

Benjamin Tighe

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Research Interests

Hodge theory, Higgs Bundles, Bott-Chern Theory of Complex Manifolds, K3 and Abelian surfaces, and other topics in complex algebraic geometry; Combinatorics of Coxeter Groups.

Education

University of Georgia <i>Athens, Georgia</i>	Ph.D in Mathematics 2017-2022
University of Washington <i>Seattle, Washington</i>	B.S. in Mathematics (Comprehensive) 2014-2017
Departmental Honors. Thesis — "The Riemann Roch Theorem: An Analysis of the Resolution of Singularities of Projective Curves over an Algebraically Closed Field" (Adviser: Sándor Kovács).	
Olympic College <i>Bremerton, Washington</i>	Associate of Science 2012-2014
With Honors (concurrent with high school diploma with the Running Start (Dual Credit) Program).	
South Kitsap High School <i>Port Orchard, Washington</i>	High School Diploma 2011-2014
With honors.	

Work Experience (Academic)

Graduate Student Teaching Assistant <i>University of Georgia, Department of Mathematics</i>	Athens, Georgia August 2017 - Present
I am currently a graduate student at UGA, receiving a stipend that is fulfilled by teaching duties, grading assignments, or tutoring.	
Precalculus Lab Supervisor <i>University of Georgia, Department of Mathematics</i>	Athens, Georgia September 2017-Present
I served as a proctor for the precalculus tests in the computer labs.	
Math Tutor <i>University of Georgia, Division of Academic Enhancement (DAE)</i>	Athens, Georgia January 2018-May 2018
I served as a representative to the DAE, tutoring in early university mathematics courses.	
Teaching Assistant Counselor <i>Summer Institute for Mathematics at the University of Washington (SIMUW)</i>	University of Washington June - August 2017
I was a TA/RA position, instructing and living with high school-aged students who are interested in learning advanced mathematics.	
Mathematics Tutor <i>CLUE Tutoring</i>	University of Washington May 2016-August 2017
I worked in a drop-in style tutoring for undergraduate (and graduate) mathematics and lead lectures in midterm reviews for calculus courses.	
Teaching Assistant <i>Department of Mathematics</i>	University of Washington June 2016-August 2016
I wrote homework solutions, responded to emails, and held office hours for (undergraduate) modern algebra.	
Homework Grader <i>Department of Mathematics</i>	University of Washington January 2015 - June 2017
I was a homework grader for undergraduate courses in mathematics, including mathematical proofs (Math 300), systems of and partial differential equations (Math 309), real analysis (Math 327/328) and modern algebra (Math 402).	

Mathematics Tutor

Olympic College, Washington

I worked in a drop-in style tutoring center in undergraduate mathematics and physics.

Bremerton

January-June 2014

Awards, Honors and Nominations

1. (Spring 2019) RTG Fellowship (NSF DM-1344994).
2. (Summer 2018) RTG Grant (NSF DM-1344994).
3. (AY 2017-2018) Graduate Teaching Assistantship.

Academic Projects

Vertical Research Group (Arithmetic Combinatorics over Finite Fields)

University of Georgia

August-December 2018

Presentation and research of analogs of standard results in combinatorial geometry, combinatorial number theory, and geometric measure theory in the context of finite fields.

Directed Reading Program

University of Georgia

January-May 2018

I was the graduate mentor for Hank Morris' undergraduate project in algebraic geometry.

Vertical Research Group (Hodge Theory)

University of Georgia

September 2017 - May 2018

I was part of a VRG at the University of Georgia during the 2017-2018 academic year that focused on the variations of Hodge structures on objects of type $(1, 1, 1, 1)$. Equivalently, this was a question on the classification of the possible monodromy representations.

Senior Project (Departmental Honors)

University of Washington

September 2016-June 2017

This was an expository paper on the connection between the resolution of singularities of projective curves and the Riemann-Roch theorem.

Talks and Special Lectures

July 26, 2018: "Hodge Theory, Period Mappings and Period Domains," Mock AMS, UGA.

March 6, 2018: "On Singular Abelian and K3 Surfaces," K3 surfaces topics course, UGA.

January 24, 2018: "A Theorem of Deligne," Hodge theory VRG, UGA.

September 26, 2017: "The Casas-Alvero Conjecture for Univariate Polynomials over a Field of Characteristic 0," Graduate Student Seminar, UGA.

July 31, 2017: Lecture on Projective Spaces over Infinite Fields, SIMUW.

March 10, 2017: Lecture on final exam material in vector calculus (Math 126), University of Washington's CLUE

March 8, 2017: A presentation on Bruhat Intervals, Coxeter Arrangements and λ -Decreasing Saturated Chains (Based on the work of Hultman, Linusson, Shreshan, and Sjöstrand), University of Washington

February 16/23, 2017: Lecture on material in vector calculus (Math 126), University of Washington's CLUE.

January 24, 2017: Lecture on midterm material in vector calculus (Math 126), University of Washington's CLUE.

December 8, 2016: Lecture on final exam material in pre-calculus (Math 120), University of Washington's CLUE.

October 24, 2016: Lecture on midterm material in differential calculus (Math 124), University of Washington's CLUE.

Conferences

June 23-24, 2018: Higgs Bundles Workshop at UIC.

February 23-25, 2018: GAGS at Georgia Tech.

Academic Service

October 21, 2017: Volunteer at the annual UGA Math Tournament.

March 21, 2016: Undergraduate panel speaker for the University of Washington's annual Mathday.

Languages

English: Native Language

Spanish: Proficient

speaking and writing

French: Intermediate

good with academic literature

Technical Skills

Computer Skills: \LaTeX , Microsoft Office, Mathematica, Logger Pro, and Python