Lu Niu

PhD Candidate in Physics

Condensed Matter Theory Group
School of Physics
The University of Sydney
Sydney, NSW 2006, Australia

Email: Luke.Niu@sydney.edu.au
Web: physics.usyd.edu.au/cmt/home.php?x=luke
GitHub: github.com/Photonico
Phone: +86 13811152301, +61 0451116402

Personal Information

Gender: Male
Day of Birth: May 12, 1993
Place of Birth: Huairou District, Beijing, P.R.China
Nationality: The People's Republic of China
Office: Room 443, School of Physics A28

Research Interests

Quantum Computation:
Quantum circuit.

Ab Initio:
The surface effect of metal nano-particles.

Education

The University of Sydney *Jul. 2019 – Present*
PhD of Science in Physics
Subject: Plasmonics
Thesis: Quantum Computation Logic Circuits Realization Based on Plasmon Effects.
GPA: Expected
Supervisor: Catherine Stampfl

University of Science and Technology Beijing *Sep. 2015 – Jun. 2017*
MPhil of Science in Physics
Subject: Atom and Molecular Physics
Thesis: Effect of External Field on the IV Characteristics through the Molecular Nano-junction.
GPA: 3.6
Supervisor: Luxia Wang

Expertise and Technical Strengths

Programming: C/C++, Fortran, Python, Julia (Main), Gnuplot, LaTeX
Software: Linux, Git, TensorFlow, VASP, Octopus
Expertise: Quantum Optics, Quantum Plasmonics, Computational Physics, Mathematical Analysis, Algorithms
Language: Mandarin Chinese (Native), English

Work Experience

University of Science and Technology Beijing
Teaching Assistant on Analytical Mechanics *Spring, 2017 and Spring, 2016*
Teaching Assistant on College Physics *Autumn, 2016 and Autumn, 2015*

Research Experience

Effect of External Field on the IV Characteristics through the Molecular Nano-junction

Sep. 2016 – Jun. 2017 @ USTB, Beijing, P.R.China

This research involves molecule physics. we analyzed the steady current between two electrodes under distinct bias voltages, and studied transient current under Gaussian pulse with different widths; we established the physical model of Molecular junction with external fields which could produce coupling with the molecule.

Plasmon-Enhanced Heterogeneous Electron Transfer with Continuous Band Energy Model

Apr. 2016 – Mar. 2017 @ USTB, Beijing, P.R.China

We calculated the Plasmon-Enhanced heterogeneous electron transfer in semiconductor continuous model with the master equation. And simulated the physical model and conducted the scientific calculation.

Molecular Emission Spectrum of Combined System and its Fourier Analysis

Dec. 2015 – Apr. 2016 @ USTB, Beijing, P.R.China

We probed into the emission spectrum of molecular with Fourier analysis. And built the equations set which describes the physical process of the molecule system excitation in the quantization radiation field.

Publications

2018

Lu Niu, Luxia Wang*; *Effect of External Field on the I-V Characteristics through the Molecular Nano-junction* (in Chinese); Acta Physica Sinica, 67, 027304 (2018).

2017

Dandan Zhao, Lu Niu, Luxia Wang*;*Plasmon Enhanced Heterogeneous Electron Transfer with Continuous Band Energy Model*; Chemical Physics, 493 (2017) 194-199.

References and Activites

2016

Nov. 14 – Nov.18, Beijing, The 2nd Joint Workshop on Condensed Matter Science, Peking University & IMPRS. @ PKU, Beijing, P.R.China.

Awards and Honors

Updated February 2020