

# Nicole Eikmeier

Computer Science Department  
Grinnell College  
1116 8<sup>th</sup> Ave  
Grinnell IA 50112

Email: [eikmeier@grinnell.edu](mailto:eikmeier@grinnell.edu)  
Phone: (952)-818-4038

## EDUCATION

- 2019 Ph.D. in Mathematics  
Purdue University, West Lafayette IN  
Thesis Adviser: David Gleich, Computer Science  
Thesis Title: Spectral Properties and Generation of Realistic Networks
- 2012 B.A. in Mathematics and Computer Science  
Concordia College, Moorhead MN

## PROFESSIONAL EXPERIENCE

- 2019 – present Assistant Professor  
Department of Computer Science, Grinnell College
- 2016 – 2019 Research Assistant  
Department of Computer Science, Purdue University
- 2017 Summer Intern  
Air Force Research Laboratory Automatic Target Recognition Center
- 2016 Summer Research Fellow  
Applied Nuclear Physics Group, Lawrence Berkeley National Lab

## PUBLICATIONS

### Preprints

- 2020 On Large-Scale Dynamic Topic Modeling with Nonnegative CP Tensor Decomposition  
Miju Ahn, **Nicole Eikmeier**, Jamie Haddock, Lara Kassab, Alona Kryshchenko, Kathryn Leonard, Deanna Needell, R.W.M.A. Madushani, Elena Sizikova, Chuntian Wang  
arXiv: 2001.00631
- 2019 Chase-escape with death on trees  
Erin Beckman, Keisha Cook, **Nicole Eikmeier**, Sarai Hernandez-Torres, Matthew Junge  
arXiv:1909.01722

### Journal Articles

- 2019 Classes of Preferential Attachment and Triangle Preferential Attachment Models with Power-law Spectra  
**Nicole Eikmeier** and David F. Gleich  
Journal of Complex Networks,  
doi: [10.1093/comnet/cnz040](https://doi.org/10.1093/comnet/cnz040)

- 2019 Coin-flipping, Ball-dropping, and Grass-hopping for Generating Random Graphs from Matrices of Edge Probabilities  
Arjun S. Ramani, **Nicole Eikmeier**, and David F. Gleich  
SIAM Review, 61(3), 549-595 (47 pages).  
doi: [10.1137/17M1127132](https://doi.org/10.1137/17M1127132)
- 2017 Measurement of the Energy-Dependent Angular Response of the ARES Detector System and Application to Aerial Imaging  
Tenzing H.Y. Joshi, Brian J. Quiter, Jonathan S. Maltz, Mark S. Bandstra, Andrew Haefner, **Nicole Eikmeier**, Eric Wagner, Tanushree Luke, Russel Malchow, and Karen McCall. *IEEE Transactions on Nuclear Science*, 64(7), 1754-1760  
doi: [10.1109/TNS.2017.2693988](https://doi.org/10.1109/TNS.2017.2693988)

### Refereed Conference Papers

- 2019 Centrality in Dynamic Competition Networks  
Anthony Bonato, **Nicole Eikmeier**, David F. Gleich, Rehan Malik  
Accepted for publication in *Complex Networks 2019*
- 2018 The HyperKron Graph Model for Higher Order Features  
**Nicole Eikmeier**, Arjun S. Ramani, and David F. Gleich  
In *Proceedings of the International Conference on Data Mining (ICDM)*, pages 941-946, 2018.  
doi: [10.1109/ICDM.2018.00115](https://doi.org/10.1109/ICDM.2018.00115)
- 2017 Revisiting Power-law Distributions in Spectra of Real World Networks  
**Nicole Eikmeier** and David F. Gleich.  
In *Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, KDD '17*, pages 817–826. ACM, New York, NY, USA, 2017.  
doi: [10.1145/3097983.3098128](https://doi.org/10.1145/3097983.3098128) (Includes all software and data.)

