

Claire Merriman

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Citizenship: USA

Education

- Expected **PhD in Progress** *University of Illinois at Urbana-Champaign*, Urbana, IL.
May 2019 Department of Mathematics, advisor: Florin Boca
May 2013 **Bachelor of Arts** *Vanderbilt University*, Nashville, TN.
Honors in Mathematics, minor in Earth and Environmental Sciences

Publications

- Submitted **Continued fractions connecting number theory, dynamical systems, and hyperbolic geometry**
Expository, <https://faculty.math.illinois.edu/~emerrim2/smp.pdf>.
- June 2019 **α -expansions with odd partial quotients** with F. Boca, *Journal of Number Theory*.
<https://doi.org/10.1016/j.jnt.2018.11.015>
- May 2019 **Make a difference this summer** with M. Lanius and S. Sisneros-Thiry, *Notices of the AMS*.
- Feb 2019 Appendix to **Distribution of the periodic points of the Farey map** by B. Heersink with F. Boca and B. Heersink, *Communications in Mathematical Physics*.
<https://doi.org/10.1007/s00220-019-03283-0>
- October 2018 **Coding of geodesics on some modular surfaces and applications to odd and even continued fractions** with F. Boca, *Indagationes Mathematicae* (2018), <https://doi.org/10.1016/j.indag.2018.05.004>.

Grants and Awards

- Fall 2018 **Thesis Writing Fellowship** *Noah Snyder's NSF CAREER Grant DMS-1454767*.
Fellowship for math graduate students doing extraordinary teaching and outreach
- April 2016-
May 2019 **Dolciani Mathematics Enrichment Grants** *Mathematical Association of America*, Coauthor.
Three grants to fund Summer Illinois Mathematics Camp for local middle and high school students totaling \$14,000.
- AY 2016-2017,
AY 2015-2016 **Chancellor's Public Engagement Student Fellows** *University of Illinois at Urbana-Champaign Office of Public Engagement*, Co-PI.
Grants to fund Summer Illinois Mathematics Camp for local middle and high school students totaling \$2500.

Talks

Invited Talks

- Jan 2019 **Joint Math Meetings** *Coding geodesic flows for various continued fractions*, Baltimore, MD.
AMS Special Session: Geometry and Dynamics of Continued Fractions
- Dec 2018 **University of Virginia** *Coding geodesic flows and various continued fractions*, Charlottesville, VA.
Geometry Seminar
- Nov 2018 **University of Maryland** *Coding geodesic flows and various continued fractions*, College Park, MD.
Student Dynamics Seminar
- Nov 2018 **University of Houston** *Coding geodesic flows for even and odd continued fractions*, Houston, TX.
Dynamics Seminar
- Oct 2018 **Queen's University** *α -odd continued fraction expansions*, Kingston, ON, Canada.
Dynamics, Geometry, and Groups Seminar
- Oct 2018 **University of Illinois at Urbana-Champaign** *Connecting the upper half plane, geodesic flows, and continued fractions*, Urbana, IL.
AWM Graduate Student Colloquium
- Sept 2018 **George Mason University** *Increasing outreach activities in the Illinois Geometry Lab*, Fairfax, VA.
Student Research Talks (StReeTs) at George Mason University
- May 2018 **Northwestern University** *Coding geodesic flows and various continued fractions*, Evanston, IL.
Dynamical Systems Seminar
- Apr 2018 **George Mason University** *Connecting outreach and continued fraction expansions through tessellations*, Fairfax, VA.
Topology, Algebraic Geometry, and Dynamics Seminar

- Feb 2018 **Eastern Illinois University** *Coding geodesic flows and various continued fractions*, Charleston, IL.
Mathematics Colloquium
- Sept 2017 **Rose-Hulman Institute of Technology** *From hyperbolic planes to continued fractions*, Terra Haute, IN.
Mathematics Seminar
- Aug 2017 **Geometry Labs United** *Illinois Geometry Lab+Mathways: Summer Illinois Math Camp*, Seattle, WA.
Presentations from Directors
- Conference Talks**
- Aug 2018 **MAA Mathfest** *Using geodesics to generate continued fractions*, Denver, CO.
Great Talks for a General Audience: Coached Presentations by Graduate Students
- Apr 2018 **Agnes Scott College** *Using modular surfaces to generate continued fractions*, Decatur, GA.
Carolina Dynamics Symposium 2018
- Apr 2018 **University of Maryland** *Coding continued fractions as cutting sequences*, College Park, MD.
Workshop on Dynamical Systems and Related Topics
- Mar 2018 **MAA Trisectional Meeting** *Using Geodesics to Generate Continued Fractions*, Valparaiso, IN.
- Jan 2018 **Joint Math Meetings** *Summer Illinois Math Camp*, San Diego, CA.
MAA General Contributed Paper Session on Outreach
- Jan 2017 **Joint Math Meetings** *Summer Illinois Math Camp*, Atlanta, GA.
MAA General Contributed Paper Session on Outreach

