

# Mason A. Porter

Professor, Department of Mathematics, UCLA  
Professor Department of Sociology (0%), UCLA  
External Professor, Santa Fe Institute

## EMPLOYMENT

- Faculty positions
  - 6/16–present:
    - Professor, Department of Mathematics, University of California, Los Angeles (UCLA)
    - Secondary Appointment (“0% Appointment”): Professor, Department of Sociology, University of California, Los Angeles (UCLA) [from 7/23]
  - 8/21–7/27: External Professor, Santa Fe Institute
  - 10/07–9/16
    - Mathematical Institute, University of Oxford: Professor of Nonlinear and Complex Systems (7/14–9/16); Associate Professor (1/14–7/14); University Lecturer (10/07–12/13)
    - Tutorial Fellow, Somerville College, University of Oxford [10/07–8/16]
- Postdoctoral positions
  - 6/05–9/07: Center for the Physics of Information, California Institute of Technology
  - 8/02–5/05: NSF VIGRE Visiting Assistant Professor, School of Mathematics (and Research Associate, Center for Nonlinear Science, School of Physics), Georgia Institute of Technology
  - 1/03–5/03: Semiclassical Analysis program, Mathematical Sciences Research Institute (MSRI), Berkeley, CA, USA

## EDUCATION

- Ph.D., Center for Applied Mathematics, Cornell University [5/26/02]
- M.S., Center for Applied Mathematics, Cornell University [1/17/01]
- B.S. with Honors, Applied Mathematics, California Institute of Technology [6/12/98]

## MENTORSHIP OF POSTDOCTORAL SCHOLARS AND GRADUATE STUDENTS

- Postdoctoral scholars: 18 (of whom 11 are women or nonbinary)
- Doctoral students supervised: 30 students (14 women or nonbinary) have earned their doctoral degrees under my mentorship; an additional 5 current PhD students (1 woman or nonbinary)
- Masters students (including visiting students): 40 students (14 women or nonbinary)

## MENTORSHIP OF UNDERGRADUATE-STUDENT RESEARCHERS

- 122 students (of whom 50 are women or nonbinary) + 2 student groups

## HONORS (selected)

- George Pólya Prize for Mathematical Exposition, Society for Industrial and Applied Mathematics (SIAM) [2025]
- Robert Sorgenfrey Distinguished Teaching Award, Department of Mathematics, UCLA [2023–24]
- Highly Cited Researcher [“Cross-Field” category], Clarivate Web of Science [2020, 2021, 2022, 2023, 2024]
- Fellow of the Society for Industrial and Applied Mathematics (SIAM) [2019]
- Fellow of the American Mathematical Society (AMS) [2018]
- Council on Undergraduate Research (CUR) Faculty Mentoring Award (Advanced Career Category; Mathematics and Computer Science Division) [2017]
- Fellow of the American Physical Society (APS) [2016]
- Whitehead Prize, London Mathematical Society (LMS) [2015]
- Project NExT Fellowship, via American Mathematical Society (AMS) [2003–2004]

**PUBLICATIONS** [Google Scholar Profile: <http://scholar.google.com/citations?user=hSyfNekAAAAJ&hl=en>; h-index = 76; >32000 total citations; >2900 citations in 2024]

- Books [2]
  - C. Cramer, MAP, H. Sayama, L. Sheetz, & S. Uzzo (Eds.) [2018], *Network Science in Education — Tools and Techniques for Transforming Teaching and Learning* (Springer)
  - MAP & J. P. Gleeson [2016], “Dynamical Systems on Networks: A Tutorial”, *Frontiers in Applied Dynamical Systems: Reviews and Tutorials*, Volume 4 (Springer)
- Publications in refereed journals [198 publications in applied math, physics, computational biology, interdisciplinary, and other research journals]. Selected publications include:
  - A. Hickok, B. Jarman, M. Johnson, J. Luo, & MAP [2024], “Persistent Homology for Resource Coverage: A

- Case Study of Access to Polling Sites”, *SIAM Review*, Vol. 66, No. 3: 481–500
- G. J. Li & MAP [2023], “Bounded-Confidence Model of Opinion Dynamics with Heterogeneous Node-Activity Levels”, *Physical Review Research*, Vol. 5, No. 2: 023179
- A. Volkering, D. F. Lindner, MAP, & G. A. Rempala [2020], “Forecasting Elections Using Compartmental Models of Infection”, *SIAM Review*, Vol. 62, No. 4: 837–865
- V. Red, E. D. Kelsic, P. J. Mucha, & MAP [2011], “Comparing Community Structure to Characteristics in Online Collegiate Social Networks”, *SIAM Review*, Vol. 53, No. 3: 526–543
- MAP, P. J. Mucha, M. E. J. Newman, & C. M. Warmbrand [2005], “A Network Analysis of Committees in the U.S. House of Representatives”, *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 102, No. 20: 7057–7062
- Publications in expository journals and magazines [22]
  - Notable examples are 7 articles on mathematics, networks, and applications in *Frontiers for Young Minds* (a venue for teenagers and preteens)
- Papers under review and revision [13]; Publications in conference proceedings and book chapters [20]; Scientific gallery publications [5]; Commentaries, opinion articles, and book reviews [19]; Study-group papers [6]; Other scholarly and educational works [4]

