Ethan Snyder

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Summary

Physics and mathematics double major with minors in computer science and astronomy. Interested in condensed matter physics and quantum information science. Extensive computational research experience modeling III-V semiconductors.

Experience

Western Michigan University — Kalamazoo, MI

Computational Astrophysics Project — *Dec '24 – present*
FILLER TEXT PLEASE FILL IN LATER. Working under Dr. Korista of the Physics Department.

Machine Shop Training — *Sep '24 – present*
Learning machine shop etiquette and safety, as well as learning how to run machines such as a mill, laythe, and a CNC. Emphasis on how to effectively communicate and detail complicated jobs to machinists.

Undergraduate Research Assistant — *Dec '23 – present*
Computationally modeling defects within semiconductor crystal lattices, particularly the deep acceptor defect in GaAs, AlAs, AlGaAs, and how that responds to different defects and impurities. Working under Dr. O'Hara of the Physics Department.

College of Arts and Sciences Lab Attendant — *Aug '22 – present*
Supervised campus computer labs and provided technical support to students and staff in labs and classrooms.

Education

Western Michigan University — Kalamazoo, MI

B.S. in Physics & Mathematics — *2021 – 2025*
Achieved a well-rounded understanding of physics, developed additional math skills beyond the scope of undergraduate physics, and sought a deeper understanding of computer science and its interplay with modern physics research through courses and experience.

Projects

HSE VASP Band Structure Scripts — *https://github.com/ethan-ss-nyder/HSE-Vasp-BandStruct…*
Developed for my semiconductor research with Dr. O'Hara, these two Python scripts streamline the process of generating input files and cleaning up output files of VASP for HSE band structure calculations.

XMLtoCSV — *https://github.com/ethan-ss-nyder/XMLtoCSV*
Developed for my final project in PHYS3420, Electronics, this converts sheet music to pure tones playable by an Arduino with a speaker wired into it. This half of the project, coded in Python. Took sheet music as an XML and extracted pure tones and their durations into a CSV file.

chordlookerupper — *https://github.com/ethan-ss-nyder/chordlookerupper*
A Java app that links to a users Spotify account and will pull from the internet the most popular chord sheet for their currently playing song. Developed for personal use to play along with songs.

Extracurriculars

Physics Club *Aug '23 – present*

Co-founder, co-president, treasurer. Co-organized a trip of 50+ students and staff into the path of totality for the 2024 total solar eclipse. Initiated outreach to undergraduate physics students, created connections between undergraduates, faculty, and research opportunities. Hosted support sessions and tutored underclassmen.

Western Student Association (WSA) *Aug '23 – present*

Registered Student Organization (RSO) representative for Physics Club, voting member of the WSA.

In-Progress Coursework

The following physics courses will be completed in Fall 2024 and Spring 2025.

- PHYS4600: Quantum Mechanics (Textbook: Introduction to Quantum Mechanics by David J. Griffiths, 3rd edition)
- PHYS4400: Electromagnetism (Textbook: David J. Griffiths, Electrodynamics by David J. Griffiths, 4th edition)
- PHYS4660: Advanced Laboratory
- MATH5700: Advanced Calculus I
- MATH4400: Graphs & Math Models

Awards & Honors

Paul Rood Physics Scholarship: Awarded to outstanding physics students. (April 2024)
URICS Summer Scholarship: Awarded to undergraduates looking to fund research projects during the summer. (May 2024)
Dean's List: (July 2023), (May 2024)

Volunteering (Associated with WMU's Lee Honors College)

FIRST Robotics Mentoring *Aug '21 – Mar '23*

Returned to Wayland Union High School's robotics program as a mentor and taught members machine shop safety, how to run a mill (Bridgeport), and introductory Java.

Elementary Orchestra Teacher Aid *Aug '21 – May '22*

Returned to Wayland Union's orchestra program and helped lead sectionals, helped in concerts, and gave specialized, individual help to struggling students.

Skills

Technical specialties: Proficient with spreadsheets and data analysis in many programming languages. Exceptionally fluent in Java and Python. Proficient in C++, C#, SQL. Beginner skill with C, R, JavaScript, Fortran, and LaTeX. Proficient with Linux/Unix systems, Shell Script, Bash, data/file management, nano/vi/vim, and SSH/SCP protocols.
Non-technical specialties: Strong work ethic, time management, organized, good communicator and collaborator. Excellent writer and proofreader.

Interests

Academic Condensed matter physics, quantum information science, quantum computing, quantum chromodynamics. Computational research. Maintaining and developing research software.
Non-Academic/Hobbies Guitar, bass, acoustic music. Astronomy, astrophotography, stargazing. Tennis, ping pong, hiking, camping. Reading, writing.