&hl=es

Current Position

2019–Today **Lecturer (Assistant Professor)**, *Department of Applied Mathematics, University of Leeds.*

Employment History

2016–2019 **MRC Fellow**, *Department of Applied Mathematics, University of Leeds.*

2013–2016 **Postdoctoral Research Assistant**, *Department of Applied Mathematics, University of Leeds.*

2009–2013 **PhD Fellowship**, Spanish Ministry of Economy and Competitiveness.

Education

2009–2013 **PhD in Mathematics**, *Complutense University of Madrid, Spain. Qualification: Excellent cum Laude.*

2004–2009 **BSc in Mathematics**, *University of Alicante, Spain. Qualification:* 9.06/10 *with honours.*

Teaching (∼420 hours)

2019–2020 **Module Leader**, *MATH5315M Applied Statistics and Probability (40h), MSc in Financial Mathematics*, University of Leeds, UK.

2018–2019 **Module Leader**, *MATH5315M Applied Statistics and Probability (40h), MSc in Financial Mathematics*, University of Leeds, UK.

2017–2018 **Module Leader**, *MATH5315M Applied Statistics and Probability (40h), MSc in Financial Mathematics*, University of Leeds, UK.

2016–2017 **Tutor**, *MATH1050 Calculus and Mathematical Analysis (10h), BSc Mathematics*, University of Leeds, UK.

2016–2017 **Module Leader**, *MATH5315M Applied Statistics and Probability (40h), MSc in Financial Mathematics*, University of Leeds, UK.

09/2016 **Module Leader**, *Stochastic Processes (45h), MSc Statistics*, University of Maputo, Mozambique.

09/2014 **Module Leader**, *Stochastic Processes (45h), MSc Statistics*, University of Maputo, Mozambique.

08/2013 **Module Leader**, *Stochastic Processes (45h), MSc Statistics*, University of El Salvador, El Salvador.

2011–2013 **Teaching Assistant**, *Probability Theory (112.5 hours), BSc in Mathematics (2^{nd} year)*, Complutense University of Madrid, Spain.

Postgraduate Supervision

2019– **Main supervisor**, *PhD student James Patterson*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EPSRC - Dstl CASE Studentship

2019– **Main supervisor**, *PhD student Bevelynn Williams*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EPSRC - Dstl CASE Studentship

2019– **Co-supervisor**, *PhD student Macauley Locke*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EPSRC - PHE NPIF Studentship

2019– **Co-supervisor**, *PhD student Sijia Li*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.

2019– **Co-supervisor**, *PhD student Van Thuy Truong*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EU Marie Curie PhD Studentship, QuanTII Innovative Training Network

2019– **Co-supervisor**, *PhD student Flavia Feliciangeli*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EU Marie Curie PhD Studentship, QuanTII Innovative Training Network

2019– **Co-supervisor**, *PhD student Lea Sta*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EU Marie Curie PhD Studentship, QuanTII Innovative Training Network

2019– **Co-supervisor**, *PhD student Giulia Belluccini*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EU Marie Curie PhD Studentship, QuanTII Innovative Training Network

2018– **Co-supervisor**, *PhD student Daniel Luque Duque*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EU Marie Curie PhD Studentship, QuanTII Innovative Training Network

2017– **Co-supervisor**, *PhD student Joshua Langwade*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EPSRC -Dstl CASE Studentship

2017– **Co-supervisor**, *PhD student Polly-Anne Jeffrey*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.
EPSRC -AstraZeneca CASE Studentship

2013–2018 **Co-supervisor**, *PhD student Maria Nowicka*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.

2013–2018 **Co-supervisor**, *PhD student Luís de-la-Higuera*, Department of Applied Mathematics, School of Mathematics, University of Leeds, United Kingdom.

Research Funding

2019–2023 **Mathematical modelling of the host response to inhaled anthrax across different scales**, *EPSRC CASE Studentship.* ***Principal Investigator****. PI: Dr. López-García*, Funded value: 100,000 GBP.

