January 3, 2023

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Peter J. Mucha
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Education

Ph. D.	Applied and Computational Mathematics, **Princeton University**, Princeton, NJ, 1998.	
M. A.	Applied and Computational Mathematics, **Princeton University**, Princeton, NJ, 1996.	
M. Phil.	Physics, **University of Cambridge**, Cambridge, UK, 1995.	
B. S.	Engineering Physics, **Cornell University**, Ithaca, NY, 1993.	

Employment

2021–   **Dartmouth College**, Hanover, NH
Jack Byrne Distinguished Professor, Department of Mathematics.

2005–2021   **University of North Carolina**, Chapel Hill, NC
Bowman and Gordon Gray Distinguished Term Professor (2012–2017)
Professor (2011–21), Associate Professor (2007–10), Assistant Professor (2005–07)
Department of Mathematics
Department of Applied Physical Sciences (previously the Institute for Advanced Materials)
Adjunct Faculty, Department of Statistics and Operations Research (2020–21).

2001–2005   **Georgia Institute of Technology**, Atlanta, GA
Assistant Professor, School of Mathematics.

1998–2001   **Massachusetts Institute of Technology**, Cambridge, MA
Applied Mathematics Instructor, Department of Mathematics.

Selected Leadership and Administrative Appointments

2022–	Advisor to Mathematical Data Science Majors, Dartmouth.
2022–	Byrne Scholars Faculty Advisor, Dartmouth.
2017–2021	Director, Chairs Leadership Program, Institute for the Arts and Humanities, UNC.
10–11/2015	Chair of the Faculty (Acting), Office of Faculty Governance, UNC.
1/2015–6/2016	Natural Sciences Faculty Advisor, Office of Research Development, UNC.
1/2013–12/2014	Department Chair (Founding), Department of Applied Physical Sciences, UNC.
7/2010–12/2012	Department Chair, Department of Mathematics, UNC.

Honors and Awards

2019	HHMI Gilliam Fellowship Advisor (awarded as student-advisor pair with Andrew Hinton).
2016	Outstanding Postdoctoral Mentor Award, UNC Office of Postdoctoral Affairs (only awardee in this inaugural cohort outside the School of Medicine).
2014	Inductee into Order of the Golden Fleece, UNC's oldest and highest honorary society, for significant, lasting contributions to the University.
2012	Bowman and Gordon Gray Distinguished Term Professorship, UNC College of Arts and Sciences, for excellence in undergraduate teaching.
2007	National Science Foundation Faculty Early Career Development Award (CAREER).
2004	Professor of the Month (February), Georgia Tech chapter of Lambda Sigma sophomore-year leadership, scholarship & service society.
2003	Department of Energy Early Career Principal Investigator in Applied Mathematics.
1999	National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship.
1993	National Science Foundation Graduate Fellowship.
1993	Winston Churchill Foundation Scholarship.

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Awards Related to Publications

2017	SIGEST selection, SIAM Review (refereed pubs. #47 & #70).
2016	SIAM Student Paper Prize to Natalie Stanley (refereed pub. #65).
2016	Political Ties Award, American Political Science Association (refereed pub. #61).
2015	*Chaos* collection "25 Articles for 25 Years" (refereed pub. #39, representing 2013).
2011	Winning entry, APS Gallery of Nonlinear Images (expository pub. #11).
2010	Winning entry, APS Gallery of Nonlinear Images (expository pub. #10).
2009	Winning entry, APS Gallery of Nonlinear Images (expository pub. #9).
2006	Winning entry, APS Gallery of Nonlinear Images (expository pub. #6).
2005	Best Paper Award, Symposium on Computer Animation (refereed pub. #12).

Refereed Research Publications

Google Scholar h-index: 52 (http://goo.gl/O5pLpX)

121. "Within-person temporal associations among self-reported physical activity, sleep, and wellbeing in college students," A. L. McGowan, Z. M. Boyd, Y. Kang, L. Bennett[†], —, K. N. Ochsner, D. S. Bassett, E. B. Falk & D. M. Lydon-Staley, to appear in *Psychosomatic Medicine* [PsyArXiv:q4jn3].

