

# Eduard Einstein

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Department of Mathematics  
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## Employment:

**Postdoctoral Associate**, September 2021-  
**University of Pittsburgh**, Pittsburgh, PA  
Interdisciplinary position in hyperbolic geometry and neuroscience funded by the Swartz Foundation  
Mentors: Jason DeBlois (Pitt) and Jonathan Victor (Weill Cornell Medical College, Neuroscience)

**Research Assistant Professor (Postdoc)**, 2018-2021  
**University of Illinois, Chicago**, Chicago, IL  
Mentor: Daniel Groves

## Education:

**Ph.D. in Mathematics**, received August 2018,  
**Cornell University**, Ithaca, NY  
Advisor: Jason Manning

**M.S. in Mathematics**, received May 2015  
**Cornell University**, Ithaca, NY

**M.A. in Mathematics**, received June 2012  
**University of California, Santa Barbara**, Santa Barbara, CA

**B.A. in Mathematics**, received May 2010  
**Pomona College**, Claremont, CA

## Papers:

Eduard Einstein and Thomas Ng. **Relatively Geometric Cubulations of Small Cancellation Free Products**. Preprint: [ArXiv:2111.03008](https://arxiv.org/abs/2111.03008).

Eduard Einstein, Daniel Groves and Thomas Ng. **Separation and Relative Quasi-convexity Criteria for Relatively Geometric Actions**. Preprint: [Arxiv:2110.14682](https://arxiv.org/abs/2110.14682).

Eduard Einstein and Daniel Groves. **Relatively Geometric Actions on CAT(0) Cube Complexes**. Preprint: [Arxiv:2010.14441](https://arxiv.org/abs/2010.14441), to appear, *J. Lond. Math. Soc.* (Accepted 9/23/21).

Eduard Einstein and Daniel Groves. **Relative Cubulations and groups with a 2-sphere boundary**. *Compositio Mathematica* 156 (2020) no. 4, 862–867.

Eduard Einstein. **Hierarchies for Relatively Hyperbolic Virtually Special Groups**. Preprint: [Arxiv:1903.12284](https://arxiv.org/abs/1903.12284) (Submitted to *Algebraic and Geometric Topology*, under review).

Will Dison, Eduard Einstein and Timothy R. Riley, **Taming the hydra: the word problem and extreme integer compression**, *International Journal of Algebra and Computation*, 28 (2018), no. 7, 1299–1381.

Will Dison, Eduard Einstein, and Timothy R. Riley. **Ackermannian integer compression and the word problem for hydra groups**. 41st International Symposium on Mathematical Foundations of Computer Science (MFCS 2016), volume 58 of Leibniz International Proceedings in Informatics (LIPIcs), pages 30:1–30:14, Dagstuhl, Germany, 2016. Schloss Dagstuhl Leibniz Zentrum fuer Informatik

Eduard Einstein, Charles Johnson, Brian Lins and Ilya Spitkovsky, **The ratio field of values**, *Linear Algebra and its Applications*, 434 (2011), 1119-1136.

## Grants, Awards and Honors:

**AMS-Simons Travel Grant**, July 2019-June 2022, \$ 4000.

**Raymond L. Wilder Prize for Outstanding Academic Achievement**, awarded June 2011  
Department of Mathematics, University of California, Santa Barbara

**Bruce Jay Levy Memorial Prize in Mathematics**, awarded September 2009  
Department of Mathematics, Pomona College

**Summer Matrix Analysis REU**: Invited Participant, June-August, 2009  
College of William and Mary, Williamsburg, VA

## Outreach, Mentoring and Undergraduate Research:

**Lead Instructor, YSP at UIC**. Supervised day to day operations and developed content for a 4 week summer program for students in 9th-12th grade.

**Mentor, First-at-LAS Connect Program**. One on one mentoring with a first generation college student in the College of Liberal Arts and Sciences, Spring 2021.

**Visualizing triangulations and tessellations with 3D printing**, supervised independent study research group with 4 students. Project sponsored by the UIC Mathematical Computing Lab, Fall 2019.

## Selected Talks

Mathematics and Statistics Colloquium, Swarthmore College, (**Invited**), March 2022, Swarthmore, PA.

Topology and Geometric Group Theory Seminar, Ohio State University, (**Invited**), March 2022, Columbus, OH.

Groups and Geometry in the South East, (**Invited**), December 2021.

