Jiasheng He

Curriculum Vitæ 11 October 2020

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Education

The Ohio State University Columbus, Ohio, USA expected to graduate in May 2021

- B.S. in Physics — 4.000 out of 4.000 Physics GPA
- B.S. in Mathematics — 3.972 out of 4.000 Mathematics GPA
- Arts and Sciences Honors Program — 3.981 out of 4.000 Total GPA
- Senior ΦΚΦ

Honors and Awards

Merit Scholarship from Rickard Memorial Fund, The Ohio State University — Spring 2020
Nominated by mathematics faculty and awarded to honors students with outstanding academic record

Smith Senior Award, The Ohio State University — April 2020
Nominated by physics faculty and to the fourth-year students for high academic achievement

Merit Scholarship from Gordan Memorial Fund, The Ohio State University — Autumn 2019
Nominated by mathematics faculty and awarded to honors students with outstanding academic record

Smith Junior Award, The Ohio State University — April 2019
Nominated by physics faculty and awarded to the third-year students for high academic achievement

Smith Sophomore Award, The Ohio State University — April 2018
Nominated by physics faculty and awarded to the second-year students for high academic achievement

Dean's List, The Ohio State University — Every Full-Time Semester
Award to the students with a 3.5 or higher GPA and more than 12 graded credit hours in a semester

Research Interests

Quantum Hall Effect | High-Temperature Superconductivity | Quantum Many-Body Theory
Algebraic and Differential Topology | Algebraic and Differential Geometry | Partial Differential Equations

Research Experiences

Wigner Crystal State in Twisted Bilayer Graphene *Solid State Theory*
Advised by Dr. Brian Skinner at The Ohio State University.
Investigate the Wigner crystal state of electrons on the two-dimensional twisted bilayer graphene; calculate the average energy density per Wigner-Seitz cell and then use Lindemann criterion to find the range of electron density in which the Wigner crystal state can exist.

Becchi-Rouet-Stora-Tyutin (BRST) Theory in Density Functional *Quantum Many-Body Theory, Quantum Gauge Theory*
Advised by Prof. Richard Furnstahl at The Ohio State University.
Careful studied the constrained system and quantum gauge theory, especially the algebra and geometry of BRST quantization; applied them in formulating the density functional of a Mexican hat toy model

Mass Density and Velocity Distribution of Dark Matter Haloes *Computational Many-Body Astrophysics*
2019 Summer Undergraduate Research Program at The Ohio State University with scholarship $3500, advised by Dr. Annika Peter.
Ran cosmological simulation programs AREPO and GADGET-2 on supercomputer, analyzed the dark matter density and speed; the result was presented in a poster at the poster session of the program.

Check details and current results of my research at my website listed above.

Skills

Proficient C C++ Python bash LaTeX 2ε GSL gnuplot h5py and HDF5 matplotlib numpy SciPy juypter notebook Wolfram Mathematica SciDAVis ImageJ Microsoft Word, Excel, PowerPoint
seven-year-long using experience of RedHat / CentOS / fedora Linux operating system

Familiar HTML MATLAB BSD operating system

Employment

The Ohio State University, Student Instructional Assistant — August 2018 – May 2019
Tutored, graded homework, and proctored exams for intermediate mechanics course