Zach Gillis

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Education

University of Chicago — Chicago, IL
Bachelor of Arts in Physics, Bachelor of Science in Mathematics — *Sep. 2021 – June 2025*
- GPA: 3.8
- Dean's List 2021-2022

Walter Payton College Preparatory High School — Chicago, IL
High School Diploma — *Sep. 2017 – June 2021*
- GPA: 5.4 (weighted), 4.0 (unweighted)
- SAT: 1580

Experience

Research Assistant — July 2023 – Present
ATLAS Group - University of Chicago / CERN — *Chicago, IL*
- Working in UChicago's arm of the ATLAS experiment at CERN
- Developing computing framework to analyze cubic and quartic Higgs self-interaction

Research Assistant — Oct. 2022 – Present
Zhong Lab – University of Chicago, Pritzker School of Molecular Engineering — *Chicago, IL*
- Working in lab focused on quantum engineering, specifically quantum networks and optics
- Designed a loop-gap resonator for microwave to optical transduction to transmit quantum states through fiber-optic cables using HFSS simulations
- Using resonator in an electron spin resonance spectroscopy setup to examine erbium-doped ceramics

Math Teacher and Curriculum Planner — Feb. 2022 – Present
Math Circles of Chicago — *Chicago, IL*
- Responsible for teaching math and statistics classes for high school students
- Working with teaching assistants and administrators to streamline current curriculum

Research Assistant — June 2022 – Aug. 2022
National Radio Astronomy Observatory (NSF REU Site) — *Charlottesville, VA*
- Selected to competitive internship focused on radio astronomy, astrophysics, and programming for data science applications, and attended seminars on radio interferometry, new findings in astrophysics and astrochemistry, and data visualization
- Completed project examining baseline-dependent averaging (BDA) to reduce the computational requirements of the Next Generation Very Large Array (ngVLA)
- Helped create Python package for BDA and author the ngVLA computation whitepaper

Research Intern — June 2021 – Aug. 2021
Northwestern University, Lurie Cancer Center (through ResearcHStart) — *Chicago, IL*
- Selected to competitive research internship program focused on cancer research and bioinformatics
- Completed a project using R on exercise-induced gene expression and the pathways perturbed by those changes
- Presented project at research symposium and awarded best poster among 27 ResearcHStart participants

Projects & Presentations

"Time Averaging Limits and Baseline Dependent Averaging for the ngVLA." — May 2023
Next Generation Very Large Array Memo Series, Computing Memo 8

"Designing a Microwave Cavity to Enable Magneto-Optic Transduction in Quantum Networking." — April 2023
University of Chicago Undergraduate Research Sympoium

"Utilizing Baseline-Dependent Averaging in the ngVLA." — September 2022
National Radio Astronomy Observatory Summer Assistantship

"Post-Exercise Regulation of the AP-1 Transcriptional Program." — August 2021
ResearcHStart at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University

Activities

UChicago Robotics | *Team Member* — Oct. 2022 – Present
- Member of selective team competing in national robotics competitions

UChicago Science Olympiad | *Community Outreach Director, formerly Technology Coordinator* — Sep. 2021 – Present
- Organizes community outreach workshops, coordinates with local public schools, plans events for visiting teams

Technical Skills

Languages: Python, R, Java, JavaScript, Swift, HTML/CSS
Programs: Ansys HFSS, Fusion 360
Libraries: NumPy, SciPy, pandas, Matplotlib, Xarray, Dask, DESeq2, Tensorflow, Keras