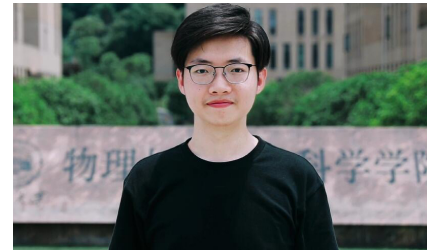


# JUNCHEN YE, B.Sc. (Last Update: Dec 2020)

## Seeking a Ph.D. Position from Fall 2021

Contact way ✉ @ jcy@hnu.edu.cn ☎ 0086+13308481024 📍 Changsha, China  
Background: ○ Topological Condensed Matter Theory □ Numerical Calculation  
Interest: 🌀 Topological Physics ⚙️ Quantum Information Experiment



## 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. Qianhui 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 ratio 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://gjxcxy.bjtu.edu.cn/Index.aspx> (Program No.201810532235)

## PUBLICATIONS As 1st Author

- Emergent topology under slow non-adiabatic quantum dynamics. Junchen Ye, and Fuxiang Li, **Physical Review A** **102**, 042209 (Oct. 2020) ("Editors' Suggestion").
- Energy transfer and position measurement in quantum mechanics. Junchen Ye, Shen-Quan Kuang, Zhao Li, Shuo Dai, and Quan-Hui Liu, **Results in Physics** **13**, 102124 (Feb. 2019).
- On "Quantum interference with slits" and its "revisited" Junchen Ye, Yang Li, Qing Chen, S. G. Chen, and Quan-Hui Liu, arXiv:1902.00015 (Jan. 2019).

## SKILLS

### Computer Languages

Mathematica LaTeX Python Matlab

### Software & Tools

QuTiP VASP WannierTools PS

## OTHER INTERESTS

Marathon Full(Half) 1(3) Badminton

Video Editing Game Theory