

Summer Atkins

CONTACT INFORMATION

University of Alabama in Huntsville
Department of Mathematical Sciences
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EDUCATION

University of Florida Degree: Ph.D. in Mathematics, Advisor: Prof. Maia Martcheva. Co-advisor: Prof. William Hager. Thesis: Regularization of singular control problems that arise in mathematical biology.	2021
University of Alabama Degree: M.A. in Mathematics	2016
University of Alabama Degree: B.S. in Mathematics	2014

APPOINTMENTS

Assistant Professor, Mathematics, University of Alabama in Huntsville	2024-present
Postdoctoral Researcher, Mathematics, Louisiana State University	2021-2023

RESEARCH INTERESTS

Optimal Control Theory, Mathematical Biology, Control Theory, Optimization

PUBLICATIONS

1. **Robustness of feedback control for SIQR epidemic model under measurement uncertainty.** S. Atkins and Michael Malisoff. *Mathematical Control Related Fields*, 2023. doi: (10.3934/mcrf.2023043)
2. **Solving singular control problems in mathematical biology, using PASA.** S. Atkins, Mahya Aghaee, Maia Martcheva, and William Hager in *Computation and Mathematical Population Dynamics*, Necibe Tuncer, Maia Martcheva, Olivia Prosper, Lauren Childs (Eds.), World Scientific, 2023. doi (10.1142/9789811263033_0009)
3. **Proximal methods for sparse optimal scoring and discriminant analysis.** S. Atkins, Gudmundar Einarsson, Brendan Ames, Line Clemmensen. *Advances in Data Analysis and Classification*, 2022. doi (10.1007/s11634-022-00530-6)

Articles Under Review

1. **An immuno-epidemiological model of foot-and-mouth disease (FMD) in the African buffalo population with carrier transmission.** S. Atkins, Hayriye Gulbudak, J. Shane Welker, and Houston Smith (submitted)
2. **Fixed time and almost fixed time estimation under unknown parameters in measurement.** S. Atkins, Michael Malisoff, and Frederic Mazenc (submitted)
3. **A switch point algorithm applied to a harvesting problem.** S. Atkins, Maia Martcheva, and William Hager (submitted)

GRANTS AND AWARDS

National Science Foundation

NSF Standard Grant, co-principal investigator

Project title: Theory and Methods for Delay-Compensating and Finite Time Control under Intermittent Measurements with Epidemiological Applications

Status: **Pending**

University of Florida, Department of Mathematics 2021
Graduate Student Teaching Award

University of Florida 2021
CLAS Dissertation Fellowship (tuition and stipend)
Funded by the Charles Vincent and Heidi Cole McLaughlin Endowment

University of Florida 2016-2020
Graduate Student Fellowship (tuition and stipend)

TALKS

Conference Talks

SIAM TX-LA, Lafayette, LA Nov 2023

SIAM Conference on Control and Its Applications, Philadelphia, PA July 2023
Mini-symposium: Applications of Control in Biological Systems

SMB Annual Meeting, Ohio State University July 2023
Special Session: Disease Dynamics Across Scales

Shanks Workshop on Advances in Mathematical and Theoretical Biology, March 2023
Vanderbilt University, Session 4

AMS Spring Eastern Virtual Sectional Meeting, April 2023
Special Session:

Modeling, Analysis, and Control of Populations Impacted by Disease and Invasion

5th Annual Meeting of the SIAM TX-LA Section, University of Houston Nov. 2022
Mini-symposium: Special Topics in Mathematical Biology

Women in Scientific Computing on Complex Physical and Biological Systems Oct. 2022
University of Florida

The 2021 Joint Mathematics Meetings (virtual) Jan. 2021
Special Session:

Women Advancing Mathematical Biology Through Computation and Analytical Techniques

Computational and Mathematical Population Dynamics 5, Fort Lauderdale, FL May 2019
Special Session: Optimal Control

