Emily T. Winn

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RESEARCH INTERESTS

Statistics of networks, shapes, and topological data; nonparametric models for large data sets; applications to genomic data, data science, machine learning

EDUCATION

Brown University — **Providence, RI**
PhD. in Applied Mathematics — *Expected May 2023*
Advisor: Dr. Lorin Crawford

Brown University — **Providence, RI**
M.S. in Applied Mathematics — *May 2019*

College of the Holy Cross — **Worcester, MA**
A.B. in Mathematics with High Honors, Magna Cum Laude — *May 2017*
Advisor: Dr. David Damiano
Thesis: Topological Modeling of Force Networks in Granular Materials

St. Edmund Hall, University of Oxford — **Oxford, England, UK**
Visiting Students Programme — *2015-2016*

FELLOWSHIPS AND GRANTS

NSF Graduate Research Fellowship — **National Science Foundation**
Fellowship award for outstanding graduate students in science — *2019 - Present*

Patrick L. McCarthy '63 Alumni Scholarship — **Holy Cross Alumni Association**
Scholarship award for legacy students with high grade point average — *2016 - 2017*

AWARDS AND HONORS

AWM Workshop Graduate Poster Award — **Joint Mathematics Meetings**
Awarded to recognize best posters in Graduate Women Poster Session — *January 2020*

Gertrude McBrien Prize in Mathematics — **College of the Holy Cross**
Awarded to an outstanding mathematics major — *May 2017*

Alpha Sigma Nu — **College of the Holy Cross**
National Jesuit Honor Society, recognizes scholarship and service — *Inducted 2016*

Pi Mu Epsilon — **College of the Holy Cross**
Mathematical Honors Society — *Inducted 2016*

TRAVEL GRANTS

SIAM Student Travel Award — **SIAM**
Awarded to travel to 2020 SIAM Conference on the Math of Data Science in Cincinnati, OH — *May 2020*

AWM Travel Grant (from AWM NSF Workshop Grant) — **Assoc. for Women in Mathematics**
Awarded to travel to 2020 Joint Mathematics Meetings in Denver, CO — *January 2020*

MAA Student Travel Grant — **Mathematical Association of America**

Awarded to travel to 2017 Joint Mathematics Meetings in Atlanta, GA *January 2017*

PUBLICATIONS

(# denotes corresponding author)

- **E.T. Winn**, M. Vazquez, P. Loliencar, K. Taipale, X. Wang, # G. Heo. A survey of statistical learning techniques as applied to inexpensive pediatric Obstructive Sleep Apnea data. *Women in Data Science and Mathematics Workshop Proceedings*, To appear.
- K. Lin, J. Rutter , A. Xie, **E.T. Winn**, B. Pardieu, R. Del Bello, R. Itzykson, Y-R Ahn, Z. Dai, R. Sobhan, G. Anderson, K. Singleton, A. Decker, P. Winter, J. Locasale, L. Crawford, # A. Puissant, # K. Wood. Using antagonistic pleiotropy to design a chemotherapy induced evolutionary trap. *Nature Genetics*, v. 52, 408-417, Apr. 2020. doi: https://doi.org/10.1038/s41588-020-0590-9.
- M. Berry, V. Diaz, B. Doleshal, T. Martin, **# E.T. Winn**, and M. Zhou. The component number of a twisted torus link. *Minnesota Journal of Undergraduate Mathematics*, [S.l.], v. 2, n. 1, Apr. 2017. ISSN 2378-5810.

CURATED DATABASES

Database for Math Graduate Program GRE Requirements *July 2020 - Present*

- Gathering data about GRE requirements for admission to more than 200 mathematics PhD programs in the US and Canada into one publicly available resource, funded by Transforming Post-Secondary Education (TPSE) Math

Database for Math Graduate Program Qualifying Exam Practices *April 2021 - Present*

- Collecting data for public database about qualifying exam practices in mathematics PhD programs via an online survey, which has had more than 100 response so far

RESEARCH EXPERIENCE

Graduate Research Fellow **Brown University**
Division of Applied Mathematics *2018 - Present*

- September 2018 - present: Thesis research under Dr. Lorin Crawford in data driven graphical models and shape statistics applied to genomic data
- Summer 2018: Research project under Dr. Caroline Klivans on limit cycles in chip firing models.
- Summer 2018: Research project under Dr. Elie Bienenstock on graph motifs in neural networks

