

CURRICULUM VITAE

MANUEL LARENAS ARAVENA

CONTACT INFORMATION

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RESEARCH INTERESTS

Mathematical Physics, Partial Differential Equations, Non-equilibrium Mechanics, Condensed Matter Physics

EDUCATION

- 2003–2010 UNIVERSIDAD DE CHILE
Mathematical Engineering Degree (equivalent to M.Sc. in Mathematics).
Thesis: *Models in Rheology and Applications to Fluids*. Supervisor: Prof. Carlos Conca.
Joint work with *Center for Mathematical Modeling*.
- 2003–2008 UNIVERSIDAD DE CHILE
Bachelor of Sciences. Major in Physics, Major in Mathematics (Magna cum Laude).

RESEARCH AND WORK EXPERIENCE

- 06/2009–12/2009 CIMAT, Center for Advanced Interdisciplinary Research in Materials
Overview: Study of singularities in solutions associated to Fluctuation-induced Casimir forces in a non-equilibrium steady state fluid. Joint work with Prof. Rodrigo Soto.
- 01/2009–03/2009 UNIVERSIDAD CATÓLICA DE CHILE, Dept. of Physics
Overview: Bibliographic review about bounds for the Ground State of dilute Bose gas with positive interaction. Work guided by Prof. Rafael D. Benguria.
- 12/2008–02/2009 UNIVERSIDAD DE CHILE, School of Sciences
Overview: Theoretical and numerical approach to Fano Resonances in saturable waveguide arrays. Joint work with Profs. Mario I. Molina and Rodrigo A. Vicencio.
- 06/2008–02/2009 CODELCO, Chilean copper mining company.
Overview: Theoretical research and numerical simulations of mining slurries. Modeling of non-Newtonian material flowing down in an open rectangular channel.
- 04/2008–12/2008 UNIVERSIDAD DE CHILE, School of Engineering
Overview: Experimental setup for deposition of Silicon nanoparticles on an insulating substrate using pulsed-electron-beam ablation.
- 12/2007–02/2008 MICOMO, research institution oriented to adapt solutions and services based on advanced technologies of information from NTT.
Overview: Summer internship. Computational fluid dynamics simulation of the dust diffusion problem on The Chuquicamata Open Mine considering atmospheric conditions and wind flow.
- Since 03/2004 UNIVERSIDAD DE CHILE
Overview: Teacher Assistant of multiple courses such as Calculus, Numerical Analysis, Modern Physics and Partial Differential Equations of Mathematical Physics.

PUBLICATIONS

09/2009 U. Naether, D. E. Rivas, **M. A. Larenas**, M. I. Molina, R. A. Vicencio. *Fano resonances in waveguide arrays with saturable nonlinearity*. Optics Letters, Vol. **34**, Iss. 18 (2009).

AWARDS AND HONORS

2002 Scholarship Grant by Universidad de Chile
Scholarship Grant by Pontificia Universidad Católica de Chile

2003 Excellence Scholarship by Universidad de Chile (awarded by the top ten students of the School of Engineering and Sciences, approx. 700 students)

2003,'04,'07,'08 Outstanding Student Award by Universidad de Chile

2009 Beca Chile PhD Scholarship

2009 Nominee to Fulbright Conicyt Scholarship

WORKSHOPS AND SEMINARS

09/2009 International Seminar and Workshop: Tunneling and Scattering in Complex Systems - From Single to Many Particle Physics. Max Planck Institute for the Physics of Complex Systems. Dresden, Germany. Poster title: *Fano resonances in waveguide arrays with saturable nonlinearity*.

08/2009 XVI International Congress on Mathematical Physics. Prague, Czech Republic.

01/2009 XVI Simposio Chileno de Física. Biennial Congress hosted by The Chilean Physical Society. Valparaíso, Chile.

11/2008 Workshop on Variational Analysis. Center for Mathematical Modeling. Santiago, Chile. Course: *Numerical methods for resolution of variational inequalities* (A. Auslander).

10/2008 Workshop on Nonlinear Physics. Universidad de Santiago de Chile. Santiago, Chile.

01/2006, 01/2007 Summer School on Discrete Mathematics. Annual Conference hosted by the Complex Systems Institute of Valparaíso. Valparaíso, Chile.
Courses: *Introduction to Distributed Systems* (A. Fernández), *Polyhedral techniques for combinatorial optimization problems* (M. Baiou), *Graph Coloring* (J. Nešetřil), *Graph exploration* (P. Fraigniaud), etc.

SKILLS

- Languages:

Spanish	native	
English	advanced	(TOEFL 102/120)
French	basic	(Delf A2)

- Mathematical software: Matlab, OpenFOAM, FreeFem++.
- Basic programming: Java, C.
- Musical studies: classical piano, keyboards, synthesizers and basic musical composition.
Founder member and keyboardist of the Chilean progressive rock band *Soliloquio*.