CURRICULUM VITAE

Personal Information
Mario Antonio Ayala Valenzuela
Nationality: Mexican
Civil status: Married with children (one)
5 Impasse de L'Epi, Apt. I-201
84000
Avignon, France
E-mail: mario.ayala.valenzuela@gmail.com
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Education
PhD in Applied Mathematics
Delft University of Technology
Areas of Interest: Markov Processes,
Interacting Particle Systems, Scaling limits,
Fluctuations, Duality, Dirichlet forms

Dissertation: Fluctuations for interacting particle systems with duality
18/02/2021

Master in Applied Mathematics
Delft University of Technology
Areas of Interest: Markov Processes,
Interacting Particle Systems, Scaling limits, Duality

Additional specialization: Financial Engineering

Master thesis work: Hydrodynamic limit for the Symmetric Inclusion Process
23/08/2016

B.S. Mathematics
Universidad de Colima
Facultad de Ciencias

B.S. thesis work: Estimation of the basic reproductive number for HLB in the state of Colima Mexico
15/04/2013

Work Experience
Postdoctoral Researcher
BIOSP-INRAE:
Under supervision of J. Coville and R. Forien
04/05/2021 to 31/05/2022 (expected)

Consultant
Dubai Community Development Authority
August 2017
Dubai, United Arab Emirates
Project: Under NDA

Consultant
Dubai Airports Authority
July 2017
Dubai, United Arab Emirates
Project: Under NDA

Intern
Ministry of Finance
Dutch State Treasury Agency
March 2016-July 2016
Project: Analysis of Dutch Inflation Bonds

Administrative Support
Ministry of Health of the State of Colima
January 2007- June 2014

Teaching Experience
Teacher assistant
Stochastic Differential Equations
Period: February 2020- July 2020
Institution: Delft University of Technology

Teacher assistant
Analyse en differentiaalvergelijkingen
Period: September-November 2019
Institution: Delft University of Technology

Teacher assistant
Linear Algebra
Period: November- Present 2019
Institution: Delft University of Technology

Lecturer (In Spanish)
Numerical methods
Period: August-December 2018
Institution: Universidad de Colima

Trainer of the Mexican Mathematical Olympiad
Period: January 2005- December 2010
Online period: January 2021- Active
Institution: Universidad de Colima
Colima, Mexico

Publications

In preparation:

Hydrodynamic limits on varying dimensions
Subject: Derivation of Hydrodynamic equation in spaces with varying dimensions

A spatial stochastic model for a vector-borne vitus population
Ongoing work with: Jérôme Coville and Raphaël Forien

Published:

Condensation of SIP particles and sticky Brownian motion
Journal of Statistical Physics
Join work with: Gioa Carinci and Frank Redig
https://link.springer.com/article/10.1007/s10955-021-02775-5

Higher order fluctuation fields and orthogonal duality polynomials
Electronic Journal of Probability
Join work with: Gioa Carinci and Frank Redig
https://doi.org/10.1214/21-EJP586

Quantitative Boltzmann Gibbs principles via orthogonal polynomial duality
Journal of Statistical Physics
Join work with: Gioa Carinci and Frank Redig
https://link.springer.com/article/10.1007/s10955-018-2060-7

Technical Reports:

An epidemiological approach to the dynamics of chytridiomycosis in a harlequin frog population
Technical report for the Mathematical and Theoretical Biology Institute
Arizona State University
Tempe, Arizona, Summer 2006

Evaluation of Aedes Aegypti control campaigns
Technical report for the Health Ministry of the State of Colima in Mexico.
Secretaria de Salud Colima
Colima, Col, Fall 2009

Talks

A spatial stochastic model for a vector-borne virus population
YEP XVII: Interacting particle systems
Eurandom
Eindhoven, The Netherlands
31/08/2021

Higher order Fluctuation Fields and Orthogonal Duality Polynomials
Encontro Nacional SPM 2021
Panel: Stochastic duality for Markov processes
Online event: https://enspm2021.eventon.io/
13/07/2021

Higher order Fluctuation Fields and Orthogonal Duality Polynomials
The third Haifa Probability School
Workshop on Random Geometry and Stochastic Analysis
Israel Institute of Technology
Haifa Israel
25/02/2020

Condensation of SIP particles and sticky Brownian motion
The 27th Meeting of PhD students in Stochastics in the Netherlands
May 2019

Condensation of SIP particles and sticky Brownian motion
NDNS+ PhD Days 2019
May 2019

Sistemas de partículas que interactúan y aplicaciones a modelos de distribución de la riqueza.
Seminario interno del grupo académico 105, Facultad de Economía
Universidad de Colima
Villa de Alvarez, Colima, México
Febrero 2018.

Contributed:
An epidemiological approach to the dynamics of chytridiomycosis in a harlequin frog population
Technical report for the Mathematical and Theoretical Biology Institute
Arizona State University
Tempe, Arizona, Summer 2006

An epidemiological approach to the dynamics of the chytidiomycosis in a harlequin frog population
SIAM Conference on the Life Sciences
Raleigh, North Carolina
July 31 - August 4, 2006

Poster Presentation
Condensation of SIP particles and sticky Brownian motion
LMS Research School: Random Structures: From the discrete to the continuous
University of Bath
July 1st to 5th, 2019

An epidemiological approach to the dynamics of the chytidiomycosis in a harlequin frog population
SIAM Conference on the Life Sciences
Raleigh, North Carolina
July 31 - August 4, 2006

An epidemiological approach to the dynamics of the chytidiomycosis in a harlequin frog population
SACNAS Undergraduate and Graduate Students Posters in Mathematics
2006 SACNAS National Conference
Tampa, Florida
October, 2006

Attended Conferences/Schools

The third Haifa Probability School
Workshop on Random Geometry and Stochastic Analysis
Israel Institute of Technology
Haifa Israel
February 24th-28th, 2020

LMS Research School: Random Structures: From the discrete to the continuous
University of Bath
July 1st to 5th, 2019

Geometry and Scaling of Random Structures
CIMPA SCHOOL
Universidad de Buenos Aires, Argentina
July 2018

Pre-School: Stochastic Dynamics out of Equilibrium
CIRM (Centre International de Rencontres Mathématiques),
Marseille, France
April, 2017

VIII Escuela de Probabilidad y Procesos Estocásticos
CIMAT, Guanajuato, México
September, 2016

7th General AMaMeF and SwissQuote Conference
Advanced Mathematical Methods in Finance
Lausanne, Switzerland
September, 2015

Mathematical and Theoretical Biology Institute (MTBI)
Arizona State University
Tempe, Arizona, Summer 2006

Honors and Awards

Recipient of Mexican National Council of Science and Technology Scholarship
PhD Studies at Delft University of Technology

Recipient of Mexican National Council of Science and Technology Scholarship
Master Studies at Delft University of Technology

17th Mexican Mathematical Olympiad (Nationwide)
Bronze Medal
Guanajuato, Mexico, November 2003

Mathematical Skills Contest (Nationwide in Mexico)
Instituto Tecnológico y de Estudios Superiores de Occidente, ITESO
1st Place
Jalisco, Mexico, January 2003

Computer skills
Matlab (Advanced user)
Python, R (Intermediate)

References
Name: Prof. Frank Redig
E-mail: f.h.j.redig@tudelft.nl
Affiliation: TU Delft

Name: Dr. Gioia Carinci
E-mail: gioia.carinci@unimore.it
Affiliation: University of Modena and R. Emilia

Name: Carlos M. Hernandez-Suarez
E-mail: carlosmh@me.com
Affiliation: Universidad de Colima