MATTHEW D. ROMNEY

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EMPLOYMENT

- James H. Simons Instructor (Visiting assistant professor), *Mathematics Department, Stony Brook University*, Sept. 2020—Aug. 2023.
- Postdoctoral researcher, *Department of Mathematics and Computer Science, University of Cologne*, Germany, Jan. 2020—Jun. 2020.
- Postdoctoral researcher, European Research Council project "Geometry of metric groups (GeoMeG)", *Department of Mathematics and Statistics, University of Jyväskylä*, Finland, Jan. 2018—Dec. 2019.

EDUCATION

- Ph.D., Mathematics, *University of Illinois at Urbana-Champaign*, 2017. *Advisor Jeremy Tyson.*
- M.S., Mathematics, *Brigham Young University*, 2013. *Advisor Michael Dorff.*
- B.S., Mathematics, *Brigham Young University*, 2012. *Summa Cum Laude and University Honors, Gordon B. Hinckley Scholar (2007-8, 2010-2), National Merit Scholar (2007-8).*

AWARDS

- Wolfgang Haken Prize in Geometry and Topology, *University of Illinois at Urbana-Champaign*, 2017. *For outstanding graduate student research.*

PUBLICATIONS

17. On CAT(κ) surfaces, *preprint,* with S. Chowdhury, H. He and A. Tsou. (2022 Stony Brook REU project)
16. Remarks on conformal modulus in metric spaces, *preprint*.
15. Polyhedral approximation and uniformization for non-length surfaces, *preprint*, with D. Ntalampekos.
14. Polyhedral approximation of metric surfaces and applications to uniformization, *Duke Math. J.*, to appear, with D. Ntalampekos.
13. Triangulating metric surfaces, *Proc. Lond. Math. Soc.,* to appear, with P. Creutz.
12. The branch set of minimal disks in metric spaces, *Int. Math. Res. Not. IMRN*, to appear, with P. Creutz.
11. Quasiconformal geometry and removable sets for conformal mappings, *J. Anal. Math.*, to appear, with T. Ikonen.
10. Uniformization with infinitesimally metric measures, *J. Geom. Anal.*, 31(11): 11445–11470, 2021, with K. Rajala and M. Rasimus.
9. On the inverse absolute continuity of quasiconformal mappings on hypersurfaces, *Amer. J. Math.*, 143(5), 1633-1659, 2021, with D. Ntalampekos.
8. Singular quasisymmetric mappings in dimensions two and greater, *Adv. Math.*, 351: 479-494, 2019.
7. Reciprocal lower bound on modulus of curve families in metric surfaces, *Ann. Acad. Sci. Fenn. Math.*, 44(2): 681-692, 2019, with K. Rajala.
6. Quasiconformal parametrization of metric surfaces with small dilatation, *Indiana Univ. Math. J.*, 68(3): 1003-1011, 2019.
5. Sums of asymptotically midpoint uniformly convex spaces, *Bull. Belg. Math. Soc. Simon Stevin*, 24(3): 439-446, 2017, with S. Dilworth, D. Kutzarova and N.L. Randrianarivony.
4. Quasiconformal mappings on the Grushin plane, *Math. Z.*, 297(3-4): 915-928, 2017, with C. Gartland and D. Jung.
3. Bi-Lipschitz embedding of the generalized Grushin plane in Euclidean spaces, *Math. Res. Lett.*, 24(4): 1179-1205, 2017, with V. Vellis.

2. Conformal Grushin spaces, *Conform. Geom. Dyn.*, 20: 97-115, 2016.

1. Univalency of convolutions of harmonic mappings, *Appl. Math. Comput.* 234: 326-332, 2014, with Z. Boyd, M. Dorff, M. Nowak, M. Wołoszkiewicz.

TEACHING

STAND-ALONE TEACHING

(full control over instruction, assessments, and grading)

- (Spring 2022) Analysis in Several Dimensions, Stony Brook University
- (Spring 2022) Calculus C
- (Spring 2022) Special topics: Geometry and dynamics of surfaces
- (Fall 2021) Calculus 3 with Applications
      –large lecture section, responsible for managing a team of TAs
- (Spring 2021) Logic, Language and Proof
- (Spring 2021) Analysis in Several Dimensions
- (Fall 2020) Applied Real Analysis
- (Fall 2018) Advanced topics course: Metrics with non-positive curvature, University of Jyväskylä
- (Fall 2016) Finite Mathematics, University of Illinois at Urbana-Champaign
- (Summer 2015) Calculus 2
- (Summer 2013) Calculus 2, Brigham Young University

TEACHING ASSISTANT

(discussion sessions, tutoring, and grading)