Seminar Talks

University of Alabama in Huntsville Applied Math Seminar Sept. 2023
Virginia Tech MathBio Seminar Sept. 2023
Oregon State University Mathematical Biology Seminar April 2023
University of Louisiana at Lafayette Applied Mathematics Seminar March 2023
University of Louisiana at Lafayette Applied Mathematics Seminar Feb. 2022
Louisiana State University Control and Optimization Seminar March 2021
University of Florida SIAM Student Chapter Seminar Feb. 2021
University of Florida Biomath Seminar Oct. 2019
University of Alabama Applied Math Seminar April 2016

Poster Presentations

SIAM Annual Meeting (AWM Workshop), Portland, OR July 2018
Title: Fast Classification of Big Data: proximal methods for sparse discriminant analysis

TEACHING EXPERIENCE

University Alabama in Huntsville

Introduction to Numerical Methods (MA 415), Instructor 2024

Louisiana State University

Calculus 1 (MATH 1550), Instructor 2021-2023

University of Florida

Calculus 3 (MAC 2313), Recitation Instructor 2020

Calculus 2 (MAC 2312), Recitation Instructor 2019

Calculus 1 (MAC 2311), Recitation Instructor 2017, 2018

Precalculus (MAC 1140), Recitation Instructor 2016

University of Alabama

Precalculus (MATH 112), Instructor 2015, 2016

Calculus 2 (MATH 126), Teaching Assistant 2015

Tutoring Experience

University of Florida, 215 Little Hall 2016-2021

Drop-in Tutor for courses ranging from College Algebra to Calculus 3

University of Alabama, Mathematics and Technology Learning Center, 2015, 2016

Tutor for courses ranging from College Algebra to Business Calculus.

PROFESSIONAL SERVICE

Co-organized Seminars and Symposia

6th Annual Meeting of the SIAM TX-LA Section	
Two Mini-symposia	2023
1. Analysis and Numerical Methods in Mathematical Biology	
2. Special Topics in Control and Optimization	
Louisiana State University	
AWM Event Series	2022-2023
5th Annual Meeting of the SIAM TX-LA Section	
Minisymposium on Special Topics in Mathematical Biology	2022
University of Florida	
AWM Student Chapter	2019-2020
SIAM Student Chapter	2019-2021
Graduate Mathematics Association Colloquia	2017

Supervision of Undergraduate Research

1. Mentored Houston Smith (student at LSU) in 2022-2023 on a project relating to analyzing and fitting an immunological model for the foot-and-mouth disease virus in African buffalo. He shared his contributions through a poster presentation at the sixth TX-LA Undergraduate Mathematics Conference (at LSU). His work also resulted in a co-authorship to a paper that was recently submitted for publication.
2. Co-mentored three minority students (Teddie Swize, Serene Sam, and Aleah Ford) with Dr. Hayriye Gulbudak (University of Louisiana at Lafayette) during the Summer of 2022 on a REU project pertaining to the fitting of an immunological model for COVID-19. One of these students shared her findings through a poster presentation at the 5th Annual Meeting of the SIAM TX-LA Section.
3. Co-mentored Zeke Abshire and Colby Blank (LSU) with Dr. Frederic Marazzato (former postdoctoral researcher at LSU) during Spring 2022 on a project pertaining to constructing a model of heart rate kinetics and fitting the model to data from the Pennington STRONG Study.

Journal Reviewer

Reviewer for BIOMATH
Reviewer for Automatica
Reviewer for Journal of Biological Sciences
Reviewer for SIAM Journal of Applied Mathematics

Panelist

Virtual Panelist for a Professional Development Seminar,	Oct. 2021
Hosted by the University of Florida's Graduate Mathematics Association.	
Virtual Panelist for a Joining the Workforce Session,	April 2021
Hosted by the University of Florida AWM Student Chapter.	
Panelist for Two Graduate School Information Session,	Oct. 2018 & March 2020
Hosted by a University of Florida's University Math Society .	

Other

- Compactors Volunteer**, Tuscaloosa Magnet School 2015, 2016
Mathematics Enrichment Program organized by Dr. Kabe Moen (University of Alabama).
- Proctor for 34th Annual Math Tournament**, University of Alabama Nov. 2015
High School Mathematics Tournament.
- College First Mentor**, University of Alabama June 2014
Sponsored by A+ College Ready and Impact Alabama.
Met with high school students who were preparing to take AP Calculus courses the coming year.