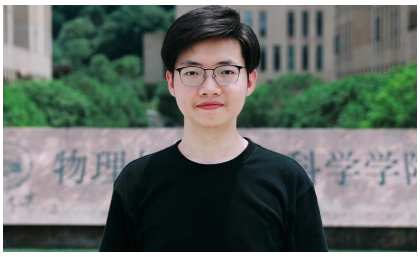
JUNCHEN YE, B.Sc. (Physics)

Seeking a Ph.D. Position from Autumn 2021

Contact way: @ jcye@hnu.edu.cn 0086+13308481024 Changsha, China
Background: Topological Condensed Matter Theory Computational Physics
Interest: Topological Physics Quantum computing



EDUCATION

Hunan University (985/211) — Changsha, China
Overall GPA: 3.67/4.0 (88.96) Core GPA: 3.86/4.0 (92.07)
Rank: 1/29 (1/161, Before dividing majors)

Undergraduate, Major in Finance — Sep 2015 – Jun 2017
Switch to Major Class (EE & Applied Physics)
Undergraduate, Major in Applied Physics — Sep 2017 – Jun 2020

RESEARCH EXPERIENCES

Dynamical Classification of Topological quantum Phases

Dr. Fuxiang Li **Graduation Project** **Dec 2019 – Jun 2020**

Dynamical classification of topological quantum phases by quench dynamics provides a novel and efficient scheme in characterizing topological invariants in equilibrium. Different from usual sudden quench, we study the non-adiabatic dynamical classification scheme by a generic non-adiabatic protocol of slowly quenching the system Hamiltonian, which is realized by introducing a Coulomb-like Landau Zener problem. the new scheme can provides a more efficient dynamical characterization approach for ultracold-atom experiments. **(cf. Publications 1.)**

Theoretical | Landau-Zener transition | **Topology** | Python

Using DFT to study topological surface states

Dr. Yexin Feng **Oct 2019 – Dec 2019**

Taking the 3D strong topological insulator Bi_2Se_3 as an example, I learn the whole process from VASP (based on DFT) to constructing Wannier function, and finally using WannierTools to study topological properties, e.g., energy spectrum or spin texture of the surface states. computational results are consistent with experiments by ARPES.

Computational | **Topology** | VASP | WannierTools | ARPES

Quantum Mechanical Treatment of Single-slit Interference

Dr. Quanhui Liu **Dec 2018 – Feb 2019**

Marcella published a “quantum-mechanical" treatment of the single-slit interference experiment by assuming wave function is a plateau within a slit. we point out that he made a mistake (infinitely large energy). by correcting wave function with the ground state of the infinitely deep well, we get a new results which are in qualitatively agreement with the real experiment of material particles C_{60}. **(cf. Publications 2.)**

Theoretical | Quantum Mechanics | Single-slit Interference

Study on Suppression of Parametric Instabilities by Complex Velocity Modulation

Dr. Chenzhuo Xiao **Oct 2017 – Jun 2019**

We numerically simulate the Stimulated Raman Scattering growing process under Flatten Maxwellian distribution and Double Maxwellian distribution by Vlasov program. In the linear phase, We found a linear increasing law between the average reflect radio and the temperature of hot electrons, furthermore, for which we provide an explanation with the Landau damping. **(cf. Achievements 4.)**

Numerical Simulation | Plasma Physics | ICF | Vlasov | Fortran

ACHIEVEMENTS

2018-2019 China National Scholarship
Ministry of Education, P.R.C, 2019

2017-2018 China National Scholarship
Ministry of Education, P.R.C, 2018

2019 MCM/ICM Contest Honorable Mention (Top 22.75%)
Consortium for Mathematics and Its Applications (COMAP), 2019

2018 National Student Innovation and Entrepreneurship Training Program (Completed as First member, Apr 2020)
Department of Higher Education, MOE of P.R.C, 2018;
http://gjcxcy.bjtu.edu.cn/Index.aspx
(Program No.201810532235)

PUBLICATIONS As 1st Author

1. Emergent topology under slow non-adiabatic quantum dynamics. **J. Ye**, and F. Li, **Physical Review A 102**, 042209 (Oct. 2020) **("Editors' Suggestion")**.

2. Energy transfer and position measurement in quantum mechanics. **J. Ye**, S. Q. Kuang, Z. Li, S. Dai, and Q. H. Liu, **Results in Physics 13**, 102124 (Feb. 2019).

SKILLS

Computer Languages

Mathematica | LaTeX | Python | Matlab

Software & Tools

QuTiP | VASP | WannierTools | PS

LANGUAGE

TOFEL (91) Oct 2020 Embarrassing!
I will get 95+ before December.

OTHER INTERESTS

Marathon Full(Half) 1(3) | Badminton | Video Editing | Game Theory