

# Lu Niu

*PhD Candidate in Physics*

Condensed Matter Theory Group  
 School of Physics  
 The University of Sydney  
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## 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, L<sup>A</sup>T<sub>E</sub>X  
**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  
 Teaching Assistant on College Physics

*Spring, 2017 and Spring, 2016*  
*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