UT Groups and Dynamics Seminar, University of Texas, (**Invited**), April 2021, Austin, TX.

Topology Seminar, University of Wisconsin, Milwaukee, (**Invited**), March 2021, Milwaukee, WI.

Algebra, Number Theory, Topology, Combinatorics and Geometry Seminar, (**Invited**), February 2021, University of North Carolina, Greensboro, NC.

Topology and Geometric Group Theory Seminar, Ohio State University, (**Invited**), February 2021, Ohio State University, Columbus, OH.

Lightning talk, *Young Geometric Group Theory VIII*, July 2019, Bilbao, Spain.

Topology Seminar, UIC, February 2019, Chicago, IL.

Topology Seminar, University of Wisconsin, Milwaukee, (**Invited**), October 2018, Milwaukee, WI.

Geometry and Topology Seminar, University of Wisconsin, (**Invited**), September 2018, Madison, WI.

Summer Conference on Topology and its Applications, (**Invited**), July 2018, Bowling Green, Kentucky.

Spring Topology and Dynamics Conference, (**Invited**), March 2018, Auburn, AL.

Geometric Group Theory and Topology Seminar, Tufts University, (**Invited**), November 2017, Medford, MA.

Topology Seminar, University of Wisconsin, Milwaukee, (**Invited**), October 2017, Milwaukee, WI.

McGill Geometric Group Theory Seminar, (**Invited**), October 2017, Montreal, QC.

Claremont Topology Seminar, (**Invited**), October 2017, Claremont, CA.

Graduate Student Conference in Algebra, Geometry and Topology, June 2017, Temple University, Philadelphia, PA.

Binghamton University Topology Seminar (**Invited**), April 2017, Binghamton, NY.

Graduate Student Topology and Geometry Conference, April 2017, Michigan State University, Lansing MI.

Binghamton University Graduate Student Algebra and Geometry Conference, October 2016, Binghamton, NY.

Temple University Graduate Seminar (**Invited**), April 2015, Philadelphia, PA.

## Teaching Experience:

**University of Illinois, Chicago**, *Fall 2018-Spring 2021*

Spring 2021: Math 215 (Introduction to Advanced Mathematics),

Fall 2020: Math 215 (Introduction to Advanced Mathematics), **2 sections**,

Spring 2020, Math 215 (Introduction to Advanced Mathematics),

Fall 2019, Math 210 (Calculus III), **2 sections**,

Spring 2019, Math 215 (Introduction to Advanced Mathematics), **2 sections**,

Fall 2018, Math 215 (Introduction to Advanced Mathematics).

**Teaching Assistant**, Department of Mathematics, Cornell University, *Fall 2012 - Spring 2018*

Courses:

Math 1110 (Calculus I), **instructor of record** (2 sections)

Math 1120 (Calculus II), **instructor of record** (2 semesters)

Math 1120 (Calculus II), **course assistant**: responsible for managing website, assisting with course administration for several sections and supervising and mentoring undergraduate graders (4 semesters)

Math 2210 (Linear Algebra), recitation sections

Math 3110 (Introduction to Real Analysis), teaching assistant and grader

Math 4320 (Introduction to Algebra), teaching assistant and grader

Math 4330 (Honors Linear Algebra), teaching assistant and grader

**Teaching Assistant**, Department of Mathematics, University of California, Santa Barbara, *Fall 2010 - Spring 2012*

Courses:

Math 3A (Differential Calculus), recitation sections

Math 3B (Integral Calculus), recitation sections

Math 8 (Transition to Higher Mathematics), recitation sections

Math 34A (Calculus I for Life and Social Sciences), recitation sections

Math 34B (Calculus II for Life and Social Sciences), recitation sections

Math 8 (Transition to Higher Mathematics), grader

Math 111B (Abstract Algebra), grader

Math 117 (Introduction to Analysis), grader

**Service:**

Refereed articles for *Transactions of the AMS*, *Indiana University Mathematics Journal*, *Israel Journal of Mathematics*, *Cambridge Philosophical Society – Mathematical Proceedings* and *Geometry, Groups and Dynamics*.

Ph.D. committee member for Joshua Faber (Ph.D. UIC 2021, Daniel Groves), Christopher Perez (Ph.D. UIC 2020, Daniel Groves) and Cloie McClellan (Ph.D. UIC 2019, Daniel Groves).