Gengpu Li

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OBJECTIVE AND INTRODUCTION

To apply for a M.Sc./Ph.D. program in Physics researching the gravitation and cosmology. I expect to graduate from Shanghai Jiao Tong University in 2021. My research interests are theoretical condensed matter physics in undergraduate study

EDUCATIONAL BACKGROUND

2017.09-2021.06 B.Sc.(pursuing) Shanghai Jiao Tong University (SJTU), Shanghai.

- Zhiyuan Honors Program, Physics.
- GPA: 3.73/4.30

EXPERIENCE

Physical:

2018.09-2019.03 *The Berry curvature and Chern number in graphene.* Director: Prof. Weidong Luo

Describe: The Berry phase is a geometrical phase that occurs in adiabatic evolution. The related Berry curvature and Chern number are critical in topological physics. In Luo's group, I practiced research by reproducing former results and doing beyond existed works. I studied graphene's band structure and Chern number. This experience provided me a solid basis to deal with more complex condensed matter systems.

2019.06-2019.08 *Growth and characterization of single crystals of superconducting NbSe2.* Director: Prof. Ying Liu, Dr. Hui Xing

Describe: We grew NbSe2 superconductor by chemical vapor transport (CVT). We used X-ray diffraction to determine our samples' crystal structure and made a device that verified the superconducting temperature.

2019.10-2021.02(expected) *Carbon nanotubes (CNT)-hexagonal boron nitride(hBN) moire superlattice system* Director: Weidong Luo

Describe: Moire superlattices is a system in which lattices lie on top of each other with a relative mismatch and interfere with creating a Moire pattern. Our research bases on works of the graphene-hBN superlattice system and curvature of nanotubes and aims to calculate the band structure by tight-binding and perturbation method. We cooperated with Prof. Zhiwen Shi's experimental group, who are also interested in that system, and some preliminary results have been achieved. I expect to finish this project soon and publish the result in my bachelor thesis.

2020.04 Workshop Talk:

Basic Quantum Field Theory.

In this 5-weeks small workshop. I introduced the conceptions of QFT to classmates. The whiteboard was published on my homepage.

Other:

2020.02 Mathematical Contest in Modeling: *A Multi-source product evaluation model: BERT-guided Deep learning and Statistical analysis* We used pre-trained BERT model developed by Google to score customers' reviews of products.The model was trained with IMDP movie review dataset.

TEACHING

- **2020.02-2020.06 Teaching Assistant**: Introduction to Computational Physics, Lecturer: Weidong Luo
  This course focus on numerical methods and their applications. I served 30 students and graded their homework and class project. I also taught students who were not familiar with MATLAB programming.
- **2020.09-2021.01 Teaching Assistant**: Mathematical Methods in Physics(II), Lecturer: Weidong Luo
  This course is about complex function, probability, and statistic. I served 29 students in the course.

ACHIEVEMENTS & AWARDS

- **2017.12** Zhiyuan Honors Scholarship, Shanghai Jiao Tong University.
- **2018.09** Second Award in China Undergraduate Physics Tournament (CUPT).
- **2018.11** Second Award(Shanghai) in Contemporary Undergraduate Mathematical Contest in Modeling.
- **2018.12** Zhiyuan Honors Scholarship, Shanghai Jiao Tong University.