

Curriculum Vitae

Jay Daigle

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Employment

2020 – Teaching Assistant Professor at The George Washington University.
2014 – 2020 Non Tenure Track Assistant Professor at Occidental College.

Education

2009 – 2014 Ph.D in Mathematics at California Institute of Technology.
Advisor: Matthias Flach.
Thesis: “On the local Tamagawa number conjecture for Tate motives”.

2008 – 2009 Master of Advanced Studies in Mathematics, Cambridge University, with Merit.

2004 – 2008 B.A. in Mathematics, Pomona College, cum laude.
Advisor: Stephan Garcia.

Academic Honors and Grants

2019 Linda and Tod White Teaching Prize.
2009 – 2014 NSF Graduate Research Fellowship.
2007 Inducted into Sigma Xi Honor Society.

Research Interests

Number Theory; monoids and factorization; Arithmetic geometry and algebraic number theory; p -adic Hodge Theory, (ϕ, Γ) -modules, L -functions, and the Tamagawa number conjecture. Supercharacters and exponential sums.

I study the theory of non-unique factorization in numerical monoids, which is easily accessible to students with an undergraduate-level background and provides a foundation for an undergraduate research program.

I also use (ϕ, Γ) -modules to study the equivariant Tamagawa number conjecture, a deep conjecture tying together much of arithmetic geometry and algebraic number theory.

Papers

Jay Daigle and Matthias Flach. On the local tamagawa number conjecture for tate motives over tamely ramified fields. *Algebra and Number Theory*, 10(6):1221–1275, 2016 arXiv:1508.06031

Jay Daigle. *On the local Tamagawa number conjecture for Tate motives*. PhD thesis, California Institute of Technology, <http://resolver.caltech.edu/CaltechTHESIS:05292014-153502602>, May 2014

S. T. Chapman, Jay Daigle, Rolf Hoyer, and Nathan Kaplan. Delta sets of numerical monoids using nonminimal sets of generators. *Comm. Algebra*, 38(7):2622–2634, 2010

Adam Booher, Jay Daigle, Jim Hoste, and Wenjing Zheng. Sampling Lissajous and Fourier knots. *Experiment. Math.*, 18(4):481–497, 2009 arXiv:0707.4210

Refereeing and Reviewing

Refereed papers for:

- *Mathematics Magazine* (2024)
- *Communications in Algebra* (2020)
- *Monatshefte für Mathematik* (2015)

Service Experience

2023 – Present ALEKS Department Liaison
 2022 – Present Math Calculus Placement Coordinator.
 2022 – Present Chair of Math Department Undergraduate Committee.
 2021 – Present Math Open Education Resource Coordinator
 2020 – Present Math Department Major Advisor.
 2020 – 2022 Member of Math Department ALEKS Committee.
 2020 – 2022 Member of Math Department Undergraduate Committee.

Teaching Experience

Courses at The George Washington University

- Math 1231, Single-Variable Calculus I: Fall 2020, 2021, 2022, 2023, 2024
Spring 2023, 2024
- Math 1232, Single-Variable Calculus II: Spring 2021, 2022, 2023, 2024
- Math 2233, Multivariable Calculus: Fall 2021, 2022
- Math 2184, Linear Algebra I: Fall 2020
- Math 2185, A Comprehensive Introduction to Linear Algebra: Fall 2023
- Math 4981, Cryptography (Topics in Mathematics): Spring 2021

Courses at Occidental College

- Junior Colloquium: Spring 2017, 2018, 2019
- Senior Colloquium, Cryptology: Fall 2017, 2018, 2019
- Linear Algebra: Spring 2017, 2019, 2020
- Multivariable Calculus: Spring 2018, 2020
- Experienced Calculus 1: Fall 2014, 2015, 2016, 2017, 2018, 2019
Spring 2016, 2017, 2018, 2019
- Real Analysis: Fall 2018
- Real Analysis II: Spring 2020
- Number Theory: Fall 2016, 2017, 2019
- Calculus 1: Spring 2016
- Advanced Calculus 2: Fall 2015
- Calculus 2: Spring 2015

Courses at the California Institute of Technology

- Taught Sequences and Series, Winter 2014
- Head TA for Calculus of Several Variables, Practical Track, Spring 2011 and 2014
- TA for “Freshman Mathematics”, Fall 2013
- Head TA for Linear Algebra, Analytical Track, Winter 2011
- TA for Calculus of One Variable, Fall 2010

Other Teaching Experience

- Ballroom instructor for Caltech Ballroom Dance Club, 2010 – 2015
- Math Tutoring through Caltech Dean's Office, Fall 2013
- Math and Language Tutor for C2 Education Tutoring Service, Summer 2008

Pedagogy and Professional Development at GW

- 2023 – Present Facilitator, GWU Course Design Institute
I give detailed feedback to faculty from across GW who are redesigning their courses, run small group sessions, and answer participant questions at the CDI workshop
- 2022 – Present Participant, Writing in STEM Disciplines seminar
I attend a series of workshops on incorporating writing into STEM courses
- 2021 Participant, Course Design Institute
I attended a week-long workshop where I redesigned a course with support from GW colleagues and Faculty Development staff
- 2020 Attendee,
CCAS faculty workshop on Implementing Alternative Assessment Practices

Pedagogy and Professional Development

- 2022 Attendee, Communicating Math Workshop
- 2021 Attendee, Mastery Grading Online Conference
- 2019 Participant, Faculty Learning Committee on Open Educational Resources
- 2017 Participant, Designing a New Course Workshop.
- 2015 Participant, Designing Student Polling Questions Workshop.
- 2014 Participant, Arizona Winter School on Arithmetic Statistics.
- 2013 Student in Caltech class E110: Principles of University Teaching in STEM.
- 2013 Participant, Arizona Winter School on Modular Forms and Modular Curves.

Presentations and Talks

“An easy on-ramp to mastery-based grading”

MAA MD-DC-VA Section Meeting, Virginia State University (April 29, 2023)

“Non-Unique Factorization in Numerical Monoids”

Induction ceremony for Pi Mu Epsilon at GW (April 15, 2021)

“Model Disagreements: How Thinking Like a Mathematician Explains

Our Broken Political Discourse” TEDxOccidentalCollege (April 21, 2018)

“An Introduction to Special Values of L -functions”

Caltech Math Club (April 2014)

“The Tamagawa number conjecture on motives, and (ϕ, Γ) -modules”

at Claremont Colleges Algebra/Number Theory/Combinatorics Seminar (March 2014)

Meritorious Poster Award at Undergraduate Poster Session

Joint Mathematics Meetings, San Diego (January 2008)

“Non-Minimal Factorization in Numerical Monoids”

The Young Mathematicians’ Conference at The Ohio State University (June 2007)

Meritorious Poster Award at Undergraduate Poster Session

Southern California-Nevada MAA section meeting (2007)

Undergraduate Poster Session at the 2007 annual AMS-MAA joint meetings in New Orleans.

Public Writing

“Election predictions can’t be proven – and that’s not a problem”

LBC Views, Leading Britain’s Conversation radio (September 12, 2024)