ŽIGA OSOLIN

PERSONAL INFORMATION

Born in Slovenia, 13 June 1988

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WORK EXPERIENCE

2012–Present Young Researcher at Department of Theoretical Physics, Jožef Stefan Institute, Ljubljana

Working on problems of strongly correlated materials with numerical tools such as Numerical Renormalization Group, Dynamical Mean Field Theory, Padé approximants and Maximum entropy under supervisor dr. Rok Žitko.

Summer 2007 C++ Programmer at Adacta (Student work)

Worked on a new version of interactive map for Slovenia for TIS application.

EDUCATION

2012 Graduated with diploma thesis

Properties of Bose-Hubbard model on an inhomogeneous chain, advisers dr. Rok Žitko and prof. dr. Janez Bonča.

2007–2012 Undergraduate studies of mathematical physics at Faculty of Mathematics and Physics, University of Ljubljana.

2003–2007 Gimnazija Bežigrad

PUBLICATIONS

January 2013 Pade approximant method for finite–temperature spectral functions in the numerical renormalization group

Žiga Osolin, dr. Rok Žitko, sent for review to Physical Review B.

SUMMER SCHOOLS AND COURSES

July 2012 Introductory Course on Ultracold Quantum Gasses

Short course about research field of cold atoms and ultracold quantum gases, with tours through laboratories in Innsbruck.

COMPUTER SKILLS

Programming C#, C++, C, Python, LaTeX, Mathematica, Cg, GLSL, java, HTML/XML, MatLab, Perl, SQL

Libraries OpenGL, .NET, DirectX, numpy, scipy, matplotlib, STL, Boost, Unity, ALPS, GSL, OpenMP, MPI, POSIX, OGRE, NRG Ljubljana, llvm, PhysX

Tools Subversion, CVS, Autodesk 3DSMax, Adobe Photoshop, Adobe Illustrator, Visual Studio, Eclipse, Word, Excel, gcc, make, gnuplot

Additional Skills 3D computer graphics, multi-platform development (Linux, Mac, Windows, Android), multi-threading, experience with designs of massive project

RESEARCH INTERESTS AND ACTIVITIES

- Numerical renormalization group (NRG) and Quantum Monte Carlo (QMC) calculations of quantum impurity problems, especially in the context of Dynamical Mean Field Theory (DMFT) calculations of properties for strongly-correlated systems
- New ways of obtaining spectral density functions for NRG that do not suffer from traditional broadening artefacts at high temperatures – Padé approximant and maximum entropy methods
- Strongly correlated systems and quantum phase transitions, antiferromagnetism, properties of Hubbard, periodic Anderson and Kondo lattice models, long-range order
- Multi-orbital and cluster DMFT extensions for more accurate material description, dual-fermion approaches
- Quantum Monte Carlo simulations for bosons on lattice, relevant for ultracold atom experiments

OTHER INFORMATION

Awards

2012 · "Fakultetna Prešernova nagrada" awarded by the Faculty of mathematics and physics for the diploma thesis

2007 · attended International Olympiad in Informatics

2006 · Golden Award for research assignment "Compiler for usage in BaadEngine"

Languages

Slovene · Mothertongue

English · Intermediate (conversationally fluent)

Hobbies Programming (games) · Volleyball · Basketball · Chess · Windsurfing

June 10, 2013