- (Fall 2019) Algebraic Topology, University of Jyväskylä
- (Fall 2017) Calculus 3, University of Illinois at Urbana-Champaign
      –served as Head TA (supervised about 25 other TAs with total course enrollment of 1600 students)
- (Spring 2016) Calculus for Business
- (Fall 2015) Linear Algebra
- (Fall 2014) Calculus 3
- (Spring 2014) Calculus 3
- (Fall 2013) Calculus 1
- (Winter 2013) Calculus 1, Brigham Young University
- (Fall 2012) Calculus 1

SERVICE

- Undergraduate honors theses supervised: S. Chowdhury (2022), H. He (2022), A. Tsou (2022)
- Co-mentor, Enhanced Research Experience for Undergraduates (REU), *Stony Brook University*, Summer 2022, with Yusheng Luo.
- Referee, various mathematics journals including: *Trans. Amer. Math. Soc.*, *Astérisque*, *Ann. Acad. Sci. Fenn.*, *Publ. Math. Debrecen*.
- Reviewer, *MathSciNet*. Written 19+ reviews.
- Illinois Geometry Lab, Graduate student mentor for project "Calculus, geometry, and probability in n dimensions", 2015-6, with A.J. Hildebrand.
- Co-organizer, Graduate Student Analysis Seminar, *University of Illinois at Urbana-Champaign*, 2014-5.
- Graduate student mentor for complex analysis research group, *Brigham Young University*, 2012-3, with Michael Dorff.

INVITED TALKS

- Differential geometry and geometric analysis seminar, *Princeton University,* Sept. 7, 2022.

- AMS Central Sectional Meeting, *virtual event hosted by Purdue University,* Mar. 26, 2022.
- Analysis seminar, *University of Tennessee,* Oct. 27, 2021.
- Analysis seminar, *Kansas State University virtual seminar*, Apr. 27, 2021.
- Quasiworld seminar, *UCLA virtual seminar*, Jan. 26, 2021.
- Finnish Mathematical Days 2020, *Oulu University, Finland*, Jan. 2, 2020.
- Colloquium, *Brigham Young University*, Dec. 3, 2019.
- Analysis seminar, *University of Turku, Finland*, Aug. 30, 2019.
- Geometry, topology, and analysis seminar, *University of Cologne, Germany*, May 3, 2019.
- Geometry seminar, *University of Fribourg, Switzerland*, Oct. 17, 2018.
- Geometric analysis seminar, *University of Helsinki*, Oct. 9, 2018.
- Analysis and Dynamics Days 2018, *University of Helsinki*, May 3, 2018.
- Analysis seminar, *University of Jyväskylä, Finland*, May 3, 2017.
- Seminar on analysis and geometry, *Aalto University, Finland*, Mar. 29, 2017.
- The Seventh Ohio River Analysis Meeting, *University of Cincinnati*, Mar. 25, 2017.
- Geometry seminar, *University of Michigan*, Jan. 27, 2017.
- Rainwater Seminar, *University of Washington*, Nov. 22, 2016.
- AMS Eastern Sectional Meeting, *Bowdoin College, Maine*, Sept. 22, 2016.
- Workshop on Analysis and Probability (Concentration week in Metric Spaces: Analysis, Embeddings into Banach Spaces, Applications), *Texas A&M University*, July 7, 2016.

CONTRIBUTED TALKS/POSTERS

- Mid-Atlantic Analysis Meeting, *virtual event hosted by U Penn et al.*, Oct. 2020.
- Modern Aspects of Complex Analysis and its Applications, *University of Washington*, Aug. 2019.
- Latest in Geometric Analysis, *Będlewo, Poland*, Nov. 2019.
- Modern Aspects of Complex Analysis and its Applications, *University of Washington*, Aug. 2019.
- Conference in Fractal Geometry and Stochastics 6, *Karlsruhe Institute of Technology, Germany,* Oct. 2018.
- 23rd International Summer School on Global Analysis and Applications, Lepage Research Institute, *Brașov, Romania*, Aug. 2018.
- Texas Geometry and Topology Conference, *Rice University*, Nov. 2015.

SELECTED CONFERENCES AND WORKSHOPS ATTENDED

- MAA MathFest, *Philadelphia, Pennsylvania,* Aug. 2022, as mentor for 2022 Stony Brook REU.
- Wasatch Topology Conference, *University of Utah*, Aug. 2019.
- Research visit, *University of Pisa, Italy*, April 2019.
- Sub-Riemannian Geometry and Beyond, *University of Jyväskylä, Finland*, Feb. 2018.
- 23rd Rolf Nevanlinna Colloquium, *ETH Zürich, Switzerland*, June 2017.
- Conference in Harmonic Analysis, *University of Wisconsin, Madison*, May 2016.
- Research Term on Analysis and Geometry in Metric Spaces, *Instituto de Ciencias Matemáticas (ICMAT), Madrid, Spain*, May-June 2015.
- Inaugural Summer School in Analysis, *University of Chicago*, June-July 2014.
- Research Experience for Undergraduates, *Brigham Young University*, and MAA MathFest, *Lexington, Kentucky*, June-Aug. 2011.