2016–2019 **Mathematical modelling of the emergence and spread of antibiotic resistant bacteria in healthcare settings: an stochastic approach**, *MR/N014855/1, Medical Research Council Skills Development Fellowship, United Kingdom.* ***Principal Investigator****. PI: Dr. López-García*, Funded value: 282,922 GBP.

2015–2018 **Stochastic models and statistical aspects in epidemics**, *MTM2014-58091, Ministry of Economy and Competitiveness, Spain.* ***Researcher****. PI: Dr. Gómez-Corral.*

2013–2016 **Vascular receptor-ligand programming: stochastic modelling of cellular fate**, *RPG-2012-772, The Leverhulme Trust, UK.* ***Postdoctoral Research Assistant****. PI: Prof. Lythe, Prof. Molina-París, Dr. Ponnambalam.*

2012–2014 **Stochastic modeling of epidemics and populations**, *MTM2011-23864, Ministry of Economy and Competitiveness, Spain.* ***Researcher****. PI: Prof. Artalejo, Dr. Gómez-Corral.*

2009–2011 **Stochastic models in biology and queueing theory: contributions of matrix-analytic methods and other algorithmic techniques**, *MTM2008-01121, Ministry of Science and Innovation, Spain.* ***PhD Fellow****. PI: Prof. Artalejo.*

Publications

2020 Jeffrey P-A, **López-García M,** Castro M, Lythe G, Molina-París C, *On exact and approximate approaches for stochastic receptor-ligand competition dynamics: an ecological perspective*, Mathematics, 8: 1014.

2020 Wilson AM**,** Abney SE**,** King M-F**,** Weir MH**, López-García M,** Sexton JD, Dancer S, Proctor J, Noakes CJ, Reynolds KA, *COVID-19 and non-traditional mask use: How do various materials compare in infection risk reduction for those wearing masks?*, Journal of Hospital Infection, *published on-line*.

2020 Wilson AM, King M-F, **López-García M,** Weir MH, Sexton JD, Kostov GE, Julian TR, Canales RA, Noakes CJ, Reynolds KA, *Evaluating a transfer gradient assumption in a fomite-mediated microbial transmission model using an experimental and Bayesian approach.*, Journal of the Royal Society Interface, 17: 20200121.

2020 King M-F, **López-García M,** Atedoghu KP, Zhang N, Wilson AM, Weterings M, Hiwar W, Dancer SJ, Noakes CJ, Fletcher LA, *Bacterial transfer to fingertips during sequential surface contacts with and without gloves*, Indoor Air, 00: 1-12.

2020 Carruthers J, Lythe G, **López-García M,** Gillard JJ, Laws TR, Lukaszewski R, Molina-París C, *Stochastic dynamics of Francisella tularensis infection and replication*, PLoS Computational Biology, 16: e1007752.

2019 Carruthers J, **López-García M,** Lythe G, Molina-París C, *Multi-scale modelling of bacterial infections*, Mathematics Today, Sept 2019.

2019 Ward J, **López-García M**, *Exact analysis of summary statistics for continuous-time discrete-state Markov processes on networks using graph-automorphism lumping*, Applied Network Science, 4: 108.

2019 de la Higuera L, **López-García M,** Castro M, Abourashchi N, Lythe G, Molina-París C, *Fate of a naive T cell: a stochastic journey*, Frontiers in Immunology, 10: 194.

2019 **López-García M,** King M-F, Noakes CJ, *A multi-compartment SIS stochastic model with zonal ventilation for the spread of nosocomial infections: detection, outbreak management and infection control*, Risk Analysis, 39: 1825-1842.

2018 **López-García M,** Aruru M, Pyne S, *Health analytics and disease modeling for better understanding of healthcare associated infections*, BLDE University Journal of Health Sciences, 3: 69-74.

2018 Castro M, **López-García M,** Lythe G, Molina-París C, *First passage events in biological systems with non-exponential inter-event times*, Scientific Reports, 8: 15054.

2018 **López-García M,** Nowicka M, Bendtsen C, Lythe G, Ponnambalam S, Molina-París C, *Quantifying phosphorylation timescales of receptor-ligand complexes: a Markovian matrix-analytic approach*, Royal Society Open Biology, 8: 180126.

