

Joshua Mirth

Curriculum Vitae

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Education

- 2015–present **Doctorate**, (*In progress*), Colorado State University, *Mathematics*.
Advisor: Henry Adams
- 2015–2017 **Master of Science**, Colorado State University, *Mathematics*.
Thesis – *Metric Thickenings of Euclidean Submanifolds*. Advisor: Henry Adams.
- 2011–2015 **Bachelor of Science**, *Summa Cum Laude*, with *Departmental Honors*, Hillsdale College, *Mathematics*.
Senior Thesis – *Functional Analysis and the Dirichlet Problem*, minor in physics. Advisor: David Gaebler.

Publications

- Submitted *Metric thickenings of Euclidean submanifolds* with Henry Adams. Available at arXiv:1709.02492.
- Submitted *A fractal dimension for measures via persistent homology* with Henry Adams, Manuchehr Aminian, Elin Farnell, Michael Kirby, Rachel Neville, Chris Peterson, Patrick Shipman, and Clayton Shonkwiler. Available at arXiv:1808.01079.

Talks and Presentations

Research Talks

- 2018 Apr. *Metric Thickenings of Euclidean Submanifolds*, Graduate Student Topology and Geometry Conference, University of Chicago (upcoming).
- 2017 Sep. *Metric Thickenings of Euclidean Submanifolds*, SIAM Central States Sectional Meeting, Applied Algebraic Topology session, Colorado State University.
- 2017 Jul. *Metric Thickenings of Euclidean Submanifolds*, TDA: Theory and Applications, workshop at Macalaster College (Poster presentation).
- 2015 Apr. *Functional Analysis and the Dirichlet Problem*, Michigan Undergraduate Mathematics Conference, Hope College.
- 2013 Jul. *Simulating Post-Reconnection Coronal Flux Tubes* American Astronomical Society Solar Physics Division Meeting (Poster with Dana Longcope).

Expository Talks

- 2018 Jul. *The Yoneda Lemma*, CSU category theory seminar.
- 2018 Jun. *Simplicial Sets*, CSU category theory seminar.
- 2017 Dec. *Morse Theory: An Introduction*, CSU Greenslopes seminar.

Teaching

- 2015–2018 **Graduate Teaching Assistant**, *Colorado State University*, Mathematics Department.
Instructor of record:
- Math 340 – Introduction to Ordinary Differential Equations, Spring 2018, Fall 2018
 - Math 261 – Calculus for Physical Scientists III, Fall 2017
 - Math 160 – Calculus for Physical Scientists I, Fall 2016, Sprint 2017
- Teaching assistant:
- Math 161 – Calculus for Physical Scientists II, Fall 2015, Sprint 2016
- Outreach:
- Co-taught (with Henry Adams) a two week course on Applied and Computational Topology at the Universidad de Costa Rica, Summer 2017.

Experience

Computational

- 2016–2017 **Programmer**, *Colorado State University*, Environmental Health Department.
Developed tools for analysis of motion tracker data in `MATLAB`.
- 2013 **REU**, *Montana State University*, Solar Physics.
Developed and tested numerical models of magnetic reconnection in the solar corona.

Miscellaneous

- 2018 **Co-organizer**, *Greenslopes Seminar*, Colorado State University.
- 2017-2018 **Secretary**, *SIAM*, Colorado State University Student Chapter.
- 2016-2017 **Treasurer**, *SIAM*, Colorado State University.
- 2014-2015 **Vice-President**, *Kappa Mu Epsilon*, Hillsdale College Chapter.
- 2013-2014 **Treasurer**, *Kappa Mu Epsilon*, Hillsdale College Chapter.
- 2013-2015 **Putnam Team**, Hillsdale College.

Awards

- Taylor Award - Highest GPA among Hillsdale College Mathematics graduates (2015)
- Kimball Medal - top male athlete at Hillsdale College (2015).
- Hillsdale College Dean's List (8 semesters)
- National Merit Scholar (2011)
- NCAA Division II All-American – three times (track and field, cross country)
- GLIAC conference champion – four times (indoor track)