César A. Parra Rojas

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EDUCATION

Ph.D. Physics 2016
School of Physics and Astronomy, University of Manchester
Supervisor: Prof. Alan J. McKane
Thesis: *Intrinsic fluctuations in discrete and continuous time models*
Supervisor: Prof. Alan J. McKane

M.Sc. Physics 2013
FCFM, Universidad de Chile
Thesis: *Efectos macroscópicos de las fluctuaciones en un baño bacteriano diluido* (*Macroscopic effects of fluctuations in a dilute bacterial bath*)
Supervisor: Prof. Rodrigo Soto.

B.Sc. Astronomy 2012
FCFM, Universidad de Chile

B.Sc. Physics 2010
FCFM, Universidad de Chile

AWARDS AND HONORS

Becas Chile PhD scholarship from CONICYT 2013–'16

Fulbright nominee 2012

Masters scholarship from CONICYT 2011–'12

1st position in ranking of the School of Science and Engineering and 1st position in ranking of Physics students at the end of B.Sc. program 2010

Outstanding Student Award by Universidad de Chile 2006–'09, '11

Universidad de Chile undergraduate scholarship 2006–'10

PUBLICATIONS

Peer-reviewed publications

1. **C. Parra-Rojas**, and A. J. McKane, "Reduction of a metapopulation genetic model to an effective one island model", *submitted* (2017) [**arXiv**]
2. **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**]
3. **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**]

4. **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**]
5. **C. Parra-Rojas**, and R. Soto, "Casimir effect in swimmer suspensions", *Phys. Rev. E* **90(1)**, 013024 (2014). [**journal**,**arXiv**]
6. **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**]
7. 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^{2+}/Pd^{0} redox cycling in hexagonal $YMn_{0.5}Fe_{0.5}O_3$: 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**]

CONFERENCES AND SCHOOLS

XIV Latin American Workshop on Nonlinear Phenomena — September 2015
Cartagena, Colombia
Talk: *Mesoscopic description of discrete-time stochastic processes*

V Summer School on Statistical Physics of Complex and Small Systems — July 2015
Centre de Reserca Matemàtica, Barcelona, Spain

II Southern-Summer School on Mathematical Biology — January 2013
ICTP-SAIFR, São Paulo, Brazil

Southern Workshop on Granular Materials — December 2012
Puerto Varas, Chile
Poster: *Velocity agitation energy due to an active suspension*

XVIII Simposio Chileno de Física — November 2012
La Serena, Chile
Talk: *Temperatura activa de una suspensión bacteriana* (*Active temperature of a bacterial suspension*)

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: Pd^{2+}/Pd^{0} *redox cycling in hexagonal* $YMn_{0.5}Fe_{0.5}O_3$.
PI: Prof. Ram Seshadri
Supervisor: Dr. Joshua Kurzman.

PROGRAMMING SKILLS

Intermediate Python (including pandas, sklearn, numpy, scipy) and Wolfram Mathematica. Some experience with FORTRAN, MATLAB and C^{++}. Open to learn and use other tools.

TEACHING EXPERIENCE

I was a Teaching Assistant at FCFM, Universidad de Chile, from 2008 to 2011, for both Introduction to Newtonian Physics (1^{st} year) and Introduction to Nuclear Physics (4^{th} year). This involved preparing a range of problems and solving them with students, plus invigilating and grading tests.

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.
