

Julian Calder

Physics and computer science student at Middlebury College interested in applying computer science principles to design and optimize physical systems. I am a passionate learner seeking to explore the intersection of materials science, electrical engineering, and computer science for the development of sustainable technologies. I am hoping to explore opportunities for technological innovation in an industry setting after spending a summer conducting materials research at a national lab.

RESEARCH EXPERIENCE

Materials Science Undergraduate Laboratory Intern, National Renewable Energy Laboratory

MAY 2022 – AUG 2022

Worked in the Materials Discovery group on the synthesis of novel layered thin-film nitride materials using a programmable high-vacuum sputtering chamber.

Film thickness, structure, and composition were measured using X-ray diffraction, X-ray reflectometry, and X-ray fluorescence.

Presented results at laboratory-wide poster symposium and in a comprehensive final research paper.

RELEVANT COURSEWORK

PHYS 0110: Electricity and Magnetism

PHYS 0111: Thermo, Fluids, Waves & Optics

PHYS 0201: Relativity and Quantum Physics

PHYS 0202: Quantum Physics Applications

PHYS 0212: Applied Math for Phys. Science

PHYS 0230: Computational Physics

MATH 0200: Linear Algebra

MATH 0225: Topics in Linear Algebra and Differential Equations

MATH 0228: Intro to Numerical Analysis

MATH 2510: Multivariable Calculus (Normandale Community College)

CSCI 0150: Computing for the Sciences

CSCI 0200: Math Foundations of Computing

CSCI 0201: Data Structures

DIS Stockholm: Data Visualization

DIS Stockholm: Engineering Sustainable Environments in Scandinavia

DIS Stockholm: Energy Cloud: Engineering Localized, Digitized, Sustainable Networks

To be taken Spring 2023:

PHYS 0225: Electronics for Scientists

PHYS 0321: Experimental Physics

CSCI 0202: Computer Architecture

CSCI 0301: Theory of Computation

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EDUCATION

Middlebury College, Middlebury, VT

SEP 2020 – JUN 2024

B.A. Physics and Computer Science |
GPA: 3.81

DIS Stockholm, Stockholm, SWE

AUG 2022 – DEC 2022

Core Course on *Engineering Sustainable Environments in Scandinavia*

SKILLS

Adept at X-ray diffraction (XRD), X-ray reflectometry (XRR), and X-ray fluorescence (XRF) material characterization techniques

Experience with Python, Java, and C++ programming languages

Proficient in MATLAB and Jupyterlab programming environments for applied mathematics and physics

Familiarity with Sketchup and Autodesk Fusion360 CAD software

WORK EXPERIENCE

ITS Lead Computer Consultant, Middlebury College

FEB 2021 – PRESENT

Provide IT support for faculty, staff, students, and alumni in greater college community

Responsible for the management of all college-operated technology on campus

Coordinate responses between different areas within IT Services to ensure problems are addressed quickly and effectively

ACTIVITIES

Middlebury Crew Team

Middlebury Club Nordic, Treasurer and Race Coordinator

Middlebury College Orchestra