Teaching

- Spring 2013-
Present **Teaching Assistant** *University of Illinois at Urbana-Champaign*.
* ranked as Excellent by student course evaluations, ** ranked Outstanding, + Merit section
All calculus courses use active learning group work
The Merit Scholars program focuses on retaining students from underrepresented minorities or rural schools, as well as those who have not declared a major and women in engineering. Teaching assistants create the group work assignments for these sections.
- o MATH 231 Calculus II +Spring 2019, *Fall 2017, **Spring 2015, Fall 2014
 - o MATH 241 Calculus III Spring 2016
 - o MATH 220 Calculus +Fall 2015
 - o MATH 234 Business Calculus *Spring 2014
- Graduate Student Mentor** *Illinois Geometry Lab*.
Worked with two faculty members to mentor group of undergraduate research projects
- Spring 2019 o Natural extension domains of α -odd continued fractions
- Fall 2018 o Developing exciting outreach material
- Spring 2016 o Interactive tool to learn linear algebra
- Fall 2014 o Gaps between successive numbers in a sequence after random sampling
- Summers 2015, 2016 **Instructor** *Summer Illinois Math Camp*, Urbana, IL.
Developed and taught week-long classes with a focus on hands on discovery
- o Making and breaking codes: cryptology, rising 8th and 9th grade students Summer 2016
 - Team taught with undergraduate teaching assistants from Merit program
 - o Number theory and cryptology, rising 9th-12th grade students Summer 2015
- Fall 2013 **Grader** *University of Illinois at Urbana-Champaign*.
MATH 125 Linear Algebra

Outreach

- Spring 2015-Present **Co-founder, Director** *Summer Illinois Math Camp*, Urbana, IL.
Day camps that introduce local middle and high school students to the creative, discovery driven side of mathematics
Each camp is one week and covers two topics outside of the K-12 curriculum
- o Raise funds to make camp free for all participants
 - o Recruit and hire graduate student instructors
 - o Hire undergraduate assistant instructors
 - o Advertise camp, manage camper application process, manage staff training
- Fall 2015-
Summer 2018 **Outreach manager** *Illinois Geometry Lab*, Urbana, IL.
Undergraduate research lab that runs public engagement and outreach activities
- o Train volunteers and maintain lesson plans for IGL outreach activities
 - o Organize class trips to the University of Illinois Department of Mathematics
 - o Run hands-on math activities with local K-12 students

- Fall 2014-Present **Volunteer** *Sonia Math Day for Girls*, Urbana, IL.
 Day long workshop for for local high school girls on mathematical topics not covered in high school
 ○ Ran hands-on math activities based around a theme *Fall 2014-Fall 2015, Fall 2018, Spring 2019*
 ○ Organize volunteers *Spring 2016-Fall 2016*
 ○ Organized activities and materials *Fall 2017*

- Fall 2014-Fall 2015, **Volunteer** *Girls Engaged in Math and Science*, Urbana, IL.
 Spring 2018 Series of 2-hour workshops for local middle school girls to learn about geometric topics not typically covered in school, with an emphasis on creating objects that they can take home
 ○ Run hands-on math activities

Service

- Fall 2017-Present **Academic Committee Member** *Association of Women in Mathematics student chapter.*
 Summer 2015 **Academic Advisor** *Undergraduate Office, Department of Mathematics.*

Research Workshops

- Oct 2018 **Workshop on Dynamics and Moduli Spaces of Translation Surfaces** *Fields Institute, Toronto, ON.*
 Aug 2018 **Summer School on Teichmüller Theory and its Connections to Geometry, Topology and Dynamics** *Fields Institute, Toronto, ON.*
 June 2017 **AMS Mathematics Research Community** *Snowbird, UT.*
 Dynamical Systems: Smooth, Symbolic, and Measurable
 June 2016 **ICERM Illustration Mathematics Workshop** *Providence, RI.*

Professional Development

- June 2018 **Career Mentoring Workshop (CaMeW)** *Mt Holyoke, MA.*
 Jan 2017 **SMP Graduate Education Mentoring Workshop** *Atlanta, GA.*
 Jan 2016 **SMP Graduate Education Mentoring Workshop** *Seattle, WA.*
 Jan 2015 **SMP Graduate Education Mentoring Workshop** *San Antonio, TX.*

Professional Memberships

AMS, MAA, AWM.

References

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