

Research and teaching interests

I am a PhD candidate at the [University of Oklahoma](#) working under the direction of [Max Forester](#). My dissertation is tentatively titled "Cubulating one-relator products with torsion." My research interests lie in the field of [geometric group theory](#). I work as a graduate teaching assistant in the math department at the University of Oklahoma, and I am currently on the job market for a mathematics teaching and research position at a post-secondary institution.

Education

- 2014 – Present **PhD (Mathematics)**, THE UNIVERSITY OF OKLAHOMA, expected 2019.
- 2012 – 2014 **MA (Mathematics)**, THE UNIVERSITY OF OKLAHOMA, *GPA – 4.0*.
- 2007 – 2011 **BA (Mathematics; Computer Science)**, BETHEL COLLEGE, KS, *Summa Cum Laude*.
- Fall 2010 **Budapest Semesters in Mathematics**.

Service and honors

- Fall 2018 – **Recipient**, *Bullard dissertation completion award*, University of Oklahoma.
- Spring 2019 Supports superior final-year doctoral students toward finishing their dissertation.
- Fall 2017 **Recipient**, *Richard V. Andree Memorial Scholarship – for academic excellence and department and university citizenship*, University of Oklahoma.
- F15, S16, **Recipient**, *Nancy Scofield Hester Math Scholarship – for academic excellence*, University of Oklahoma.
- F17, S18
- Spring 2016 **Recipient**, *C Eugene Springer Math Scholarship – for academic excellence*, University of Oklahoma.
- Fall 2014 – **Organizer**, *Student Topology and Geometry Seminar*, University of Oklahoma.
- Spring 2018
- Fall 2016 – **Graduate Mentor**, University of Oklahoma.
- Spring 2017 Mentored undergraduate Andy Jarnevic in a survey of graduate-level topology and geometric group theory.
- Spring 2014 **Vice President**, *Mathematics Graduate Student Association*, University of Oklahoma.
- Spring 2015 **Head Learning Specialist**, *Math Help Center*, University of Oklahoma.
- Fall 2016 – **Volunteer**, *Math Day*, University of Oklahoma.
- Fall 2017 Provided assistance as required during Math Day, an outreach program for high school students.
- 2015 – 2016 **Member**, *Phi Kappa Phi Honor Society*, University of Oklahoma Chapter.

Preprints and manuscripts

Cubulating one-relator groups with torsion, *in preparation*.

Another visual proof of Nichomachus' Theorem, *preprint*.
(available at <http://benstuc.ky>)

Select talks

- Fall 2018 **Cubulating one-relator free products with torsion**, *Geometry and topology seminar*, Temple University.
- Spring 2018 **Cubulable quotients of free products**, *Graduate Student Topology and Geometry Conference*, University of Illinois at Chicago, (also presented at [Temple Graduate Student Conference in Topology, Geometry and Algebra](#)).
- Spring 2018 **An application of symplectic connect sum**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Fall 2017 **Forcing the continuum hypothesis**, *Student Set Theory Seminar*, University of Oklahoma.
- Fall 2017 **Exotic aspherical manifolds**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Fall 2017 **Mathematics labs: Our efforts and students' reactions (with Sepideh Stewart)**, *RAMP-UP seminar*, University of Oklahoma.
- Fall 2017 **Cardinal arithmetic and relativization**, *Student Set Theory Seminar*, University of Oklahoma.
- Fall 2017 **Attacking (and being rebuffed by) the Hadwiger-Nelson problem**, *Graduate Student Seminar*, University of Oklahoma.
- Summer 2017 **The Freiheitssatz via stackings**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Summer 2017 **The Freiheitssatz via diagrams**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Spring 2017 **Hartnell's firefighter problem and growth of groups**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Spring 2017 **What is mathematics research?**, *Norman Science Cafe*, Norman Public Library.
- Fall 2016 **One-relator groups and local indicability**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Spring 2016 **The Hopf-Rinow Theorem**, *Differential Geometry II Oral Presentation*, University of Oklahoma.
- Spring 2016 **Quasi-isometry invariants and hyperbolic groups**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Fall 2015 **Degree of a smooth map**, *Differential Geometry I Oral Presentation*, University of Oklahoma.
- Fall 2015 **Applications of graph folding**, *Geometry and Topology Seminar*, University of Oklahoma.

- Fall 2015 **Limits and colimits**, *Student Category Theory Seminar*, University of Oklahoma.
- Fall 2015 **Introduction to Bass-Serre Theory**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Fall 2014 **The Wirtinger presentation of fundamental groups of knot complements**, *Student Geometry and Topology Seminar*, University of Oklahoma.
- Spring 2013 **An algorithmic approach to raising the lower bound of $R(5,5)$** , *Graduate Student Combinatorics Conference*, University of Minnesota, Twin Cities.

