Yi Xue Chong

Apt 5G, 319 Highland Road, Ithaca, NY yc983@cornell.edu

Education

Ph.D. candidate, Physics, Cornell University *Aug'14-present*
Advisor: Prof. J.C. Séamus Davis
CGPA: 3.7/4.0

MSci Physics, University of Birmingham, UK *September'10-May'14*
First Class Honors

Coding Projects

Mahjong Interactive Tutorial and Gameplay with Virtual Players *May'19*
Self-motivated coding hobby
- Designed interactive tutorials for beginners to learn mahjong game rules.
- Implemented GUI for gameplay with 3 virtual players in Excel VBA.

Machine Learning to Deduce Electron Location from Detector Signal *March'19*
Cornell CS6780 group project
- Simulated detector signals for electron paths to train a 2D convolutional neural network(CNN).
- Implemented machine learning using Keras python package with Tensorflow backend.

Chaos in Billiard Ball Trajectories *Oct'13*
Project for Computational Modelling for Physical Systems module
- Given initial trajectory a billiard ball, collision paths with its boundary are coded in C++.
- Investigated whether trajectory angle at the n^{th} collision shows chaos for a number of wall shapes.

Research Experiences

Probing Quantum Materials with Scanning Tunneling Microscopy(STM) *Dec'16-present*
Under Prof. J.C. Séamus Davis, LASSP, Cornell University
- Run and upgrade cryogenic STM to study unconventional superconductors and topological materials.
- Built and improve GUIs in MATLAB to improve efficiency in data analysis and aid visualization.

Development of Novel Experiments *May'15-present*
Prof. J.C.Séamus Davis, LASSP, Cornell University
- Investigated the feasibility of speed-of-gravity experiment and designed prototype in SolidWorks.
- Built a reservoir prototype that allows helium capture while decoupling experiment from environment.

Selected Undergraduate Projects *2010-2014*
University of Birmingham
- Simulation in MATLAB and built arrays for investigating microwave transmission.
- Set up and tested a helium temperature experiment for the undergraduate lab as a summer intern.
- Internship project in developing physics question for computer generated marking system.
- Built Theremin, an electronic musical instrument as a lab project.
- Group project in building a magneto-optical trap(MOT).

Publications

- A. Kostin*, P. O. Sprau*, A. Kreisel*, Y.X. Chong, A. E. Böhmer, P. C. Canfield, P. J. Hirschfeld, B. M. Andersen, J. C. Davis, "Imaging orbital-selective quasiparticles in the Hund's metal state of FeSe," **Nature Materials** 17, 869-874 (2018).

Selected Awards

- Recipient of **Poynting Scholarship** and **School Prize** in 2014.
- **School Prize** 2013, **Undergraduate Science Prize** 2012, **School Prize** (top of the class) in 2011.
- **2nd place** in Help University College National Mathematics Marathon (Malaysia) 2008.
- **3rd place** in Sunway A-Level Maths and Logic Challenge 2008.

Technical Skills

Software C++, Python, PANDAS, MATLAB, Excel VBA, LabVIEW
Other SolidWorks (CAD), Machining

Relevant Courses

Introduction to Computer Science and Programming using Python
Machine Learning