

César A. Parra Rojas

POST-DOCTORAL FELLOW

Frankfurt Institute for Advanced Studies

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Employment

Frankfurt Institute for Advanced Studies

POST-DOCTORAL FELLOW

Group of Systems Medicine and Infectious Diseases

Frankfurt am Main, Germany

May 2017 - Present

Education

Udacity

MACHINE LEARNING ENGINEER NANODEGREE

[view certificate](#)

2018

The University of Manchester

DOCTOR OF PHILOSOPHY (PHYSICS)

- Thesis title: Intrinsic Fluctuations in Discrete and Continuous Time Models
- Supervisor: Prof. Alan J. McKANE

Manchester, UK

2016

Universidad de Chile

M.Sc. PHYSICS

- Thesis title: Efectos Macroscópicos de las Fluctuaciones en un Baño Bacteriano Diluido
(Macroscopic Effects of Fluctuations in a Dilute Bacterial Bath)
- Supervisor: Rodrigo Soto

Santiago, Chile

2013

Universidad de Chile

B.Sc. ASTRONOMY

Santiago, Chile

2012

Universidad de Chile

B.Sc. PHYSICS

Santiago, Chile

2010

Honors & Awards

2013 – 2016 **Becas-Chile Study Abroad Scholarship for PhD**

CONICYT, Chile

2012 **Fulbright nominee**

Fulbright Comission, Chile

2011 – 2012 **Masters Scholarship**

CONICYT, Chile

Publications

Submitted:

- 1 THE TRICHOTOMY OF PNEUMOCOCCAL INFECTION OUTCOMES
A. E. S. Almocera, G. Hernández-Mejía, **C. Parra-Rojas**, and E. A. Hernandez-Vargas
[\[bioRxiv preprint\]](#)

Journal articles:

- 1 ADJUVANTED INFLUENZA VACCINE DYNAMICS
C. Parra-Rojas, V. von Messling, and E. A. Hernandez-Vargas
[\[GitHub repository\]](#) in press
Scientific Reports
- 2 NEURAMINIDASE INHIBITORS IN INFLUENZA TREATMENT AND PREVENTION—IS IT TIME TO CALL IT A DAY?
C. Parra-Rojas, V. K. Nguyen, G. Hernández-Mejía, and E. A. Hernandez-Vargas
[\[PDF\]](#)[\[GitHub repository\]](#) 2018
Viruses **10(9)**, 454

- 3 THE 2017 PLAGUE OUTBREAK IN MADAGASCAR: DATA DESCRIPTIONS AND EPIDEMIC MODELLING 2018
V. K. Nguyen, C. Parra-Rojas, and E. A. Hernandez-Vargas *Epidemics* **25**, 20
[|PDF|bioRxiv preprint|GitHub repository|](#)
- 4 REDUCTION OF A METAPOPULATION GENETIC MODEL TO AN EFFECTIVE ONE ISLAND MODEL 2018
C. Parra-Rojas, and A. J. McKane *Europhys. Lett.* **122**, 18001
[|PDF|arXiv preprint|](#)
- 5 STOCHASTIC EPIDEMIC DYNAMICS ON EXTREMELY HETEROGENEOUS NETWORKS 2016
C. Parra-Rojas, T. House, and A. J. McKane *Phys. Rev. E* **94**(6), 062408
[|PDF|arXiv preprint|](#)
- 6 SUPPRESSING ESCAPE EVENTS IN MAPS OF THE UNIT INTERVAL WITH DEMOGRAPHIC NOISE 2016
C. Parra-Rojas, J. D. Challenger, D. Fanelli, and A. J. McKane *Phys. Rev. E* **94**(5), 052133
[|PDF|arXiv preprint|](#)
- 7 INTRINSIC NOISE AND TWO-DIMENSIONAL MAPS: QUASICYCLES, QUASIPERIODICITY, AND CHAOS 2014
C. Parra-Rojas, J. D. Challenger, D. Fanelli, and A. J. McKane *Phys. Rev. E* **90**(3), 032135
[|PDF|arXiv preprint|](#)
- 8 CASIMIR EFFECT IN SWIMMER SUSPENSIONS 2014
C. Parra-Rojas, and R. Soto *Phys. Rev. E* **90**(1), 013024
[|PDF|arXiv preprint|](#)
- 9 ACTIVE TEMPERATURE AND VELOCITY CORRELATIONS PRODUCED BY A SWIMMER SUSPENSION 2013
C. Parra-Rojas, and R. Soto *Phys. Rev. E* **87**(5), 053022
[|PDF|arXiv preprint|](#)
- 10 $\text{Pd}^{2+}/\text{Pd}^0$ REDOX CYCLING IN HEXAGONAL $\text{YMN}_{0.5}\text{Fe}_{0.5}\text{O}_3$: IMPLICATIONS FOR CATALYSIS BY PGM SUBSTITUTED COMPLEX OXIDES 2011
J. A. Kurzman, J. Li, T. D. Schladt, C. R. Parra, X. Ouyang, R. Davis, J. T. Miller, S. L. Scott, and R. Seshadri *Inorg. Chem.* **50**, 8073
[|PDF|](#)