## TEACHING AND DESIGN OF NEW COURSES, MAJORS, AND DEGREE PROGRAMS (selected)

- Lecture Courses, UCLA [2016–2025]: Introduction to Networks; Topics in Network Science; Mathematics and Social Systems; Dynamical Systems; Applied Partial Differential Equations; Applied Ordinary Differential Equations; Data-Driven Modeling in Complex Systems; Experience of Data Science; Asymptotic Methods; Topological Data Analysis; Introduction to Applied Mathematics (graduate course)
- Design of New Courses
  - UCLA: Topics in Network Science (graduate course); Mathematics and Social Systems (graduate course); Topological Data Analysis (graduate course); Introduction to Networks (upper-division undergraduate course, adapted from my Oxford course); Data-Driven Modeling in Complex Systems (lower-division undergraduate course)
  - University of Oxford: Networks [4<sup>th</sup>-year undergraduate course]
  - University of Oxford: Statistical Mechanics [4<sup>th</sup>-year undergraduate course]
  - Georgia Tech: Introduction to Mathematical Modeling [upper-division undergraduate course]
- Design of new majors and degree programs
  - UCLA: Co-designed undergraduate major in Data Theory
  - University of Oxford: Co-designed Master’s program in Mathematical and Theoretical Physics

## GRANTS (selected; 18 grants listed in full CV)

- Co-Principal Investigator, “DMREF/Collaborative Research: Iterative Design and Fabrication of Hyperuniform-Inspired Materials for Targeted Mechanical and Transport Properties”, National Science Foundation [No. 2323343], NSF 23-530 Designing Materials to Revolutionize and Engineer our Future (PI: Karen E. Daniels; other co-PIs: Ryan C. Hurley, Katherine A. Newhall, and Christopher Rock), \$332,070 awarded to MAP from the overall award [12/01/23–11/30/27]
- Co-Principal Investigator, “RTG: Geometry and Topology at UCLA”, National Science Foundation [No. 2136090], Division of Mathematical Sciences, Research Training Grants in the Mathematical Sciences (PI: Sucharit Sarkar; other co-PIs: Deanna Needell, Michael Hill, Burt Totaro), \$1,150,000; total intended award is \$2,500,000 [9/1/22–8/31/27]
- Co-Principal Investigator, “RAPID: Analysis of Multiscale Network Models for the Spread of COVID-19”, National Science Foundation [No. DMS-2027438], Mathematical Biology (PI: Andrea L. Bertozzi), \$200,000 [4/15/20–3/31/22]
- Principal Investigator, “ATD: Models of Spreading Dynamics in Multilayer Networks”, National Science Foundation [No. 1922952], Algorithms for Threat Detection (ATD), \$500,000 [7/15/19–6/30/24]; supplement of \$15,999 [No. 1945838] to work on Challenge Problems
- Principal Investigator, “Dynamic Optimization and Network Analysis for Bus Transportation for the Los Angeles Unified School District”, funded as a 2018 UCLA Institute of Transportation Studies (IST) research proposal (co-PI: Mario Gerla), \$101,447 [10/01/18–09/30/19]

## SEMINARS, PRESENTATIONS, AND OTHER INVITED PARTICIPATION (selected)

- Invited Conference Presentations (plenary, keynote, and equivalent) [30 of them]
  - Examples include: 82nd World Science Fiction Convention [WorldCon82], Glasgow, Scotland [8/24]; SIAM Invited Address, Joint Mathematics Meetings 2023 [JMM 2023] [1/23]; NetSci 2018 [keynote; 6/18]; XI Americas Conference on Differential Equations and Nonlinear Analysis [8/17]; American Physical Society (APS) March Meeting [3/16]
- Named/Distinguished Lecture Series [6 of them], including:

