

# Frederick Hohman

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[fredhohman.com](http://fredhohman.com)

## Education

- 2015-Present **Ph.D.** in Computational Science and Engineering  
Georgia Institute of Technology, Atlanta, GA  
Advisor: Professor Surya Kalidindi  
Interests: Data science, visual analytics, computational mathematics, material informatics
- 2011-2015 **B.S.** in Mathematics, Area of Emphasis in Applied Mathematics  
**B.S.** in Physics  
University of Georgia, Athens, GA  
Thesis: "3D Printing the Trefoil Knot and its Pages"  
Overall GPA: 3.84/4.0, Magna Cum Laude

## Research Experience

### GRADUATE RESEARCH ASSISTANT

- 2015-Present Georgia Institute of Technology, School of Computational Science and Engineering, Atlanta, GA
- Project: Microstructure Informatics
- Applying data science to speed up the process of new material characterization, development, and manufacturing to meet needs of national Materials Genome Initiative.
  - Research areas: Data science, material informatics, statistics

### UNDERGRADUATE THESIS AND RESEARCH

- 2013-2015 University of Georgia, Department of Mathematics, Athens, GA
- Project: 3D Printing the Trefoil Knot and its Pages
- Exploring 3D printing in topology. Programmed, designed, and 3D printed 34-piece, color-coordinated, and magnetized 3D puzzle of the trefoil knot fibration illustrating an open-book decomposition. Posted smaller, derivative models online and have received 8,000+ views and 1,500+ downloads.
  - Research areas: 3D modeling, topology, visualization, mathematical exposition

## Features and Presentations

1. Invited to post on Wolfram Community and received over 7,000+ views, resulted in two articles written about project from 3DPrint.com
2. Presented at 2015 and 2014 UGA Center for Undergraduate Research Symposium
3. Featured in yearly 2015 UGA Mathematics Department Newsletter

4. UGA Center for Undergraduate Research website Spotlight
5. Abstract published in UGA Journal of Undergraduate Research Opportunities
6. Invited to guest post on Makerhome.com: well-known 3D printing website of Dr. Laura Taalman (James Madison University, MakerBot)
7. Images featured on Sketches of Topology: topology website of Dr. Kenneth Baker (University of Miami)

## REU IN MATHEMATICS AND COMPUTATIONAL SCIENCE

2014-2015

Fairfield University, Department of Engineering, Fairfield, CT

Project: Numerical and Experimental Comparison of Oceanic Overflow

- Directly compared numerical solutions derived from the Navier-Stokes equations to designed experiments performed at the lab-scale to model specific ocean phoneme. Configured MIT General Circulation Model on a linux computer cluster to parallel compute numerical simulations while using MATLAB for pre- and post-processing data visualization.
- Research ares: Computational fluid dynamics, data visualization, applied mathematics

## Features and Presentations

1. Presented at 67<sup>th</sup> American Physical Society Division of Fluid Dynamics
2. Abstract published in 67<sup>th</sup> APS DFD Conference Proceedings
3. 1st place at 2015 Joint Mathematical Meeting Undergraduate Poster Session in Computational Math
4. Presented at REU Mini-Conference at Yale University, Brown University, and Los Alamos National Lab

## Math Outreach and Work Experience

### 3D PRINTED CUBE DECOMPOSITION TROPHY

2014

University of Georgia Mathematics Department, Athens, GA

Designed, modeled, and 3D printed cube decomposition trophy for annual UGA High School Math Tournament that was given to the top scoring teams and participants.

### 3D PRINTED UGA KEYCHAIN

2014

University of Georgia Lamar Dodd School of Art, Athens, GA

Created 3D printed UGA keychain and presentation notes given at Experience UGA: a interdisciplinary event that exposes middle-school and high-school students to hands-on learning activities.

### STUDENT NOTETAKER

2014-2015

University of Georgia, Athens, GA

Generated notes for undergraduate mathematics and physics courses to provide for students with disabilities.

## I.T. ASSISTANT

2013 St. Joseph Catholic School, Marietta, GA  
Installed and managed network of 65 iPads controlled by 5 MacBooks. Migrated school towards cloud-based interactivity allowing realtime faculty integration and management of student services.

## TUTOR

2012 University of Georgia, Athens, GA  
Specialized in tutoring Calculus to undergraduates.

# Technology Skills

OS: Mac OS X, Windows, Unix Command Line  
Productivity: Microsoft Office, iWork  
Programming: Mathematica, Matlab, L<sup>A</sup>T<sub>E</sub>X, Python, C  
Web: HTML, CSS, Markdown, Jekyll, Git  
Graphics: Pixelmator, Blender, Meshlab, MakerBot Desktop (developing: Adobe CSS Suite)

# Honors and Awards

2015 President's Fellowship at Georgia Institute of Technology  
2015 1st at Joint Mathematics Meeting Undergraduate Poster Session in Computational Math  
2015 UGA CURO Research Graduation Distinction  
2014 UGA CURO Research Assistantship  
2013 Presidential Scholar  
2011-2015 Dean's List  
2011-2015 Georgia HOPE Scholarship  
2009 Eagle Scout Award

# Organizations

2014-2015 American Physical Society  
2012-2015 UGA Mathematics Club  
2012-2013 Society of Physics Students, UGA Chapter  
2011-2015 National Society of Collegiate Scholars

# Coursework

## COMPUTATIONAL SCIENCE AND ENGINEERING

CSE 6001 Introduction to Computational Science and Engineering  
CSE 6010 Computational Problem Solving  
CSE 8803 Material Informatics

## COMPUTER SCIENCE

CS 8001 Visualization Seminar

## MATHEMATICS

4990H Honors Thesis  
4970H Undergraduate Research II  
4960H Undergraduate Research I  
4760 Mathematics and Music  
4720 Partial Differential Equations  
4510 Numerical Analysis II  
4500 Numerical Analysis I  
3200 Introduction to Higher Mathematics  
3100H Sequences and Series  
3000 Linear Algebra  
2700 Elementary Differential Equations  
2500 Multivariable Calculus  
2260 Calculus II for Science and Engineering

## PHYSICS

4800 Introduction to Nanotechnology  
4701 Quantum Mechanics I  
4300 Thermodynamics  
4201 Electricity and Magnetism I  
4202 Classical Mechanics II  
4101 Classical Mechanics I  
3900 Mathematical Methods in Physics  
3700 Modern Physics  
3320L Electronics  
1312L Advanced Introductory Physics II  
1311L Advanced Introductory Physics I

## STATISTICS

4520 Mathematical Statistics II  
4510 Mathematical Statistics I

## Website

Designed, developed, and maintaining [fredhohman.com](http://fredhohman.com). Displays project expositions and blog posts by using a static site generator to serve code and content publicly on Github.

## References

**Dr. Surya Kalidindi:** [surya.kalidindi@me.gatech.edu](mailto:surya.kalidindi@me.gatech.edu), (404) 385-2886  
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George W. Woodruff School of Mechanical Engineering  
School of Computational Science and Engineering  
778 Atlantic Dr NW, Atlanta, GA 30332

**Dr. Jason Cantarella:** [jason@math.uga.edu](mailto:jason@math.uga.edu), (706) 542-2595

[jasoncantarella.com/wordpress/](http://jasoncantarella.com/wordpress/)

University of Georgia

Department of Mathematics

Boyd Graduate Research Center, Athens, GA 30602

**Dr. David Gay:** [dgay@math.uga.edu](mailto:dgay@math.uga.edu), (706) 542-4803

[euclidlab.org/david-gay/](http://euclidlab.org/david-gay/)

University of Georgia

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Fairfield University

Department of Engineering

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