Caleb Jacobs

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EDUCATION

CU BOULDER
Ph.D., Department of Applied Mathematics
Exp. May 2026 | Boulder, CO
Prospective adviser: **Bengt Fornberg**

MICHIGAN TECH
B.S., Department of Mathematical Sciences
Grad. April 2021 | Houghton, MI
Conc: Applied Computational
Minor: Physics

COURSEWORK

Highlights
Vector and Tensor Analysis
Partial Differential Equations
Numerical Partial Diff Eq
Numerical Linear Algebra

Top of Class
Calculus II with Technology
Calculus III (Multivariable Calculus)
Math Modeling with Diff Eq
Applied Vector and Tensor Math
Complex Variables
Numerical Linear Algebra
Intro to Combinatorics
Graphs and Optimization Algorithms

SKILLS/EXPERTISE

PROGRAMMING
Proficient:
Julia • C • Mathematica • MATLAB • Java • LaTeX
Comfortable:
C++ • Shell

MATHEMATICS
Specializations:
Radial Basis Function Generated Finite Differences (RBF-FD) • Tensors and Differential Geometry • Level-Set Methods (LSM) • Mathematical Visualization and Graphics

RESEARCH/PROJECTS

PDES ON EVOLVING SURFACES | Primary Researcher
Jan 2019 – Present | Michigan Tech
Worked with **Prof Cécile Piret** and **Jacob Blazejewski** to develop a novel, high order, mesh-free method for solving PDEs over evolving surfaces using radial basis generated finite differences (RBF-FD). Our first paper on the subject is being written. I was awarded the Summer Undergraduate Research Grant (SURF) during Summer 2020 to help with funding this project.

MATHEMATICA TENSOR FRAMEWORK | Primary Developer
Sep 2018 | Michigan Tech
Independently developed a framework in Mathematica to efficiently and easily compute and derive tensor symbolic equations and expressions (i.e. Christoffel symbols, covariant derivatives, etc). The framework allows for general, symbolic coordinate system input as well as embedded hypersurface input.

TEACHING EXPERIENCE

CALCULUS I AND II | Teaching Assistant
August 2021 - Present
I run multiple recitations and office hours every week. I have also been in charge of grading, proctoring exams, and coordinating with my colleagues to create a constructive and effective learning environment.

COMPLEX VARIABLES COURSE | Teaching Assistant
Jan 2021
Primary grader

MATH LEARNING CENTER | Veteran Tutor
Sep 2018 – Present | Michigan Tech
Tutored a full range of undergraduate math course including:
- College algebra through multivariable calculus,
- Linear algebra and numerical linear algebra,
- PDEs and numerical PDEs,
- Combinatorics,
- Probability and statistics.

AWARDS/HONORS

SECONDARY
Rochman Award for Science
2017 | Ashland High School

POST SECONDARY
Department Scholar Award
2019 | Mathematical Sciences Department, Michigan Tech

Grants/Scholarships
Summer Undergraduate Research Fellowship (SURF)
Summer 2020 | Michigan Tech

National Achievement Scholarship
Fall 2017 - Present | Michigan Tech

Dean's List
All semesters | Michigan Tech