Department of Mathematics
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Lvzhou Chen

Employment

2020–current **R. H. Bing Instructor**, *The University of Texas at Austin*, USA.

Education

2014–2020 **Ph.D. in Mathematics**, *The University of Chicago*, USA.
Advisor: Danny Calegari
Thesis: Surfaces in graphs of groups and the stable commutator length

2015 **M.S. in Mathematics**, *The University of Chicago*, USA.

2014 **B.S. in Mathematics and Applied Mathematics**, *Fudan University*, China.
Thesis Advisors: Zhi Lü and Yijun Yao
Thesis: $\mathbb{Z}_2$-cohomological rigidity of small covers over n-Löbell

Research Interests

Geometry, topology, and dynamics in low dimensions, with an emphasis on stable commutator length and mapping class groups of infinite-type surfaces

Publications

1. **Scl in graphs of groups**, *Invent. Math.*, **221** (2020), no. 2, 329–396.
2. **(with Danny Calegari) Big mapping class groups and rigidity of the simple circle**, *Ergodic Theory and Dynamical Systems*, **41** (2021), no. 7, 1961–1987.
3. **Scl in free products**, *Algebr. Geom. Topol.*, **18** (2018), no.6, 3279–3313.
4. **Spectral gap of scl in free products**, *Proc. Amer. Math. Soc.*, **146** (2018), no.7, 3143–3151.
5. **(with Santana Afton, Danny Calegari, Rylee Alanza Lyman) Nielsen realization for infinite-type surfaces**, *Proc. Amer. Math. Soc.*, **149** (2021), no. 4, 1791–1799.
6. **(with Nicolaus Heuer) Spectral gap of scl in graphs of groups and 3-manifolds**, *submitted*, arXiv: 1910.14146, 69 pages.
7. **(with Alexander J. Rasmussen) Laminations and 2-filling rays on infinite type surfaces**, *submitted*, arXiv: 2010.06029, 44 pages.
8. **(with Nicolaus Heuer) Stable commutator length in right-angled Artin and Coxeter groups**, *submitted*, arXiv 2012.04088, 41 pages.
9. **(with Chloe I. Avery) Stable torsion length**, *submitted*, arXiv 2103.14116, 38 pages.

10. **(with Danny Calegari) Normal subgroups of big mapping class groups**, *in preparation*.

Awards

2020 **Wirszup Fellowship**, *University of Chicago*, USA.
given to an excellent finishing graduate student

Invited Talks

June 2021 **International Young Seminar on Bounded Cohomology and Simplicial Volume**.
Stable torsion length

June 2021 **GGT Seminar, University of Münster**.
Stable torsion length

June 2021 **Infinite-type surfaces and big mapping class groups session, NCNGT Conference**.
Normal subgroups of big mapping class groups

June 2021 **Oberseminar Groups and Geometry, Universität Bielefeld Bielefeld**.
Big mapping class groups and rigidity of the simple circle

May 2021 **Topology Festival, Cornell University**.
Stable torsion length

May 2021 **GGT session, 2021 Spring Topology and Dynamics Conference**.
Normal subgroups of big mapping class groups

March 2021 **Geometry Topology Seminar, Georgia Tech**.
Big mapping class groups and rigidity of the simple circle

Nov. 2020 **Big Surfaces Seminar, online**.
Existence of 2-filling rays

Oct. 2020 **Topology/Geometry Seminar, Rutgers**.
Stable commutator lengths of integral chains in right-angled Artin groups

Sept. 2020 **GGT Seminar, Ohio State University**.
Stable commutator lengths of integral chains in right-angled Artin groups

Aug. 2020 **Topology Seminar, University of Texas at Austin**.
Stable commutator lengths of integral chains in right-angled Artin groups

June 2020 **Hyperbolic Lunch, University of Toronto**.
Big mapping class groups and rigidity of the simple circle

June 2020 **Hyperbolic geometry and manifolds session, NCNGT Conference**.
Stable commutator length in graphs of groups

Feb. 2020 **ANT-CoG Seminar, University of North Carolina at Greensboro**.
Spectral gap of stable commutator length in graphs of groups and 3-manifolds

Feb. 2020 **Geometry Seminar, University of Michigan**.
Big mapping class groups and rigidity of the simple circle

Jan. 2020 **Geometry and Topology Seminar, Caltech**.
Stable commutator length in groups acting on trees

Dec. 2019 **Topology Seminar, Fudan University**.
Spectral gap of stable commutator length in graphs of groups and 3-manifolds

Oct. 2019 **Geom/Top Seminar, Washington University in St. Louis**.
Spectral gap of stable commutator length in graphs of groups and 3-manifolds

Oct. 2019 **Geometry and Topology Seminar, University of Chicago**.
Big mapping class groups and rigidity of the simple circle

Sept. 2019 **Dynamics Seminar, Boston College**.
Big mapping class groups and rigidity of the simple circle

March 2019 **Topology and Geometric Group Theory Seminar, Cornell University**.
Stable commutator length in Baumslag–Solitar groups

Nov. 2018 **Fall AMS southeastern sectional meeting, University of Arkansas**.
Stable commutator length in generalized Baumslag–Solitar groups

Sept. 2017 **Fall AMS eastern sectional meeting, University at Buffalo**.
Spectral gap of stable commutator length

Referee Experience

J. AMS, GAFA, Invent. Math., Algebr. Geom. Topol. (twice), J. Topol. Anal.

Teaching Experience

Instructor at UT Austin

Fall 2021 **M 408 S**, *Integral Calculus for Science*.

Spring 2021 **M 427 L**, *Advanced Calculus for Applications II*.

Fall 2020 **M 328 K**, *Introduction to Number Theory*.

Instructor at UChicago

2019–2020 **Math 152 and 153**, *Calculus*.

2018–2019 **Math 152 and 153**, *Calculus*.

2017–2018 **Math 152 and 153**, *Calculus*.

2016–2017 **Math 151, 152 and 153**, *Calculus*.

College Fellow (Teaching Assistant) at UChicago

Spring 2016 **Math 263**, *Introduction to Algebraic Topology*.

Winter 2016 **Math 262**, *Point-set Topology*.

Fall 2015 **Math 267**, *Introduction to Representation Theory of Finite Groups*.

Grader at UChicago

Spring 2019 **Math 319**, *Graduate Riemannian Geometry*.

Fall 2016 **Math 317**, *Graduate Algebraic Topology*.

Winter 2016 **Math 318**, *Graduate Differential Topology*.

Service

Spring 2020 **Organizer of Geometric Group Theory session in NCNGT conference**.
Designed mini-sessions, invited speakers and hosted the session online

Fall 2018 **Organizer of Reading Group**, *on surface subgroups*.

Divided papers into manageable parts for one-hour talks, assigned talks to participating postdocs and graduate students, gave several talks

2017–2018 **Mentor for Directed Reading Program**.

Found suitable topics and textbooks for undergraduate students to study

- Mentee: Mary Stelow. Topic: 1-dimensional Complex Dynamics
- Mentee: Jeremy Atos. Topic: Fundamental Groups and Homology Groups