

Yiqi “Andrew” Liu

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Curriculum Vitae / June 1, 2023

EDUCATION

- 2023.08 - **Princeton University**
PhD in Physics
• **Research:** Cosmic Microwave Background
- 2019.08 - 2023.05 **Johns Hopkins University**
B.S. in Applied Math & Statistics, Physics, and Mathematics
• **GPA:** 3.99/4.0
• **Departmental Honors:** Applied Math & Stats, Physics, Math
• **Minor:** Computer Science

AWARDS AND FELLOWSHIPS

- 2023 Donald E. Kerr Memorial Award
\$1,000, JHU, awarded to 2 graduating seniors major in physics
- 2023 Applied Mathematics and Statistics Achievement Award
\$500, JHU, awarded to 6 graduating seniors major in applied math & statistics
- 2022 Provost’s Undergraduate Research Award
\$6,000, JHU, research fellowship
- 2022 ΣΠΣ Physics Honors Society
- 2020 - 2021 Bloomberg Distinguished Professor Summer Research Fellowship
\$10,000, JHU, research fellowship, awarded two consecutive years
- 2019 - 2022 Dean’s List

PUBLICATIONS

Yiqi Liu, Hsiang-Chih Hwang, Nadia L. Zakamska, John R. Thostensen
CSS1603+19: a low mass polar at the cataclysmic variable period minimum
Published on MNRAS DOI: [10.1093/mnras/stad1156](https://doi.org/10.1093/mnras/stad1156)

RESEARCH EXPERIENCE

- 2019.09 - 2023.05 **The Cosmology Large Angular Scale Surveyor (CLASS)**
Mentors: Charles L. Bennett, Tobias A. Marriage, Ivan L. Padilla
- Component Separation Algorithm:** Implemented the needlet internal linear combination (NILC) for foreground component separation. Tested the algorithm under different foreground conditions. Used pixel covariance to reduce the NILC bias at large angular scale.
- Polarized Foreground Masks:** Constructed masks based on polarized intensity with WMAP and Planck maps specific to the CLASS scanning region. Tested power spectrum estimators’ performances over different polarization masks.
- Instrumentation:** Assisted in designing telescope components with SolidWorks. Assembled CLASS cryogenic receivers. Used Tormach CNC to produce infrared filters for the CLASS detector assembly.

2021.09 - 2023.05 **Zakamska Stellar Astrophysics Group**

Mentors: Nadia L. Zakamska, Hsiang-Chih Hwang

Cataclysmic Variable: First-authored paper on the puzzling cataclysmic variable CSS1603+19. Performed various analysis over infrared and optical observations. Demystified unusual emission structure from the system. Concluded with a physical model for this system including the stellar mass and radius of the system.

Time-Domain Astrophysics: Designed a range of routines for decoding photometry and spectroscopy observations. Identified fine line and continuum structure from large data sets.

PypeIt Data Reduction: Reduce raw GNIRS near-infrared exposures with data-reduction pipeline PypeIt.

TALKS AND PRESENTATIONS

2023 Mar “CMB analysis using the global-NILC method”
American Physics Society 2023 March Meeting, Las Vegas, NV

2023 Jan “CSS1603+19: a low mass polar at the cataclysmic variable period minimum”
241st Meeting of the American Astronomical Society, Seattle, WA

2022 Oct “The Needlet ILC: a search for primordial signal from the start of time”
DREAMS Symposium, Johns Hopkins University, MD

2022 Oct “CSS1603+19: a strange cataclysmic variable”
DREAMS Symposium, Johns Hopkins University, MD

2022 Aug “Demystify a Strange Cataclysmic Variable”
The Center for Astrophysics Research Experience, Johns Hopkins University, MD

TEACHING

2023 Spring Teaching Assistant, EN.553.430 Introduction to Statistics (Undergraduate, 14 students)

2022 Fall Teaching Assistant, EN.553.633 Monte Carlo Method (Graduate, 17 students)

2022 Fall Teaching Assistant, AS.171.103 General Physics I (Undergraduate, 23 students)

2020 Fall Teaching Assistant, AS.171.103 General Physics I (Undergraduate, 39 students)

INDUSTRIAL EXPERIENCE

2021.06 - 2021.08 **Quantitative Researcher**

Zhejiang Longwin Investment, Hangzhou, Zhejiang, China

High-Frequency Trading Backtest: Backtested high-frequency trading based on Box Arbitrage. Constructed testing framework for quantitative strategies with high-performance python routines.

Sentiment Investment: Analyzed commodity trading strategy using market sentiment based on institutional investors' open interests.

Factor Investment Strategy: Helped to develop quantitative stock trading model based on analyst report and company earnings.

SKILLS

Programming: Python, SQL, C, C++, Java, Matlab, R, HTML, Julia, PHP

Machining: Tormach CNC Mill, Monarch Lathes, Bridgeport Mill

Language: English, Mandarin-Chinese

Other: L^AT_EX, JupyterLab, SolidWorks, Mathematica, Rowing, Alpine Ski