YingKai Liu

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Education

TOEFL iBT: 99 (taken on Nov. 4th, 2018)

2015 - present: Boling school of Physics, Nankai University, Tianjin, China

(Currently a junior undergraduate)

GPA: 3.45 (Top 20%)

Research Interest

I am interested in the topological properties of materials and the phenomenon of integer discreetness arising from continuous symmetry. In a different perspective, I am interested in how particles subject to relatively simple laws can exhibit to collective novel properties as a whole. I am also interested degeneracy in band structures corresponding to quasi-particles.

Research Experience

Research Experience	
2017. Dec present	 Chern Institute of Mathematics (CIM), Nankai University Undergraduate research fellow (Prof. Molin Ge) □ Learning Berry phase of spin-1 particle in anomalous Zeeman effect.
2018. July - Sept.	 Yeshiva University (New York) Visiting undergraduate (Prof. Emil Prodan) □ Studied theory and calculation techniques of 2D Topological model. Calculated the Chern number of bulk model and winding number of edge model under fluctuation. □ Studied the Non-Abelian braiding of Majorana excitations.
2017. July - 2017. Oct.	 University of Nevada, Las Vegas Visiting undergraduate (A. Prof. Qiang Zhu) Built a database prototype for processing, storing and querying VASP calculation results using Python. Built an Evolutionary Algorithm package using Python.
2016. Apr2017. Oct.	 Nankai University Undergraduate research fellow (Prof. Xiangfeng Zhou) □ Learning calculation methods of Berry phase in 2D materials □ Using tight-binding model to investigate the band structure of multiple 2D materials.

Awards and Scholarships

MCM Successful Modeling prize (2016);

MCM Honorable Mentioning prize (2017);

Second scholarship of Nankai University (2016);

Boling scholarship of Nankai University (2015, 2016, 2017);

Courses Taken

Theoretical Mechanics
Quantum Mechanics
Electrodynamics
Thermodynamics
Optics
Introduction to Group theory
Computational Physics
Solid Physics (till June, 2019)
Quantum Field Theory

Advanced Quantum Mechanics (till Jan., 2019)

Extracurricular Activities

Director of Academic Department, Student Union of School of Physics
Responsible for holding college-wide and school-wide English and Physics activities and
organize lectures of Physics.
Participated in Physicists' Tournament of Nankai University and won the 4th place as group
leader.