

Óscar Nájera

Curriculum Vitae

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Research Interests

Condensed Matter, Solid State Physics, Strongly correlated electrons, Statistical Mechanics, Mathematical & Theoretical Physics, Scientific Programming & computational systems analysis

Education

Université Paris-Sud, Orsay, France

Sept. 2014 –
current

- PhD in Strongly Correlated Electron Systems, Defense expected 7/2017
 - Theory Group at Laboratoire de Physique des Solides

École Normale Supérieure de Cachan, Cachan, France

Sept. 2013 –
Sept. 2014

- M2 Master in Molecular Nano- bio-photonics (MONABIPHOT)
 - Mémoire: Study of spin-orbit effects in the Mott-Hubbard metal-insulator transition

Escuela Politécnica Nacional, Quito, Ecuador

Oct. 2006 –
Sept. 2012

- Physics Diploma
 - Diploma Thesis Topic: Estimation, by computer simulation, of the exchange energy dispersion between polar nano-regions in $Pb_xBi_4Ti_{3+x}O_{12+3x}$; $x = \{2, 3\}$ relaxor ferroelectrics

German School, Quito, Ecuador

1997 – 2006

- German Abitur May 2006
- Ecuadorian High School Diploma June 2005

Honors and Awards

- 2014** PhD fellowship, École Doctorale Physique en Île de France, France
- 2013** Paris-Saclay Master Scholarship, Campus Paris-Saclay, France
- 2012** Danced for Ecuador in WDSF World DanceSport Championship Standard, Australia
- 2010** Physics Olympiad 1st place, Escuela Politécnica Nacional, Ecuador
- 2005** Bronze Medal for Academic performance, German School Quito, Ecuador
- 2003** PAD Preisträger, Kultusminister Konferenz, Germany

Publications

- **O. Nájera**, M. Civelli, V. Dobrosavljević, M. Rozenberg: *Resolving the VO₂ controversy: Mott mechanism dominates the insulator-to-metal transition*, Phys. Rev. B 95, 035113 (2017), arXiv: 1606.03157

Conference Presentations

- *Mott Metal - Insulator transition on a dimerized lattice*, A: III Conference of Ecuadorian Mathematicians, Institut Henri Poincaré, Paris - France, 26/04/2017
- *Resolving the chicken-and-egg problem in VO₂: a new paradigm for the Mott transition*, APS March Meeting 2017, New Orleans - USA, 13/03/2017
- *Sphinx-Gallery: Pimp your documentation with a gallery of examples*, At: EuroScipy, Erlangen - Germany 2016
- *Estimation of the exchange interaction dispersion between polar nano-regions in relaxors P2BIT & P3BIT*, At: XVI ELAVIO, Latin American School in Operations Research, Bento Gonçalves - RS - Brazil Feb. 2012

Posters

- **O. Nájera**, M. Civelli, V. Dobrosavljević, M. Rozenberg: *Resolving the chicken-and-egg problem in VO₂: a new paradigm for the Mott transition*, At: CIFAR Quantum Materials Meeting, Paris-France, 2016
- **O. Nájera**, M. Civelli, V. Dobrosavljević, M. Rozenberg: *A minimal model approach to the Mott transition in VO₂*, At: The New Generation in Strongly Correlated Electron Systems, Trieste-Italie, 2016
- **O. Nájera**, M. Civelli, V. Dobrosavljević, M. Rozenberg: *A minimal model approach to the Mott transition in VO₂*, At: School on Computational Quantum Materials, Orford(Québec)-Canada, 2016
- **O. Nájera**, M. Civelli, M. Rozenberg, *Spin-orbit effect in the Mott-Hubbard metal-insulator transition*, At: COR.S.O 2015, Cargèse-France, August 2015
- **O. Nájera**, M. Civelli, M. Rozenberg, *Spin-orbit effect in the Mott-Hubbard metal-insulator transition*, At: LEES 2014, Amboise-France June 2014
- **O. Nájera**, L. Lascano: *Estimation of the exchange interaction dispersion between PNR in relaxor ferroelectrics*, Awarded poster At: NanoAndes, Quito-Ecuador Nov. 2012

Computer Skills

Programming Languages Python, C/C++, Bash, Php, Matlab/Octave

Libraries & packages GSL, SciPy, NumPy

Content-description languages L^AT_EX, HTML, CSS

Operating Systems Linux(Gentoo & Arch & Ubuntu)

Graphic design Gimp, Inkscape, Blender

Languages

English Fluent

German Fluent

Spanish Native

French Intermediate

Academic Experience

Swiss Federal Institute of Technology(ETH), Zurich, Switzerland

Apr. 5 - May 15, 2013 Visitor at Institute for Building Materials (IfB) Training in Lattice Boltzmann Methods for fluid dynamics

International Center for Theoretical Physics, Trieste, Italy

Mar. 10 - 21, 2014 Teaching Assistant *Workshop on Advanced Techniques for Scientific Programming and Management of Open Source Software packages* SMR 2574

Mar. 11 - 22, 2013 Invited Student *Workshop on Computer Programming and Advanced Tools for Scientific Research Work* SMR 2503

Feb. 20 - Mar. 2, 2012 Invited Student *Advanced School on Scientific Software Development* SMR 2330

Escuela Politécnica Nacional, *Quito, Ecuador*

Aug. 2011 - June 2012 Laboratory and teacher's Assistant

- Responsible of Experimental Physics laboratory in subjects like Newtonian Mechanics, Electromagnetism and Optics. Shared responsibility for lectures, homework assignments and grades in this subjects.

Sept. 2010 - Feb. 2011 Teacher's Assistant

- Support students in single- & multi-variable Calculus, and Real Analysis through exercise sessions and solutions of exams.

Personal Referees

Dr. Marcelo Rozenberg Master & PhD Thesis Supervisor

e-mail marcelo.rozenberg@u-psud.fr

Institution LPS, Université Paris-Sud

Dr. Marcello Civelli Master & PhD Thesis Supervisor

e-mail marcello.civelli@u-psud.fr

Institution LPS, Université Paris-Sud

Dr. Vladimir Dobrosavljević Colaborator

e-mail vlad@magnet.fsu.edu

Institution National High Magnetic Field Laboratory, Florida State University

Outside Interests

- Ballroom Dancing
- Cycling
- Swimming