

DR. EDGAR A. BERING IV

edgar.bering@temple.edu

RESEARCH INTERESTS

The geometry and dynamics of mapping class groups and outer automorphisms of free groups, as well as the combinatorics of model spaces on which they act.

EDUCATION

Ph.D. in Mathematics

August 2017

Thesis: *Compatible Trees and Outer Automorphisms of a Free Group*

Advisor: Marc Culler

University of Illinois at Chicago, Chicago, IL

B.Math., Honours Combinatorics & Optimization and Pure Mathematics, *with distinction*

April 2012

University of Waterloo, Waterloo, ON

EMPLOYMENT

Research Assistant Professor

July 2017–Present

Temple University

Graduate Mentor, Mathematical Computing Laboratory

Fall 2016, Spring 2017

University of Illinois at Chicago

PAPERS AND PREPRINTS

E. A. Bering IV, *A uniform McCarthy-type theorem for linearly growing outer automorphisms of a free group*, preprint. arxiv:1709.07468.

E. A. Bering IV, *Length Function Compatibility for Group Actions on Real Trees*, preprint. arxiv:1708.07078.

E. A. Bering IV, G. Conant, and J. Gaster, *On the complexity of finite subgraphs of the curve graph*, to appear, *Osaka Journal of Mathematics*. arXiv:1609.02548.

E. A. Bering IV and J. Gaster, *The random graph embeds in the curve graph of an infinite genus surface*, *New York Journal of Mathematics* **23** (2017), 59–66. arXiv:1405.6423.

E. A. Bering IV, *A brief introduction to measurable cardinals*, *Waterloo Mathematics Review* **2** (2013), no.2, 2–13.

G. Alagic and E. A. Bering IV, *Quantum algorithms for invariants of triangulated manifolds*, *Quantum Information and Computation* **12** (2012), no. 9 & 10, 843–863. arXiv:1108.5424. Also presented as a poster at QIP 2012.

AWARDS AND FELLOWSHIPS

Mathematical Association of America Project NExT Fellow.

2017

CONFERENCE TALKS

Invited Speaker, Special Session on “Boundaries and Non-positive Curvature in Group Theory”. *April 2018*
AMS Southeastern Sectional Meeting. Vanderbilt University.

Invited Speaker, Geometric Group Theory Session.

March 2018

52nd Spring Topology and Dynamical Systems Conference. Auburn University.

Chicago Action Now! Workshop on Dynamical Systems, Group Actions, and Geometry. University of Illinois at Chicago. *February 2017*

SEMINAR TALKS

Topology and Geometric Group Theory Seminar. Cornell University.	<i>April 2018</i>
Geometric Group Theory Seminar. McGill University.	<i>March 2018</i>
Claremont Topology Seminar. Pomona College.	<i>January 2018</i>
Teichmuller Theory Seminar. Rutgers University Newark.	<i>December 2017</i>
Geometry & Topology Seminar. CUNY Graduate Center.	<i>November 2017</i>
Geometry & Topology Seminar. University of Oklahoma.	<i>November 2017</i>
Topology Seminar. University of Arkansas.	<i>October 2017</i>
GEAR Seminar. University of Illinois at Urbana-Champaign.	<i>April 2017</i>

TEACHING EXPERIENCE

Temple University.

- Calculus III (MATH 2043).
- Differential Topology II (MATH 9072).
Topics course covering techniques and themes in three and four dimensional topology using the Poincaré sphere as a guiding example. Discussed: surgery on knots and links and the relation to 4-manifolds given by Kirby calculus, branched covers of knots, the topology of singularities of algebraic surfaces, Seifert fibered spaces and the classification thereof, polyhedral and crystallographic constructions.

Graduate Teaching Assistant, University of Illinois at Chicago.

Instructor for:

- Emerging Scholars' Workshop for Precalculus (MATH 122).
- Emerging Scholars' Workshop for Calculus I (MATH 179).
- Emerging Scholars' Workshop for Calculus II (MATH 182).
(Emerging Scholars' Workshops are Triesman-style enrichment workshops complementing a course.)

Teaching Assistant for:

- Precalculus (MATH 121).
- Calculus I (MATH 180).
- Calculus II (MATH 181).
- Introduction to Advanced Mathematics (MATH 215).
- Computer Algorithms I (MCS 401).

SERVICE

Reviewer, Mathematical Reviews and Zentralblatt für Mathematik.	<i>Since 2017</i>
Organizer, Graduate Geometry, Topology, and Dynamics Seminar, University of Illinois at Chicago.	<i>August 2014—December 2016</i>
Volunteer Instructor, Math Circles of Chicago.	<i>August 2013—May 2017</i>
Oral Competition Judge, ICTM Regional High School Math Contest, University of Illinois at Chicago.	<i>February 2015</i>
Judge, QED: Chicago's Youth Math Symposium, Walter Payton College Preparatory High School.	<i>December 2014, December 2015, December 2016</i>

CONFERENCES ATTENDED

AMS Southeastern Sectional Meeting, Vanderbilt University	<i>April 2018</i>
Spring Topology and Dynamical Systems Conference, Auburn University	<i>March 2018</i>
Joint Mathematics Meetings, San Diego CA	<i>January 2018</i>
Virginia Topology Conference, University of Virginia	<i>November 2017</i>
Groups explored through geometry and dynamics, Princeton University	<i>September 2017</i>
MAA Math Fest 2017, Chicago, IL	<i>July 2017</i>
Redbud Topology Conference, University of Arkansas	<i>April 2017</i>
Junior Geometry and Topology, University of Wisconsin Madison	<i>April 2017</i>
Young Geometric Group Theory VI, Oxford University	<i>March 2017</i>
Chicago Action Now! University of Illinois at Chicago	<i>February 2017</i>
Joint Mathematics Meetings, Atlanta GA	<i>January 2017</i>
Virginia Topology Conference, University of Virginia	<i>November 2016</i>
Algebraic, Topological & Combinatorial Approaches to $Aut(F_n)$, Technion	<i>July 2016</i>
Beyond Hyperbolicity, University of Cambridge	<i>June 2016</i>
Graduate Student Topology and Geometry Conference, Indiana University Bloomington	<i>April 2016</i>
Young Geometric Group Theory V, Karlsruhe Institute of Technology	<i>February 2016</i>
Dubrovnik VIII - Geometric Topology, Geometric Group Theory & Dynamical Systems	<i>June 2015</i>
Workshop on mapping class groups and $Out(F_n)$, University of Texas Austin	<i>May 2015</i>
Geometric Group Theory in the Midwest, University of Wisconsin Madison	<i>November 2014</i>
Thurston Legacy Conference, Cornell University	<i>June 2014</i>
GEAR Junior Retreat, University of Michigan Ann Arbor	<i>May 2014</i>
Cube complexes and 3-manifolds, University of Illinois at Chicago	<i>May 2013</i>
Quantum Information Processing 2012, University of Quebec at Montreal	<i>December 2011</i>

Updated: April 30, 2018