Curriculum Vitae

Benaoumeur Bakhti

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Employment

Jan 2017- Present : Research/Teaching assistant.

Department of physics,

University of Mascara, Mascara-Algeria.

Theme : Soft condensed matter.

Non-equilibrium stochastic systems.

Monte Carlo and Kinetic Monte Carlo simulations.

Oct 2013- Sep 2016 : Postdoc in Physics.

Statistical physics group (Prof. Philipp Maass),

University of Osnabrück, Osnabrück-Germany.

Theme : Classical density functional theory.

Fractional exclusion statistics.

Education

2009-2013:   PhD Student in Theoretical Physics.

Statistical physics group (Advisor: Prof. Philipp Maass),

University of Osnabrück, Osnabrück-Germany.

Thesis : Development of lattice density functionals and applications to

structure formation in condensed matter systems.

Jun-Sept 2009 :   German Course **(B1 Certificate)**
Goethe Institute, Göttingen-Germany

2006-2009:   PhD Student in Theoretical Physics,

                    Condensed matter physics laboratory,

                    University of Oran Es-Senia, Oran-Algeria.

Thesis : Magnetism in the Ising Model on a 2D curved surface.

                    (Stopped after getting the DAAD scholarship).

2003-2006:   Master in Micro-optoelectronics

                    Laboratory of Optoelectronic Materials Studies and Polymers,

                    University of Oran Es-Senia, Oran-Algeria.

Thesis : Spontaneous and induced Polarization Effects On GaN/InGaN

                    Quantum Hetero-Structure.

1997-2002:   High Study Diploma in Theoretical Physics.

                    University of Oran Es-Senia, Oran-Algeria.

1997 :   General Certificate of Education (Baccalauréat)
                    Mascara, Algeria.

Research Visit

July 2019:   Research visit to Department of Chemistry, University of Cambridge, UK
                   Group of Prof. Daan Frenkel.

May-July 2013 : Visiting scholar in the University of Rhode Island, RI-USA
                   Group of Prof. Gerhard Müller.

Teaching

WS/SS 2018/2019

- Modelisation and numerical simulation (Lab).
- Experiments lab of Electronics (Lab).
- Mathematical methods for physicists: Special functions (Course and exercises).
- Magnetism of materials and magnetic nanostructures (Course and exercises).

WS/SS 2017/2018

- Mathematical methods for physicists: Special functions (Course and exercises).
- Group theory and crystallography (Course and exercises).
- Magnetism of materials and magnetic nanostructures (Course and exercises).
- Experiments lab of Electronics (Lab).

SS 2017

- Mathematical methods for physicists: Special functions, Course and exercises (Department of Physics, University of Mascara, Mascara, Algeria).
- Experiments lab of Electricity (Department of Sciences and Technologies, University Mustapha Stambouli of Mascara, Mascara, Algeria).

WS 2015-2016

- Mathematical methods for physicists, Exercises (Department of Physics, University of Osnabrück, Osnabrück, Germany).

SS 2015-2016

- Mathematical methods for physicists, Exercises (Department of Physics, University of Osnabrück, Osnabrück, Germany)

2008-2009

- Exercises of mechanics (Department of Physics & Chemistry, ENSET, Oran)

2007-2008

- Experiments lab of vibrations and waves (Department of Physics; University of Essenia, Oran)

2006-2007

- Lecture of Optics (Department of Physics & Chemistry, ENSET, Oran)
- Exercises of Optics (Department of physics & chemistry of ENSET, Oran)
- Exercises of Vibrations and Waves (Department of Physics & Chemistry, ENSET, Oran)
- Exercises of Atomic Physics (Department of Civil Engineering, ENSET, Oran)

Supervising Master Students

Hamza Benkadda (Co-Supervisor): Design and realization of an electronic system embedded into drone to measure the quality of the air (Automatic Department, July 2019)

Badra Korimeche (Supervisor): Kinetic Monte Carlo simulation for protein synthesis (Physics Department, June 2018).

Publications

Méthodes mathématiques pour la physique: Fonctions spéciales (Monograph 141 pages).

M. Zareb, B. Bakhti, Y. Bouzid, and H. K. Benkada, *Air quality monitoring using UAV flight system: A review*, Conference Paper (accepted in IEEE, 2019).