Research Assistant **College of the Holy Cross**
Department of Mathematics and Computer Science *June 2016 - May 2017*
Honors thesis in topological models of force networks in granular materials under Dr. David Damiano

Research Assistant **Sam Houston State University**
NSF REU Program in Mathematics *Summer 2016*
Worked in group of seven undergraduate and graduate students on studying properties of twisted torus links under Dr. Brandy Doleshal and Dr. Taylor Martin

RESEARCH PRESENTATIONS

**Denotes event cancelled due to COVID-19 epidemic*
Invited Talks .....

- Measuring Graduate Student Success, Virtual Graduate Students Achieving Inclusion Now (GAIN) Conference, Online, October 2021
- Minisymposium on Women in Data Science, Virtual SIAM Conference on Mathematics of Data Science, Online, June 2020
- *Special Session on Mathematics of Data Science, AMS Spring Eastern Sectional Meetings, Medford, MA, 2020
- Models, Inference, and Algorithms Seminar Series, Broad Institute, Cambridge, MA, 2019

Contributed Talks

- Graduate Student Applied Mathematics Seminar, Brown University, Providence, RI, 2019
- AMS Contributed Paper Session on Undergrad. Research, Joint Mathematics Meetings, Atlanta, GA, 2017
- Special Session on Undergrad. Research, AMS Sectional Meetings, Bowdoin College, Brunswick, ME, 2016
- Women in Mathematics in New England (WiMiN), Smith College, Northampton, MA, 2015

Posters

- *Poster Session, SIAM Conference on the Mathematics of Data Science, Cincinnati, OH, 2020
- AWM Graduate Student Poster Session, Joint Mathematics Meetings, Denver, CO, 2020
- MAA Undergraduate Student Poster Session, Joint Mathematics Meetings, Atlanta, GA, 2017
- College of the Holy Cross Summer Research Symposium, Worcester, MA, 2016
- College of the Holy Cross Summer Research Symposium, Worcester, MA, 2015

TEACHING AND MENTORING EXPERIENCE

Teaching Experience

Co-instructor — **Brown University**
Statistical Inference I (APMA 1650) — *Summer 2020*

Teaching Assistant — **Brown University**
Operations Research Methods (APMA 1200) with Dr. Anasatios Matzavinos — *Spring 2019*

Teaching Assistant — **Brown University**
Information Theory (APMA 1710) with Dr. Matthew Harrison — *Fall 2018*

Teaching Assistant — **College of the Holy Cross**
Linear Algebra (MATH 244) with Dr. Daniel Franz — *Spring 2017*

Teaching Assistant — **College of the Holy Cross**
Principles of Analysis (MATH 242) with Dr. Stephen Levandoski — *Fall 2016*

Pedagogy Training

Sheridan Teaching Seminar - Reflective Teaching (Certificate I) — **Brown University**
The Harriet W. Sheridan Center for Teaching and Learning — *Fall 2019*
Course to "develop and refine fundamental teaching and assessment strategies and communication skills based on how students learn."

Mentoring Experience

Brown Undergrad-Grad Mentoring Program — **Brown University**
Division of Applied Mathematics — *2017 - 2020*
Mentor three students, providing advice on courses, research, and summer opportunities

SERVICE AND ACTIVITIES

Member of Review Committee — **NeurIPS 2020**
Workshop for Topological Data Analysis and Beyond — *Fall 2020*

Reviewed three papers submitted to the workshop

Treasurer of AWM Student Chapter **Brown University**
Division of Applied Mathematics *Fall 2020*
In charge of submitting semester budgets and ensuring that event expenses are properly documented and reimbursed.

Graduate President of AWM Student Chapter **Brown University**
Division of Applied Mathematics *2019 - 2020*
In charge of organizing weekly meetings and monthly events, including speakers, panels, and support for undergraduate and graduate women in applied math and math

Faculty Graduate Liaison **Brown University**
Division of Applied Mathematics *2018 - 2019*
- Organize all proposed budgets for department graduate student organizations and activities each semester
- Serve as contact between faculty and graduate students and advocate for student well-being

Lead Retreat Coordinator **Brown University**
Division of Applied Mathematics *2018*
Planned logistics and activities for graduate student fall retreat, including accommodation, food, budgeting, transportation, and research activities

PROFESSIONAL AFFILIATIONS

- American Mathematical Society (AMS)
- Association for Women in Mathematics (AWM)
- Society for Industrial and Applied Mathematics (SIAM)
- The Rose Whelan Society

CODING LANGUAGES

LaTeX, MATLAB, Python, R, some C++