

# Ziqi Guo

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## EDUCATION

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### Purdue University

West Lafayette, IN, USA

*Ph.D. in Mechanical Engineering; GPA: 4.00/4.00*

*Sep. 2021 – Jun. 2026 (Expected)*

*Awards: Ross Fellowship*

*Courses: Machine Learning | Convex Optimization | Numerical Analysis | Quantum Transport | Solid state physics*

### Huazhong University of Science & Technology (HUST)

Wuhan, China

*B.E. in Energy & Power Engineering (Honours Degrees); GPA: 3.99/4.00, Rank: 1/221*

*Sep. 2017 – Jun. 2021*

*Awards: Top 0.1% of university | National Scholarship | 5 national awards | Commencement Address Speaker*

*Courses: Object-oriented Programming | Finite Element Method | Numerical Methods | Heat Transfer | Fluid Mechanics*

## PUBLICATIONS

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(<sup>1</sup> indicates equal contribution.)

1. Ziqi Guo, Zherui Han, Dudong Feng, Guang Lin<sup>\*</sup>, and Xiulin Ruan<sup>\*</sup>. Accelerated First-principles Prediction of Thermal Conductivity and Radiative Properties through Maximum Likelihood Estimation of Phonon Scattering Rates. *In Review*.
2. Ziqi Guo, Prabudhya Roy Chowdhury, Zherui Han, Yixuan Sun, Dudong Feng, Guang Lin<sup>\*</sup>, and Xiulin Ruan<sup>\*</sup>. Fast and Accurate Machine Learning Prediction of Phonon Scattering Rates and Lattice Thermal Conductivity. *npj Computational Materials*, Jun. 2023.
3. Andrea Felicelli, Ioanna Katsamba, Fernando Barrios, Yun Zhang, Ziqi Guo, Joseph Peoples, George Chiu<sup>\*</sup>, and Xiulin Ruan<sup>\*</sup>, Thin layer lightweight and ultrawhite hexagonal boron nitride nanoporous paints for daytime radiative cooling, *Cell Reports Physical Science*, Oct. 2022.
4. Song He, Zhengyuan Ma, Weizhong Deng, Zikang Zhang, Ziqi Guo, Wei Liu, Zhichun Liu<sup>\*</sup>. Novel flat plate loop heat pipe with dual evaporators for energy-efficient systems of cooling multiple heat sources. *Energy Reports*, Nov. 2022.
5. Sijie Li<sup>1</sup>, Ziqi Guo<sup>1</sup>, Jacob B Ioffe, Yunfei Hu, Yi Zhen<sup>\*</sup>, Xin Zhou<sup>\*</sup>. Autism\_genepheno: Text mining of gene-phenotype associations reveals new phenotypic profiles of autism-associated genes. *Scientific Reports*, Jul. 2021.
6. Sorting System Based on RFID Positioning Technology. 2019SR1151524. *Software Copyright filed Nov. 2019*.
7. Grab-type flexible sorting method based on RFID spatial positioning technology. CN 201910875139.3. *Patent filed Sep. 2019*.

## RESEARCH EXPERIENCE

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### Nanoscale Energy Transport and Conversion Laboratory

Purdue

*Research Assistant, supervised by Prof. Xiulin Ruan*

*Sep. 2021 – Present*

- Currently using multiscale, multiphysics simulation and machine learning approaches to investigate the thermal and optical properties of materials.
- Built the first machine learning model that can predict phonon scattering rates and thermal conductivity at the experimental and first principles accuracy level, with up to two orders of magnitude acceleration.

### Maizie Zhou Lab

Vanderbilt University

*Research Intern, supervised by Prof. Xin Zhou*

*Apr. 2020 – May. 2021*

- Proposed an innovative text mining pipeline to identify sentence-level mentions of autism-associated genes and phenotypes in literature through natural language processing methods.

### Thermal Science and Engineering Lab

HUST

*Research Assistant, supervised by Prof. Zhichun Liu*

*Jan. 2018 – May. 2021*

- Designed a high-performance liquid-based electrocaloric cooling system that reaches a 2.1K temperature scan. Simulated its performance with COMSOL.
- Proposed a dual flat plate loop heat pipe that can cool multiple heat sources for a wide range of heat loads.
- Reduce the thermal resistance of heat pipes by 10% through super-hydrophilic and super-hydrophobic coating of the capillary core.

## SKILLS

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**Programming:** Python, MATLAB, Fortran, C++

**Software:** COMSOL, ANSYS, AutoCAD, SolidWorks

**Technologies:** Git, Linux, Arduino, Raspberry pi, PLC