B. Bakhti, *Interacting fluids in an arbitrary external fields* (accepted in Physica A, 2019).

A. Beloufa, B. Bakhti, D. Bouguenna, M. R. Chellali , *Computational investigation of CreZ[Z=Si, Sn and Ge] half-Heusler ferromagnets* Physica B, **563,** 50 (2019).

B. Bakhti, D. Boukari, M. Karbach, P. Maass, and G. Müller, *Self-gravitating lattice gas in one, two, and three dimensions* Phys. Rev. E **97** 042131 (2018).

R. Chellali, L. Zheng, R. Schlesiger, B. Bakhti, A. Hamou, J. Janovec, and G. Schmitz, *Grain boundary segregation in binary Nickel-Bismuth alloy,* Acta Materialia **103**, 754 (2016).

B. Bakhti, M. Karbach, P. Maass, and G. Müller, *Monodisperse hard rods in external potentials* Phys. Rev. E **92**, 042112 (2015).

B. Bakhti, M. Karbach, P. Maass, M. Mokim, and G. Müller, *Statistically interacting vacancy particle,* Phys. Rev. E **89**, 012137 (2014).

B. Bakhti, G. Müller, and P. Maass, *Interacting hard rod on a lattice, microstates distributions and density functionals,* J. Chem. Phys. **139**, 054113 (2013).

Bakhti, Development of lattice density functionals and applications to structure formation in condensed matter systems (2013, PhD thesis).

B. Bakhti, S. Schott and P. Maass, *Exact density functional for hard-rod mixtures derived from Markov chain approach*, Phys. Rev. E **85**, 002100 (2012).

Presentations
Mai 02 2018
A lattice model for gravitational collapse, Day for physics, University Mustapha Stambouli of Mascara, Mascara-Algeria.

August 23, 2017
Self-gravitating lattice gas in one, two and three dimensions, Technische Universität Berlin, Berlin (invited by Prof. Sabine Klapp).

February 19, 2016
Bethe ansatz for non-equilibrium stochastic systems with open boundaries, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen (invited by Prof. Ana Suncana Smith).

April 24, 2014
Exact DFT for interacting hard rods on a lattice, Max Planck Institute for Intelligent Systems, Stuttgart (invited by Dr. Matthias Krüger).

Jun 19, 2013
Markov chain density functional theory, University of Rhode Island, RI, USA (invited by Prof. Gerhard Müller).

Organizing Committee

December 13-14/2005
Workshop on Nanosciences and Nanotechnologies " Nanotech 1", Oran, Algeria

Conferences

February 05-11/2007
School On Dynamical Mathematics. *E.N.S.E.T, Oran*. Algeria

December 2-4/2007
International Conference of Physics and its Applications (CIPA 2007).
Communication titled: *Universality and Criticality in the two dimensional lattice models,*
Oran, Algeria

November 21-23/2006
Fall School On Nanosciences & Nanotechnologies 2006 (Nanoschool 1). University of Oran.

December 13-14/2005
Workshop on Nanosciences and Nanotechnologies " Nanotech 1". *University of Oran*.
Communication titled*: Polarization and Electric Field Effects in Wide Band Gap*
semiconductor Nanostructure

April 08-10/2004
IXémes Journées Maghrébines des sciences des matériaux JMSM' 2004. *University of Oran*.

Awards

2009: Doctoral fellow of the German Academic Exchange Service (**DAAD**).

Interests Field

- Computation in condensed matter and statistical physics.
- Density functional theory.
- Soft condensed matter.
- Stochastic dynamical systems.
- Equilibrium and non-equilibrium phase transitions.
- Heterogeneous Parallel Programming

Languages

Arabic   Native
French   Good
English   Good
German   Good

Computer Skills

Regular user of Linux, Windows 7, 8, XP, Word, OpenOffice, Excel, Latex, Inkscape.
Programming with C, C++ , Python and Matlab.
Experience with using the SGI UV 2000 cluster.
Good knowledge of CUDA C programming.
Basic of Java programming and Mathematica.
Expert in building and programming drones, programming the Arduino and the Raspberry Pi.