### Refereed Workshop Papers

- 2018 Dynamic Competition Networks: detecting alliances and leaders  
Anthony Bonato, **Nicole Eikmeier**, David F. Gleich, and Rehan Malik.  
In Anthony Bonato, Pawel Pralat, and Andrei Raigorodskii, editors, *Algorithms and Models for the Web Graph*, pages 115–144, 2018.  
doi: [10.1007/978-3-319-92871-5\\_9](https://doi.org/10.1007/978-3-319-92871-5_9)
- 2018 Development of CNNs for Feature Extraction  
**Nicole Eikmeier**, Rachel Westerkamp, and Edmund Zelnio.  
*Algorithms for Synthetic Aperture Radar Imagery XXV*. Vol. 10647. International Society for Optics and Photonics, 2018.  
doi: [10.1117/12.2305394](https://doi.org/10.1117/12.2305394)

### AWARDS

- 2019 AWM-NSF International Travel Grant
- 2017 Award Winning Poster, Computational Science and Engineering Conference, Purdue University
- 2016 Teaching Academy Graduate Teaching Award, Purdue University
- 2016 Department of Homeland Security Fellowship
- 2015 Excellence in Teaching Award, Mathematics Department of Purdue University

**TEACHING EXPERIENCE****Grinnell College**

Functional problem Solving (Spring 2020, Fall 2019)  
 Analysis of Algorithms (Spring 2020)

**Purdue University**

Applied Calculus 1 (Fall 2015, Spring 2015, Fall 2014)  
 Plane Analytic Geometry and Calculus 2 (Summer 2014, Fall 2013)  
 Algebra and Trigonometry 1 (Spring 2014)  
 Plane Analytic Geometry and Calculus 1 (Spring 2013)  
 Analytic Geometry and Calculus 1 (Fall 2012)

**TEACHING DEVELOPMENT****Workshops at Grinnell College**

2019 Assignment Workshop: Student Writing and Research

**CONFERENCE ACTIVITY/PARTICIPATION****Research Presented**

- 2020 Title TBD  
SIAM Conference on Mathematics of Data Science (MDS20), May 5-8
- 2020 Higher-order Preferential Attachment Models  
Joint Mathematics Meeting, January 15-18
- 2019 A Generalized Preferential Attachment Model with Triangles  
SIAM Network Science, May 22-23
- 2019 The HyperKron Graph Model for Higher Order Features  
Joint Mathematics Meeting, January 16-20
- 2018 The HyperKron Graph Model for Higher Order Features  
International Conference on Data Mining, November 17-20
- 2018 The HyperKron Graph Model for Higher Order Features  
SIAM Discrete Math Conference, June 4-8
- 2018 Dynamic Competition Networks: Detecting Alliances and Leaders  
Workshop on Algorithms for the Web Graph, May 14-16
- 2017 Revisiting Power-law distributions in Spectra of Real World Networks  
Knowledge, Discovery and Data Mining Conference, August 13-17
- 2017 Revisiting Power-law distributions in Spectra of Real World Networks  
SIAM Workshop on Network Science, July 13-14

**Other Participation**

- 2020 Council on Undergraduate Research (CUR) Dialogues, February 13-16
- 2019 Complex Networks Winter Workshop (CNNW), December 14-20
- 2019 Women in Data Science and Mathematics (WiSDM), July 29-August 2
- 2019 Mathematical Research Community (MRC), June 10-15
- 2019 NetSci, May 27-31

- 2018 Grace Hopper Celebration of Women in Computing, September 26-28
- 2017 Women in Data Science Conference, February 3

### **DEPARTMENT TALKS**

- 2018 The Havel Hakimi Theorem for constructing graphs with given degree distributions
- 2018 How to create your department webpage
- 2018 Hodge Laplacians on Graphs
- 2017 Memory Efficient Generation of Q from Householder QR
- 2017 Graph Modeling with Kronecker Products
- 2016 Information Based Complexity Theory
- 2015 An Introduction to the fast Multipole Method

### **SERVICE**

- 2019 – present Journal Reviewing, SIAM Journal on Mathematics of Data Science
- 2019 – present Journal Reviewing, Statistical Analysis and Data Mining
- 2018 – present Journal Reviewing, Internet Mathematics
- 2018 Women in Data Science Ambassador
- 2016 – 2017 Women in Sciences Leadership Team Member
- 2013 – 2016 Association for Women in Mathematics Purdue Chapter President, Cabinet Member
- 2014 – 2015 Graduate Student Representative

### **PROFESSIONAL AFFILIATIONS**

- 2012 – present American Mathematical Society (AMS)
- 2012 – present Association for Women in Mathematics (AWM)
- 2018 – present Mathematical Association of America (MAA)
- 2014 – present Society for Industrial and Applied Mathematics (SIAM)