

ZONGQI SHEN

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Education Background

Department of Physics, Massachusetts Institute of Technology

Sep.2022-present

PhD Student in Physics

Department of Physics, Fudan University

Sep.2018-Jun.2022

Bachelor of Science in Physics

Research Interests

Emergent phenomena in strongly correlated electron systems

- Ultrafast optics
- Complex oxides

Publications

[1] Jiahui Qian, **Zongqi Shen**, Xinyuan Wei, Wei Li, “Z₂ nontrivial topology of rare-earth binary oxide superconductor LaO”

[PhysRevB.105.L020508](#)

[2] Jinwoong Hwang, Yeongrok Jin, Canxun Zhang, Tiancong Zhu, Kyoo Kim, Yong Zhong, Ji-Eun Lee, **Zongqi Shen**,

Yi Chen, Wei Ruan, Hyejin Ryu, Choongyu Hwang, Jaekwang Lee, Michael F. Crommie, Sung-Kwan Mo, Zhi-Xun Shen,

“A novel $\sqrt{19} \times \sqrt{19}$ superstructure in epitaxially grown 1T-TaTe₂” [Adv. Mater. 2022, 34, 2204579](#)

Research Experience

Scanning tunneling microscopy (STM) study of moiré graphene and TMDC materials

Aug.2021-Jan.2022

Supervisor: Prof. [Michael F. Crommie](#), UC Berkeley

- Characterized twisted bilayer graphene and transition metal dichalcogenides (TMDC) devices.
- Imaged the Mott insulating behavior of monolayer 1T-TaSe₂ with ‘flower pattern’ orbital texture.

Study of unconventional superconductivity in oxide heterostructures

May.2019-Aug.2021

Supervisor: Prof. [Wei Li](#), Fudan University

- Grew and optimized single crystal oxide thin films Ti₂O₃/GaN layer-by-layer with pulsed-laser deposition.
- Studied the nontrivial topology of rare-earth oxide superconductor LaO with first-principle calculation.

CVD growth of 2D materials and device fabrication

Nov.2018-May.2019

Supervisor: Prof. [Faxian Xiu](#), Fudan University

- Synthesized high quality Bi₂SeO₂ sample using chemical vapor deposition (CVD) method.
- Peeled off single-layered graphene for heterostructure fabrication.

Honors & Awards

• Excellent Student Award from Fudan University

Sep.2021

• Selected for National Top Talent Undergraduate Training Program

May.2021

• National Scholarship

Dec.2020

Skills

Laboratory:

- Material Growth: PLD and CVD growth of thin films
- Characterization skills: STM/STS, AFM, Cryogenic Transport Measurements, MPMS, X-Ray Diffraction

Theory:

- Programming: Python, C, Mathematica
- Simulation: *ab-initio*(VASP), transport properties(Kwant), STS spectrum