Conference proceedings:

- 1 FROM MICROSCOPIC CALCIUM SPARKS TO THE ECG: MODEL REDUCTION APPROACHES FOR MULTI-SCALE CARDIAC SIMULATION 2015
M. A. Colman, C. Parra-Rojas, and E. A. Pérez Alday *Computing in Cardiology (CinC)*
[|PDF|](#)

Presentations

Upcoming

KOLLOQUIUM FÜR BIOINFORMATIK UND SYSTEMBIOLOGIE MITTELHESSEN (KoBIS) Dec 2018
Chemical diversity in Xenorhabdus and Photorhabdus: interpretable machine learning for natural product research Gießen, Germany

Talks

28TH ANNUAL MEETING OF THE SOCIETY FOR VIROLOGY Mar 2018
Role of adjuvants in immune response dynamics after influenza vaccination Würzburg, Germany

XIV LATIN AMERICAN WORKSHOP ON NONLINEAR PHENOMENA Sep 2015
Mesoscopic description of discrete-time stochastic processes Cartagena, Colombia

Posters

28TH ANNUAL MEETING OF THE SOCIETY FOR VIROLOGY Mar 2018
Neuraminidase inhibitors—is it time to call it a day? Würzburg, Germany

SOUTHERN WORKSHOP ON GRANULAR MATERIALS Sep 2015
Velocity agitation energy due to an active suspension Puerto Varas, Chile

Research Internships

Argonne National Laboratory & James Franck Institute

Chicago, USA

CHICAGO-CHILE MATERIALS COLLABORATION PROGRAM, UNIVERSITY OF CHICAGO

Jan – Mar 2012

- Supervisor: Prof. Igor Aronson
- Project: Study of noise effects on the nematic transition of bacterial suspensions

Cerro Calán Observatory

UNIVERSIDAD DE CHILE

Santiago, Chile

Jan 2011

- Supervisor: Dr. Francisco Förster
- Project: *Robotic telescope: optimisation of observation plan by means of Ant Colony Optimisation and genetic algorithms*

Materials Research Laboratory

CISEI PROGRAM, UNIVERSITY OF CALIFORNIA, SANTA BARBARA

Santa Barbara, USA

Jan – Mar 2010

- Supervisors: Dr. Joshua Kurzman & Prof. Ram Seshadri
- Project: $\text{Pd}^{2+}/\text{Pd}^0$ redox cycling in hexagonal $\text{YMn}_{0.5}\text{Fe}_{0.5}\text{O}_3$

Technical Skills

Programming

Python, Mathematica. Familiar with MATLAB, FORTRAN, C++, Bash

Data analysis and visualisation

NumPy, pandas, Matplotlib, Seaborn. Familiar with Plotly, Altair.

Machine Learning

scikit-learn, XGBoost, LightGBM, SHAP. Familiar with Keras, PyTorch.

Other

Git, \LaTeX

Leadership

The University of Manchester Chilean Society

CHAIR

Manchester, UK

2015–2016

The University of Manchester Chilean Society

DIVERSITY OFFICER

Manchester, UK

2014–2015

Other activities

Music

Guitarist, vocalist, composer. Tenor of the University of Manchester Chorus (2013–2014) and of the School of Science and Engineering Choir of Universidad de Chile (2007–2009)