SHAN ZHONG

201 E 24th St, Austin, Texas 78712

Tel: 737-4206247, Slightly Outdated Personal Page, Email: shanzhong@utexas.edu

EDUCATION

The University at Texas at Austin 08/2022-

CSEM Program, Oden Institute

Peking University **Bachelor of Science** 09/2017-07/2021

GPA: 87.4/100 (Major: 88.1), Major in Physics, Minor courses taken in Machine Intelligence

PUBLICATIONS & SUBMISSIONS

1. (*co-author submission*) Orbital-Selective High-Temperature Cooper Pairing Developed in the Two-Dimensional Limit
2. (*co-author*) Equally Spaced Quantum States in van der Waals Epitaxy-Grown Nano-Islands. *Nano Letters* **2021** 21(21), 9285-9292
3. (*co-author*) Hetero-site Nucleation for Growing Twisted Bilayer Graphene with a Wide Range of Twist Angles. *Nat.Comms.***12**, 2391(2021)
4. (*co-author patent*) Multilayer Graphene and Its Synthesis Method. (link)

SELECTED RESEARCH

Machine Learning Potentials for Molecular Systems 04/2022 - 09/2022

Group: Machine Learning Group *Microsoft Research Asia*

- Built neural networks to learn from molecule electron density (3D vision model) and predict long range interactions (graph neural network).

Graph Embedding in Hyperbolic Space 07/2021 - 04/2022

Advisor: Carlo V.Cannistraci *Tsinghua Laboratory of Brain and Intelligence*

- Hyperbolic geometry, instead of the Euclidean counterpart, may provide a better representation space for hierarchical structures in graphs/networks.
- Developed multiple hyperbolic graph/network embedding algorithms by extending the pre-weighting+ inference+adjustment scheme. Evaluated the performance against some graph neural network methods.
- Also exposed to projects of network geometry estimation, sparse neural network training & architecture design inspired by brain network and network science.

Finite-size Supercell Correction for Charged Defects under PBC 09/2019 - 01/2020

Advisor: Ji Chen *School of Physics, Peking University*

- Calculations of charged defects properties in periodic supercells need to remove the spurious Coulomb interactions between periodic images.
- Taught myself *VASP* and applied Matlab scripts to calculate Defect Formation Energy & make finite-size supercell corrections for spurious Coulomb interactions, for charged defects under periodic boundary conditions (PBC).
- Developed familarity with with Linux, clusters, supercomputers, first-principle calculations, and molecular dynamics.

Orbital Selective High-Temperature Cooper Pairing at the 2D Limit 03/2019 - 12/2019

Advisor: Jian Wang *International Center for Quantum Materials, Peking University*

- We used Scanning Tunneling Microscopy (STM) measurements to discern the Cooper pairing characteristics in the $FeSe/SrTiO_3$ system.
- Helped sample preparaion and STM measurements. In charge of developing Matlab scripts for analyzing & post-processing STM image datasets, drift correction, and various model fittings.

OTHER EXPERIENCES

Citadel & Citadel Securities Asia-Pacific Datathon 03/2021

- Implemented python scripts to develop football betting strategies based on model prediction and mispriced odds. Composed half of the final report. Group collabration via Slack, Google Cloud, etc.

Visiting Scholar at the Weizmann Institute of Science 01/2020-03/2020

Advisor: Binghai Yan *Department of Physics, Weizmann Institute of Science, Israel*

- Independently learned (two weeks, two English books, ¿600 pages) and implemented a scheme of simplifying linear response tensors based on symmetry considerations, using Mathematica.
- Participated IPS (Israel Physics Society) 2020 conference and other seminars & lab tours.

Vice Minister of Academic Practice Department of the Student's Union 09/2018-06/2019

- In charge of organizing seminars and talks for students, networking with professors, and making invitations and appointments.
- Editor of *PKU Physical Review*, Issue 2.
- Served as the peer advisor to four freshmen (two from underrepresented background) to help them adapt to college life.

HONORS AND AWARDS

Outstanding Undergraduate Research	06/2021
Excellent Study Award	2019-2020
PKU Scholarship in Physics (twice)	09/2019 & 03/2020
First prize (Beijing), National Mathematics Modeling Contest	10/2019
Excellent Research Award	2018-2019
Ruitian Tomorrow's Star Scholarship	2018-2019
May 4th Scholarship	2017-2018
Merit Student in PKU	2017-2018

SKILLS

Technical Skills: Python, Pytorch, C/C++, Matlab, Linux, MySQL, Mathematica, LaTeX