Conferences

- Summer 2018 **Temple Graduate Student Conference in Topology, Geometry and Algebra**, *Temple University*, Philadelphia, PA.
- Spring 2018 **Graduate Student Topology and Geometry Conference**, *University of Illinois at Chicago*, Chicago, IL.
- Fall 2017 **Redbud Topology Conference**, *University of Oklahoma*, Norman, OK.
- Fall 2017 **Groups explored through geometry and dynamics: A Conference in Celebration of Lee Mosher**, *Princeton University*, Princeton, NJ.
- Spring 2017 **Redbud Topology Conference**, *University of Arkansas*, Fayetteville, AR.
- Spring 2017 **Texas Geometry and Topology Conference**, *Texas Tech University*, Lubbock, TX.
- Fall 2016 **Geometry of Mapping Class Groups and $Out(F_n)$** , *Mathematical Sciences Research Institute*, Berkeley, CA.
- Fall 2016 **Groups Acting on $CAT(0)$ Spaces**, *Mathematical Sciences Research Institute*, Berkeley, CA.
- Fall 2016 **Introductory Workshop: Geometric Group Theory**, *Mathematical Sciences Research Institute*, Berkeley, CA.
- Spring 2016 **Redbud Topology Conference**, *University of Oklahoma*, Norman, OK.
- Fall 2015 **Redbud Topology Conference**, *University of Arkansas*, Fayetteville, AR.
- Spring 2015 **Redbud Topology Conference**, *Oklahoma State University*, Stillwater, OK.
- Spring 2015 **40th Spring Lecture Series**, *University of Arkansas*, Fayetteville, AR.
- Spring 2015 **Texas Geometry and Topology Conference**, *University of Houston*, Houston, TX.
- Fall 2014 **Redbud Topology Conference**, *University of Arkansas*, Fayetteville, AR.
- Spring 2013 **3rd Graduate Research Conference in Algebra and Representation Theory**, *Kansas State University*, Manhattan, KS.

Teaching experience

- Summer 2016 **Instructor**, CENTER FOR TALENTED YOUTH (*Johns Hopkins University*), Bristol, RI.
Led a class called Paradoxes and Infinities for gifted 7th through 10th graders in an immersive setting using active learning techniques.

2012 – **Graduate Teaching Assistant**, THE UNIVERSITY OF OKLAHOMA, Norman, OK.
Present Teach sections and lead discussion hours for 1000-level math courses. Grade assignments and exams. Tutor weekly in the mathematics help center.

Classes taught

Summer 2018 **Calculus I (Instructor of record)**.
Spring 2018 **Calculus I (discussion section)**.
Fall 2017 **Accelerated Calculus II (discussion section)**.
Summer 2017 **Calculus II (Instructor of record)**.
Spring 2017 **Accelerated Calculus II Honors (discussion section)**.
Fall 2016 **Accelerated Calculus II Honors (discussion section)**.
Spring 2016 **Calculus I (Instructor of record)**.
Fall 2015 **Accelerated Calculus III (discussion section)**.
Summer 2015 **Accelerated Calculus I (Instructor of record)**.
Spring 2015 **Accelerated Calculus I (discussion section)**.
Fall 2014 **Accelerated Calculus I (discussion section)**.
Summer 2014 **Calculus I (Instructor of record)**.
Spring 2014 **Calculus I (discussion section)**.
Fall 2013 **Pre-Calculus/Trigonometry (Instructor of record)**.
Summer 2013 **Math for Critical Thinking (Instructor of record)**.
Spring 2013 **College Algebra (Instructor of record)**.
Fall 2012 **Math for Critical Thinking (discussion section)**.

Other work experience

Summer 2018 **Tutor**, NEXTTHOUGHT, Norman, Oklahoma.
Recorded detailed, high-quality explanations of college-level textbook solution walkthroughs for over 30 problems in calculus, statistics, differential equations, and computer science.

2011 – 2012 **Network Administrator**, LARI MEMORIAL PEACE MUSEUM, Kimende, Kenya.
Built partnerships with thirteen Kenyan primary and secondary schools by equipping and maintaining on-site computer labs with a network of eight computers and a satellite internet connection. Educated students and teachers about computer basics in a collaborative setting.

2011 **Information Services Intern**, EXCEL INDUSTRIES, Hesston, KS.
Developed tools to manage the organization of information in SQL databases and aid system administration.

Computer experience

JAVA, C/C++, PYTHON, Sage, GAP, Mathematica, TI-83/84/89, HTML, CSS, L^AT_EX, Linux, Windows, AutoCAD, Photoshop, word and spreadsheet processing

References available upon request.