2018 Carruthers J, **López-García M,** Gillard JJ, Laws TR, Lythe G, Molina-París C, *A novel stochastic multi-scale model of Francisella tularensis infection to predict risk of infection in a laboratory*, Frontiers in Microbiology, 9: 1165.

2018 **López-García M,** Kypraios T, *A unified stochastic modelling framework for the spread of hospital-acquired infections*, The Journal of the Royal Society Interface, 15(143): 20180060.

2018 Sambaturu N, Mukherjee S, **López-García M,** Molina-París C, Menon GI, Chandra N, *Role of genetic heterogeneity in determining the epidemiological severity of H1N1 influenza*, PLoS Computational Biology, 14(3): e1006069.

2018 Gómez-Corral A, **López-García M**, *Perturbation analysis in finite LD-QBD processes and applications to epidemic models*, Numerical Linear Algebra with Applications, 25: e2160.

2018 **López-García M,** Nowicka M, Fearnley GW, Ponnambalam S, Lythe G, Molina-París C, *Performance measures in stochastic processes and the matrix-analytic approach*, In: Quantitative Biology - Theory, Computational Methods, and Models (editors: Munsky B, Hlavacek W, Tsimring L).

2018 Gómez-Corral A, **López-García M**, *A within-host stochastic model for nematode infection*, Mathematics, 6: 143.

2017 de-la-Higuera L, **López-García M,** Lythe G, Molina-París C, *IL-2 stimulation of regulatory T cells: a stochastic and algorithmic approach*, In: Modeling Cellular Systems (editors: Pahle J, Matthäus F, Graw F), 81-105.

2017 Gómez-Corral A, **López-García M**, *On SIR epidemic models with generally distributed infectious periods: number of secondary cases and probability of infection*, International Journal of Biomathematics 10: 1750024 (13 pages).

2017 Artalejo JR, Gómez-Corral A, **López-García M,** Molina-París C, *Stochastic descriptors to study the fate and potential of naive T cell clonotypes in the periphery*, Journal of Mathematical Biology 74: 673-708.

2016 **López-García M**, *Stochastic descriptors in an SIR epidemic model for heterogeneous individuals in small networks*, Mathematical Biosciences 271: 42-61.

2015 Economou A, Gómez-Corral A, **López-García M**, *A stochastic SIS epidemic model with heterogeneous contacts*, Physica A: Statistical Mechanics and its Applications 421: 78-97.

2015 Gómez-Corral A, **López-García M**, *Lifetime and reproduction of a marked individual in a two-species competition process*, Applied Mathematics and Computation 264: 223-245.

2014 Gómez-Corral A, **López-García M**, *Control strategies for a stochastic model of host-parasite interaction in a seasonal environment*, Journal of Theoretical Biology 354: 1-11.

2014 Gómez-Corral A, **López-García M**, *Maximum queue lengths during a fixed time interval in the M/M/c retrial queue*, Applied Mathematics and Computation 235: 124-136.

2013 Gómez-Corral A, **López-García M**, *Maximum population sizes in host-parasitoid models*, International Journal of Biomathematics 6: 1350002 (28 pages). DOI: 10.1142/S1793524513500022.

2013 Gómez-Corral A, **López-García M**, *Modeling host-parasitoid interactions with correlated events*, Applied Mathematical Modeling 37: 5452-5463.

2012 Gómez-Corral A, **López-García M**, *Extinction times and size of the surviving species in a two-species competition process*, Journal of Mathematical Biology 64: 255-289.

2012 Gómez-Corral A, **López-García M**, *On the number of births and deaths during an extinction cycle, and the survival of a certain individual in a competition process*, Computers & Mathematics with Applications 64: 236-259.

