Fengyu Liu

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Education

Nankai University, Tianjin, P. R. China

B.S., Physics (Po-ling Class), Concentration in Optics; Under the National Training Plan for Top-notch Students of Basic Disciplines, Ministry of Education, P. R. China; Expected: July 2019

Cumulative GPA: 3.81/4.00 (90.56/100) by WES iGPA Calculator

Research Experience

Undergraduate Researcher, the Key Laboratory of Weak Light Nonlinear Photonics, School of Physics & Teda Applied Physics Institute, Nankai University (May 2016 – July 2018)

Superviser: Prof. Zhigang Chen & Assoc. Prof. Daohong Song

1) The Design and Application of Topological Optical Waveguide

Designed a photonic waveguide that has topologically protected one-way modes.

2) Physical phenomena in Photonic Floquet Topological Insulator

Simulated the propagation of light in photonic floquet topological insulator using Beam Propagation Method (BPM), calculated the edge states and Chern Numbers with MATLAB.

Undergraduate Research Intern, School of Applied & Engineering Physics, Cornell Unicersity (June 2017 – Sept. 2017 & July 2018 – March 2019)

Superviser: Prof. Gennady Shvets

1) Berry curvature and Chern numbers in photonic topological insulator (PTI)

Explored different structures in photonic crystals that have similar symmetry with a quantum valley Hall (QVH) PTI using COMSOL and MATLAB. Developed numerical simulations for calculating Berry curvature and Chern numbers in topological crystals.

2) Cavity modes near a PTI-PEC interface

Simulated cavity modes near PTI and perfect electric conductor (PEC) interface. Implemented a discrete approach to calculate the coupling coefficient by processing its ectromagnetic field data.

3) Fermi Arc in Metagate-Tuned Graphene

Developed numerical simulations for calculating properties of Metagate-Tuned Graphene with MATLAB and COMSOL. Explored Fermi Arcs by changing symmetry of the arrey and introducing spatially varying loss to the system.

Skills

Computer Skills

Languages: Python, C/C++, LaTeX

Software: MATLAB, COMSOL Multiphysics, Mathematica, CST

Language

English (Fluent), Mandarin (Mothertongue)

Courses

Quantum mechanics, Electrodynamics, Solid State Physics, Photoelectric technology, Software Foundation and Computational Physics, Linear Algebra, Theoretical Mechanics, Mathematical Methods of Physics, Atomic Physics, Introduction to the Theory of Groups, Thermodynamics and Statistical Physics, Principle and Application of Microcomputer, Methods of Material Analysis and Testing, Electromagnetic Metamaterials (audit at Cornell), etc.

Scholarships and Honors

Gong Neng Scholarship, Nankai University, Sep. 2018

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TIPCCAS Outstanding Undergraduate Scholarship, Chinese Academy of Sciences, May 2017

Gong Neng Scholarship, Nankai University, Sep. 2016

Po-ling Scholarship for Freshmen, Nankai University, Oct. 2015

Acadamic Activities

Participant, the Physics Camp of Southwest Associated University (Jan. 2017)

A physics forum organized by Peking University, Tsinghua University and Nankai University for exchanging the experience of top students.

Participant, Academic Exchange with National University of Singapore and Nanyang Technological University (Feb. 2016)

Visited the laboratory and attended some lectures in NUS and NTU.

Organizer, Physics Today Lecture (Sept. 2015 – June 2016)

Participated in organizing, physicists inviting and lecture recording.

Captain, The 8th Young Physicists' Tournament of Nankai University (Sept. 2015 – Apr. 2016)

Won the Second Prize.