

## César A. Parra Rojas

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Post-doctoral fellow  
Sistems Medicine of Infectious Diseases  
Frankfurt Institute for Advanced Studies (FIAS)  
60438 Frankfurt am Main, Germany  
Email: [parra@fias.uni-frankfurt.de](mailto:parra@fias.uni-frankfurt.de)  
Web: [cparrarojas.github.io](https://cparrarojas.github.io)

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### EDUCATION

Machine Learning Engineer Nanodegree Udacity Nanodegree Program <a href="#">view certificate</a>	2018
Ph.D. Physics School of Physics and Astronomy, University of Manchester Supervisor: Prof. Alan J. McKane <b>Thesis:</b> <i>Intrinsic fluctuations in discrete and continuous time models</i> Supervisor: Prof. Alan J. McKane	2016
M.Sc. Physics FCFM, Universidad de Chile <b>Thesis:</b> <i>Efectos macroscópicos de las fluctuaciones en un baño bacteriano diluido (Macroscopic effects of fluctuations in a dilute bacterial bath)</i> Supervisor: Prof. Rodrigo Soto.	2013
B.Sc. Astronomy FCFM, Universidad de Chile	2012
B.Sc. Physics FCFM, Universidad de Chile	2010

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### AWARDS AND HONORS

Becas Chile PhD scholarship from CONICYT	2013–'16
Fulbright nominee	2012
Masters scholarship from CONICYT	2011–'12
1 <sup>st</sup> position in ranking of the School of Science and Engineering and 1 <sup>st</sup> position in ranking of Physics students at the end of B.Sc. program	2010
Outstanding Student Award by Universidad de Chile	2006–'09, '11

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### PUBLICATIONS

#### Submitted

1. **C. Parra-Rojas**, V. K. Nguyen, G. Hernández-Mejía, and E. A. Hernandez-Vargas, “The modest effect of oseltamivir in influenza treatment and prevention explained”.
2. **C. Parra-Rojas**, V. von Messling, and E. A. Hernandez-Vargas, “Adjuvanted influenza vaccine dynamics”.

## Journal articles

1. V. K. Nguyen, **C. Parra-Rojas**, and E. A. Hernandez-Vargas, “The 2017 plague outbreak in Madagascar: data descriptions and epidemic modelling”, *Epidemics* (in press). [[bioRxiv](#)]
2. **C. Parra-Rojas**, and A. J. McKane, “Reduction of a metapopulation genetic model to an effective one island model”, *Europhys. Lett.* **122**, 18001 (2018). [[journal](#), [arXiv](#)]
3. **C. Parra-Rojas**, T. House, and A. J. McKane, “Stochastic epidemic dynamics on extremely heterogeneous networks”, *Phys. Rev. E* **94(6)**, 062408 (2016). [[journal](#), [arXiv](#)]
4. **C. Parra-Rojas**, J. D. Challenger, D. Fanelli, and A. J. McKane, “Suppressing escape events in maps of the unit interval with demographic noise”, *Phys. Rev. E* **94(5)**, 052133 (2016). [[journal](#), [arXiv](#)]
5. **C. Parra-Rojas**, J. D. Challenger, D. Fanelli, and A. J. McKane, “Intrinsic noise and two-dimensional maps: Quasicycles, quasiperiodicity, and chaos”, *Phys. Rev. E* **90(3)**, 032135 (2014). [[journal](#), [arXiv](#)]
6. **C. Parra-Rojas**, and R. Soto, “Casimir effect in swimmer suspensions”, *Phys. Rev. E* **90(1)**, 013024 (2014). [[journal](#), [arXiv](#)]
7. **C. Parra-Rojas**, and R. Soto, “Active temperature and velocity correlations produced by a swimmer suspension”, *Phys. Rev. E* **87(5)**, 053022 (2013). [[journal](#), [arXiv](#)]
8. J. A. Kurzman, J. Li, T. D. Schladt, **C. R. Parra**, X. Ouyang, R. Davis, J. T. Miller, S. L. Scott, and R. Seshadri, “Pd<sup>2+</sup>/Pd<sup>0</sup> redox cycling in hexagonal YMn<sub>0.5</sub>Fe<sub>0.5</sub>O<sub>3</sub>: Implications for catalysis by PGM substituted complex oxides”, *Inorg. Chem.* **50**, 8073–8084 (2011). [[journal](#)]

## Conference proceedings

1. M. A. Colman, **C. Parra-Rojas**, and E. A. Pérez Alday, “From Microscopic Calcium Sparks to the ECG: Model Reduction Approaches for Multi-Scale Cardiac Simulation”, *Computing in Cardiology (CinC)*, 325–328 (2015). [[journal](#)]

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## PRESENTATIONS

### Talks

- 28<sup>th</sup> Annual Meeting of the Society for Virology March 2018  
Julius-Maximilians-Universität Würzburg, Würzburg, Germany  
**Title:** *Role of adjuvants in immune response dynamics after influenza vaccination*
- XIV Latin American Workshop on Nonlinear Phenomena September 2015  
Cartagena, Colombia  
**Title:** *Mesoscopic description of discrete-time stochastic processes*
- XVIII Simposio Chileno de Física November 2012  
La Serena, Chile  
**Title:** *Temperatura activa de una suspensión bacteriana (Active temperature of a bacterial suspension)*

## Posters

- 28<sup>th</sup> Annual Meeting of the Society for Virology* March 2018  
Julius-Maximilians-Universität Würzburg, Würzburg, Germany  
**Title:** *Neuraminidase inhibitors—is it time to call it a day?*
- Southern Workshop on Granular Materials* December 2012  
Puerto Varas, Chile  
**Title:** *Velocity agitation energy due to an active suspension*
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## OTHER RESEARCH

- Argonne National Laboratory & JFI, University of Chicago January–March 2012  
*Chicago-Chile Materials Collaboration Program.*  
Research: Study of noise effects on the nematic transition of bacterial suspensions.  
Supervisor: Prof. Igor Aronson.
- FCFM, Universidad de Chile January 2011  
Cerro Calán Observatory.  
Research: *Robotic telescope: optimisation of observation plan by means of Ant Colony Optimisation and genetic algorithms.*  
Supervisor: Dr. Francisco Förster.
- Materials Research Laboratory, University of California, Santa Barbara January–March 2010  
*CISEI program.*  
Research:  $\text{Pd}^{2+}/\text{Pd}^0$  redox cycling in hexagonal  $\text{YMn}_{0.5}\text{Fe}_{0.5}\text{O}_3$ .  
PI: Prof. Ram Seshadri  
Supervisor: Dr. Joshua Kurzman.
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## SKILLS

**Proficient:** Python (numpy, pandas, scikit-learn, scipy, keras), Wolfram Mathematica, LaTeX.  
**Familiar with:** Git, Bash, FORTRAN, MATLAB, C<sup>++</sup>.

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## OTHER ACTIVITIES

- The University of Manchester Chilean Society: chair 2015–2016; diversity officer 2014–2015.
  - Member of the University of Manchester Chorus from 2013 to 2014 and of the School of Science and Engineering Choir of Universidad de Chile from 2007 to 2009.
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