Most recent Research Visits

06/2019 **Research in groups - 2 weeks**, *International Centre for Mathematical Sciences, Edinburgh.*

07/2018 **Research visit - 1 week**, *School of Mathematical Sciences, University of Adelaide, Australia.*

02/2018 **Research visit - 2 weeks**, *Complutense University of Madrid, Madrid, Spain.*

05/2017 **Research visit - 2 weeks**, *Institute of Mathematical Sciences, Madrid, Spain.*

04/2017 **Research visit - 3 weeks**, *Indian Institute of Science, Bangalore, India.*

02/2017 **Research visit - 2 weeks**, *Medecins Sans Frontieres, Paris, France.*

Referee Activities

I have acted as referee for a grant proposal within the *"NILS Science and Sustainability"* European program, and for a *"UKRI Future Leaders"* fellowship.

I have also acted as a reviewer for, among others, the following journals: *Journal of the Royal Society Interface*, *Frontiers in Immunology*, *BMC Systems Biology*, *PLoS ONE*, *SIAM Journal on Applied Mathe-*

matics, *Scientific Reports*, *Transactions of Mathematics and its Applications*, *Mathematical Problems in Engineering*, *Mathematical Biosciences*, *Physica A: Statistical Mechanics and its Applications*, *Applied Mathematical Modelling*, *International Journal of Biomathematics*, *Stochastic Environmental Research and Risk Assessment*, *Discrete and Continuous Dynamical System Series-B*, *Kuwait Journal of Science*, *HSOA Journal of Infectious & Non Infectious Diseases*, *Sankhya B - The Indian Journal of Statistics*, *The International Journal of Computational Intelligence Systems*.

Recent Administrative Activities

2019 - Today **School of Mathematics (University of Leeds) SALIP - School Academic Lead for Inclusive Practice**.

09/2019 **Conference Organizer: *Stochastic modelling in Health & Disease***, *University of Leeds*.

07/2019 **Conference Organizer: *Mathematical and Statistical Explorations in Disease Modelling and Public Health***, *International Centre for Theoretical Studies*, Bangalore, India.

02/2018 **Conference Organizer: *Probability in the North-East***, *University of Leeds*.

04/2017 **Conference Organizer: *Probability in the North-East***, *University of Leeds*.

2016 - Today **Member of the Athena Swan/Equality & Inclusion Forum**, *School of Mathematics, University of Leeds*.

Most recent International Conferences & Meetings

2020 **Workshop - "Mathematical modelling and statistical analysis of infectious disease outbreaks: heterogeneity in space, time and social structure, and virus evolution", CIRM, Marseille, France**, *Invited talk*.

2020 **RSME Young Researchers Conference 2020, Castellón, Spain**, *Plenary talk*.

2019 **UK Fluids Network Conference 2019, Cambridge, UK**, *Contributed talk*.

2019 **SMB 2019, Montreal, Canada**, *Invited talk at minisymposia*.

2019 **SPHINx19, Spread of Pathogens in Healthcare Institutions and Networks**, *Contributed talk*.

2019 **ICMAT, Madrid, Spain**, *Invited seminar*.

2018 **ECMTB 2018, Lisbon, UK**, *Contributed talk*.

2018 **SMB 2018, Sydney, Australia**, *Contributed talk*.

2018 **UK Conference on Multiscale Biology, Nottingham, UK**, *Contributed talk*.

2018 **International Symposium on Health Analytics and Disease Modeling, New Delhi, India**, *Invited talk*.

2018 **Data analysis seminar series, Madrid, Spain**, *Invited seminar*.

Awards

09/2016 **Vicent Caselles Spanish National Award**, *BBVA Foundation & Spanish Royal Mathematical Society*.

Outreach

I have delivered a number of public engagement talks at different schools around Yorkshire, and at the University of Leeds *Sixth Form Conference 2017* and *2018*. I have also recently participated in the *Leeds Festival of Science 2018*, delivering talks at several schools in Leeds. I was also the leader of the activities carried out at the School of Mathematics (University of Leeds) during the *Be Curious 2016* open-day science festival. I recently obtained an MRC Public Engagement award (1200 GBP) in order to carry out a public engagement activity at the Thackray Medical Museum within the *MRC Festival 2018*.
For all of these public engagement activities, I have developed the series of video games *Hospital Infections* (available at https://matml.github.io/) which I use in order to explain to the general public how epidemic

processes occur in real life, and how mathematical and computational tools can be used in order to analyse the spread of infectious diseases among individuals in a population.