- Mathematical Biosciences Institute (MBI) National Colloquium [3/20]
- Arizona State University, Brauer–Mickens Distinguished Seminar, School of Mathematical & Statistical Sciences [11/14]
- Public Lectures [3 talks]
- Invited School and Tutorial Lectureships [9 of them]
  - Examples include: Minitutorial on Network Dynamics, 2015 SIAM Conference on Applications of Dynamical Systems [5/15]; Introduction to Multilayer Networks, Tutorial, NetSci 2014 [6/14]
- Invited Participation in Long-Term Academic Programs [4 of them]: once each at MBI [2016], ICERM [2014], KITP [2011], and SAMSI [2010–2011]
- Invited Workshop Presentations [39 of them]
- Invited Minisymposium Conference Presentations [29 of them]
- Invited Seminars at Universities (and companies and other venues) [>200 of them]

### EDITORIAL DUTIES (selected)

- Editorial Boards (selected) [on 10 current editorial boards]
  - Member of the Editorial Board, *La Matematica* (Association for Women in Mathematics) [6/22–present]
  - Member of the Editorial Board, *Physical Review E* (American Physical Society) [1/21–12/26]
  - Associate Editor, *SIAM Journal on Mathematics of Data Science* [SIMODS] (Society for Industrial and Applied Mathematics) [inaugural editorial board; 2/18–12/26]
  - Associate Editor, *Network Neuroscience* (MIT Press) [inaugural editorial board; 4/16–present]
  - Associate Editor, Research Spotlights section, *SIAM Review* [SIREV] (Society for Industrial and Applied Mathematics) [1/15–12/26]

### ORGANIZATION OF CONFERENCES, WORKSHOPS, AND OTHER THINGS (selected)

- Organization of Long-Term Scientific Programs [3 of them; 2 of them listed below]
  - Organizer, Mathematical Research Community (MRC) on “Complex Social Systems”, American Mathematical Society (with H. Z. Brooks, M. Feng, and A. Volkening) [2023]
  - Lead Organizer, Mathematical Research Community (MRC) on “Network Science”, American Mathematical Society (with A. Clauset and D. Kempe) [2014]
- Organization of Conferences and Workshops (lead and co-lead) [29 of them]
  - Examples include NetSciEd (with C. Cramer, R. Gera, E. Panagakou, H. Sayama, M. Stella, S. Uzzo), Satellite Symposium on Network Science in Education [each year during 2015–2025], DSOF/GSNP Short Course on “Introduction to Topological Data Analysis”, 2021 APS March Meeting [2021], AMS Short Course on “Mathematical and Computational Methods for Complex Social Systems” (with H. Z. Brooks, M. Feng, and A. Volkening), 2021 Joint Mathematics Meetings [2021], IPAM Workshop on Mathematical Models in Understanding COVID-19 (with A. L. Bertozzi, J. C. Miller, and D. Schriger) [2020], SIAM Conference on Applications of Dynamical Systems 2019 [DS19] (with E. Spiller) [2019]; Ada Lovelace Bicentenary: Celebrating Women in Computer Science, Somerville College, Oxford [2015]

### ADDITIONAL SERVICE, OUTREACH, AND MENTORING (selected)

- Scientific Organizations
  - Vice Chair, SIAM Activity Group on Dynamical Systems [1/1/24–12/31/25]
  - Chair, SIAM Activity Group on Dynamical Systems [1/1/22–12/31/23]
  - Program Director, SIAM Activity Group on Dynamical Systems [1/1/18–12/31/19]
  - Secretary (and DSWeb Co-Editor-in-Chief, jointly with D. M. Abrams), SIAM Activity Group on Dynamical Systems [1/1/16–12/31/17]
  - Member, Education Committee, SIAM [1/1/13–12/31/18]
  - Member, Directorate Advisory Committee (DAC); Physical and Computational Sciences Directorate; Pacific Northwest National Laboratory (PNNL) [3/21–5/25]
  - Member, Scientific Advisory Committee, Wallenberg Initiative in Networks and Quantum Information (WINQ), Nordic Institute for Theoretical Physics (NORDITA) [2/21–present]
  - Member, Subcommittee on Mathematics Across the Disciplines, Committee on the Undergraduate Program in Mathematics, Mathematical Association of America [1/1/09–1/15/15]
- Faculty Advisor (and founding faculty): University of Oxford student chapter of SIAM [10/07–12/15]
- Outreach: National and International
  - Brochure on “Network Literacy: Essential Concepts and Core Ideas” (with C. Cramer, H. Sayama, L. Sheetz, and S. Uzzo) [posted online 3/12/15]; translated into 19 other languages
  - Mathematics workshops on network science for students of ages 13–16 [2012–2016]
- Mentor, Mathematical & Theoretical Biology Institute (MTBI) summer REU program [2000–2002]