

HAORAN NI

Research Interests: Computational Materials Modeling | Scientific Machine Learning

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🌐 github.com/haoran-ni

🏠 haoran-ni.github.io

EDUCATION

Carnegie Mellon University

Ph.D. in Materials Science and Engineering
Supervisor: Prof. Noa Marom

Aug. 2023 – present

Pittsburgh, USA

École Polytechnique Fédérale de Lausanne (EPFL)

Master of Science in Physics
GPA: 5.42/6.00 | ranking not available

Sep. 2020 – Jul. 2022

Lausanne, Switzerland

Lanzhou University

Bachelor of Science in Physics, Cuiying Honors College
GPA: 4.11/5.00 | 91.05/100.00 | Ranked 4/227 in Physics | Top 2%

Sep. 2016 – Jun. 2020

Lanzhou, China

University of California, Los Angeles (UCLA)

UCLA Extension Program
GPA: 4.0/4.0

Mar. 2019 – Jun. 2019

Los Angeles, USA

PUBLICATIONS

- [1] Huguenin-Dumittan K K, Loche P, **Haoran N**, et al. Physics-Inspired Equivariant Descriptors of Nonbonded Interactions[J]. *The Journal of Physical Chemistry Letters*, 2023, 14(43): 9612-9618.

THESES

Machine learning of the dispersion interaction in phosphorus

Instructor: Prof. Michele Ceriotti

Mar. 2022 – Jul. 2022

Lausanne, Switzerland

- Implemented necessary utility python functions for *pyLODE* and *equistore*
- Successfully captured the dispersion behavior of the exfoliation of phosphorene using a machine learning model
- Compared the capabilities of an analytical model and a machine learning model on learning the dispersion interaction in phosphorus
- Master thesis available at github.com/haoran-ni/MasterThesis.

Observation of the spin-orbit magnetoresistance in heterostructures

Instructor: Prof. Xiaolong Fan

Jun. 2018 – May 2020

Lanzhou, China

- Systematically measured the spin Hall magnetoresistance of CoFeB/Pt/MgO, CoFeB/Ta/MgO, CoFeB/Pt and CoFeB/Ta samples
- Confirmed the appearance of the spin-orbit magnetoresistance in CoFeB/Pt/MgO and CoFeB/Ta/MgO by comparing samples with/without the oxide layer
- Proposed appropriate boundary conditions to solve the spin diffusion equation and theoretically explained the appearance of the double-peak phenomenon in magnetoresistance measurements
- Bachelor thesis available at arxiv.org/abs/1909.12811. I am the lead author.

AWARDS

National Scholarship

Nov. 2017

Chinese Mathematical Olympiad | First Prize in Jiangsu Province

Sep. 2015

Chinese Chemistry Olympiad | First Prize in Jiangsu Province

Oct. 2015

Hong Kong PhD Fellowship Scheme (HKPFS) at HKUST | declined

Apr. 2020

The Scientific Research and Innovation Scholarship | First Prize

Dec. 2018

Honorary Title – Outstanding Student of Lanzhou University

Dec. 2018

Excellent Graduation Thesis at Lanzhou University

Jun. 2020

National English Speech Competition for College Students | Bronze Medal

Aug. 2017

National English Competition for College Students | Special Prize

May 2018

Excellent Student Scholarship at Lanzhou University | Third Prize

Dec. 2018

SKILLS

Programming: Python, Shell, L^AT_EX

Scientific Software: FHI-aims, OriginLab, OVITO, Igor, NextNano3, VASP, VESTA

STANDARDIZED TESTS

| | | | |
|--------------------------------|----------------------------|-------------------|-----------------------|
| TOEFL iBT (110) | | | 17th Oct. 2022 |
| • Reading: 30/30 | • Listening: 26/30 | • Speaking: 25/30 | • Writing: 29/30 |
| GRE General (331 + 4.0) | | | 8th Oct. 2022 |
| • Verbal R.: 161/170 | • Quantitative R.: 170/170 | • A.W.: 4.0/6.0 | |

LEADERSHIP / EXTRACURRICULAR

| | |
|---|------------------------------|
| EPFL Chinese Students & Scholars Association | Oct. 2020 – Sep. 2022 |
| <i>Vice President</i> | <i>EPFL</i> |
| Amateur Musician | Oct. 2020 – present |
| <i>Artist Name: Nii</i> | <i>Netease Music</i> |
| Cuiying Honors College Leadership | Sep. 2017 – Jul. 2018 |
| <i>Head of Physics Cuiying Class</i> | <i>Lanzhou University</i> |
| Cuiying Memory Project | Jan. 2018 – Jan. 2019 |
| <i>Volunteer</i> | <i>Lanzhou University</i> |