Zach Gillis

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Education

University of Chicago — Chicago, IL
B.S. Physics, B.S. Mathematics — *Sept. 2021 – June 2025*

- GPA: 3.8/4.0
- Quad Undergraduate Research Scholar
- Dean's List

Walter Payton College Preparatory High School — Chicago, IL
High School Diploma — *Sept. 2017 – June 2021*

- GPA: 4.0/4.0
- SAT: 1580

Experience

Research Intern — June 2024 – Present
Stanford SLAC National Accelerator Laboratory — *Menlo Park, CA*

- Continuing work on the ATLAS experiment with SLAC and Stanford faculty
- Completing project to measure ATLAS trigger efficiency for vector boson fusion Higgs processes

Research Assistant — July 2023 – Present
University of Chicago, ATLAS Group — *Chicago, IL*

- Working in UChicago's arm of the ATLAS experiment at the LHC at CERN
- Used Monte Carlo simulations to place, for the first time, novel constraints on cubic and quartic Higgs self-interaction strength
- Developed distributed computing framework to run Higgs boson pair production simulations

Research Assistant — Oct. 2022 – Present
University of Chicago, Zhong Quantum Lab (Pritzker School of Molecular Engineering) — *Chicago, IL*

- Working in lab focused on quantum engineering, including quantum transduction and rare-earth doped material platforms
- Designed microwave and optical cavities for magneto-optic quantum transduction to enable quantum networking

Math Teacher and Curriculum Planner — Feb. 2022 – Sept. 2023
Math Circles of Chicago — *Chicago, IL*

- Responsible for teaching math and statistics classes for high school students
- Worked with teaching assistants and administrators to streamline current curriculum

Research Intern and Summer Student — June 2022 – Aug. 2022
National Radio Astronomy Observatory — *Charlottesville, VA*

- Selected to competitive internship focused on radio astronomy, radio telescope design, astrophysics, and astrochemistry
- Completed project enabling 32-fold reduction in required computing resources for the Next Generation VLA (ngVLA)
- Helped create Python package and author an ngVLA computation memo

Research Intern — June 2021 – Aug. 2021
Northwestern University, Lurie Cancer Center — *Chicago, IL*

- Selected to competitive research internship program focused on cancer research and bioinformatics
- Completed a project using R on exercise-induced gene expression resulting pathway perturbation
- Presented project at research symposium and awarded best poster among 27 ResearcHStart participants

Publications

Bizo, W., Haisch, U., Rottoli, L., Gillis, Z., Moser, B., & Windischhofer, P. — Feb. 2024
Addendum to: Constraints on the quartic higgs self-coupling from double-higgs production at future Hadron Colliders.
Journal of High Energy Physics, 2024(2). https://doi.org/10.1007/jhep02(2024)170

Steeb, J.W. & Gillis, Z. — May 2023
Time Averaging Limits and Baseline Dependent Averaging for the ngVLA.
Next Generation Very Large Array Computing Memo Series. https://library.nrao.edu/public/memos/ngvla/NGVLAC_08.pdf.

Technical Skills

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