Margaret Nichols

Mathematician & Data Scientist

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Employment

Lucy Family Institute for Data & Society, Applied Analytics and Emerging Technology Lab — Notre Dame, IN
    Data Scientist — *June 2023 – present*
    Postdoctoral Research Associate — *Jan 2023 – May 2023*

The Fields Institute for Research in Mathematical Sciences — Toronto, ON
    Simons Postdoctoral Fellow — *Sept 2021 – Aug 2022*

University at Buffalo, Department of Mathematics — Buffalo, NY
    Visiting Assistant Professor — *Aug 2019 – Aug 2021*

Education

University of Chicago, Chicago, IL
    Ph.D in Mathematics — *June 2019*
      Advisor: Danny Calegari
    M.S. Mathematics — *June 2015*

Oberlin College, Oberlin, OH
    B.A. Mathematics with Highest Honors — *May 2013*
      Minor in Computer Science

Budapest Semesters in Mathematics, Budapest, Hungary — *Fall 2011*

Publications/Preprints

Surface embeddings in $\mathbb{R}^2 \times \mathbb{R}$ (with William Menasco), preprint. arXiv:2206.06542

Taut sutured handlebodies as twisted homology products, preprint. arXiv:1810.07353

Comparing the generalized roundness of metric spaces, Bull. Aust. Math. Soc., Vol. 92, no. 2 (2017) (with Lukiel Levy-Moore and Anthony Weston).

Bijective projections on parabolic quotients of affine Weyl groups, J. Algebraic Comb., Vol. 41, no. 4 (2015) (with Elizabeth (Beazley) Milićević, Min Hae Park, XiaoLin Shi, and Alexander Youcis).

Invited Talks

Characterizing $S^2 \hookrightarrow \mathbb{R}^3$ via the crease set
– University of California - Davis, Geometry/Topology Seminar — *Nov 2021*
– BIRS-CMO Knots, Surfaces and 3-manifolds Workshop — *June 2021*
– Spring Topology and Dynamical Systems Conference — *May 2021*
– Penn State, AMS Fall Eastern Sectional Meeting — *Oct 2020*

Taut sutured handlebodies as twisted homology products
– Nearly Carbon Neutral Geometric Topology Conference — *June 2021*
– Eastern Illinois Conference in Geometry, Dynamics, and Topology — *(postponed)*
– Rutgers University, Geometry/Topology Seminar — *Feb 2020*
– Boston College, Geometry/Topology Seminar — *Nov 2019*
– Columbia University, Geometric Topology Seminar — *Oct 2019*
– Binghamtom University, AMS Fall Eastern Sectional Meeting — *Oct 2019*
– University at Buffalo, Geometry and Topology Seminar — *Sept 2019*
– University of Michigan, LG&TBQ — *June 2019*
– University of Georgia, Georgia Topology Conference — *May 2019*
– University of Virginia, Geometry Seminar — *Apr 2019*
– CUNY, Geometry and Topology Seminar — *Mar 2019*
– Joint Math Meetings, Special Session on Women in Topology — *Jan 2019*
– University of Illinois, Geometry, Groups, and Dynamics Seminar — *Nov 2018*
– University of Illinois - Chicago, Geometry, Topology, and Dynamics Seminar — *Oct 2018*
– Washington University in St. Louis, Geometry and Topology Seminar — *Oct 2018*
– University of Michigan, Topology Seminar — *Sept 2018*

General Audience
– Lucy Family Institute, Lucy Lunch Series   *Apr 2023*
    From geometric topology to data science
– Fields Institute, Fields Postdoc Colloquium   *Sept 2021*
    Surfaces in 3-manifolds and the Thurston norm

Honors and Awards

NSF Graduate Research Fellowship   *2013 – 2018*
Edward T. Wong Prize in Mathematics, *Oberlin College*   *May 2013*
Vance Scholarship in Mathematics, *Oberlin College*   *2009 – 2013*

Teaching

University at Buffalo
Instructor   *2019 – 2021*
– Math 428/528 - Intro to Topology 2 (graduate-level)
– Math 309 - Linear Algebra

University of Chicago
Instructor   *2016 – 2019*
– Math 151-3 - Calculus 1-3

Grader   *Fall 2017*
– Math 317 - Graduate Algebraic Topology

College Fellow   *2014 – 2015*
– Math 274 - Differential Manifolds and Integration, with S. Webster
– Math 176 - IBL Basic Geometry, with D. Hirschfeldt
– Math 203 - Analysis in $\mathbb{R}^n$, with A. Eskin

Service

Association for Women in Mathematics, UChicago Chapter   *2014 – 2019*
    President (2016 – 2018), Vice President (2015 – 2016), Webmaster (2018 – 2019)
Mentor, UChicago Directed Reading Program   *Fall 2015, Spring 2018*
Department Representative, UChicago Dean's Student Advisory Committee   *2015 – 2016*
Co-organizer of UChicago math department warm-up program (WOMP)   *Fall 2015*