120. "Mindful attention promotes control of brain network dynamics for self-regulation and discontinues the past from the present," D. Zhou[*], Y. Kang, D. Cosme, M. Jovanova[*], X. He, A. Mahadevan, J. Ahn[*], O. Stanoi[*], J. K. Brynildsen, N. Cooper, E. J. Cornblath, L. Parkes, —, K. N. Ochsner, D. M. Lydon-Staley, E. B. Falk & D. S. Bassett, *Proc. of the National Academy of Sciences* **120**, e2201074119 (2023).

119. "Dense sampling approaches for psychiatry research: Combining scanners and smartphones," A. L. McGowan, F. Sayed[†], Z. M. Boyd, M. Jovanova[*], Y. Kang, M. E. Speer, D. Cosme, —, K. N. Ochsner, D. S. Bassett, E. B. Falk & D. M. Lydon-Staley, *Biological Psychiatry* (2022) [doi:10.1016/j.biopsych.2022.12.012].

118. "*Escherichia coli* catheter-associated urinary tract infections are associated with distinctive virulence and biofilm gene determinants," Z. Zou[*], R. F. Potter, W. H. McCoy, J. A. Wildenthal[*], G. L. Katumba[*], —, G. Dantas & J. P. Henderson, *JCI Insight* (2022) [doi:10.1172/jci.insight.161461].

117. "A robust core architecture of functional brain networks supports topological resilience and cognitive performance in middle- and old-aged adults," W. C. Stanton[*], — & E. Dayan, *Proceedings of the National Academy of Sciences* **119**, e2203682119 (2022).

116. "Controllability of structural brain networks and the waxing and waning of negative affect in daily life," A. L. McGowan, L. Parkes, X. He, O. Stanoi[*], Y. Kang, S. Lomax, M. Jovanova[*], —, K. N. Ochsner, E. B. Falk, D. S. Bassett & D. M. Lydon-Staley, *Biological Psychiatry Global Open Science* **2**, 432–439 (2022).

115. "Finite-state parameter space maps for pruning partitions in modularity-based community detection," R. A. Gibson[*] & —, *Scientific Reports* **12**, 15928 (2022).

114. "Purpose in life, neural alcohol cue reactivity, and daily alcohol use in social drinkers," Y. Kang, D. Cosme, D. Lydon-Staley, J. Ahn[*], M. Jovanova[*], F. Corbani, S. Lomax, O. Stanoi[*], V. Strecher, —, K. Ochsner, D. S. Bassett & E. B. Falk, *Addiction* **117**, 3049–3057 (2022).

113. "Altered neural flexibility in children with attention-deficit/hyperactivity disorder," W. Yin, T. Li, —, J. R. Cohen, H. Zhu, Z. Zhu & W. Lin, *Molecular Psychiatry* **27**, 4673–4679 (2022).

112. "A bipartite graph-based expected networks approach identifies DDR genes not associated with TMB yet predictive of immune checkpoint blockade response," W. H. Weir[*], — & W. Y. Kim, *Cell Reports Medicine* **3**, 100602 (2022).

111. "A simultaneous feature selection and compositional association test for detecting sparse associations in high-dimensional metagenomic data," A. L. Hinton[*] & —, *Frontiers in Microbiology* **13**, 837396 (2022).

110. "Rigidity percolation in disordered 3D rod systems," S. Heroy, D. Taylor, F. Shi, M. G. Forest & —, *Multiscale Modeling and Simulation* **20**, 250–281 (2022).

∗: graduate students, †: undergraduate students

REFEREED RESEARCH PUBLICATIONS (continued)

109. "Comparing transmission potential networks based on social network surveys, close contacts, and environmental overlap in rural Madagascar," K. Kauffman, C. S. Werner, G. Titcomb, M. Pender, J. Y. Rabezara, J. P. Herrera, J. T. Shapiro, A. Solis, V. Soarimalala, P. Tortosa, R. Kramer, J. Moody, — & C. Nunn, *Journal of The Royal Society Interface* **19**, 20210690 (2022).

108. "One node at a time: Node-level network classification," S. Shai, I. Jacobs† & —, *IEEE International Conference on Machine Learning and Applications (ICMLA)*, 922–929 (2021).

107. "Optimizing emergency stroke transport strategies using physiological models," D. A. Paydarfar†, D. Paydarfar, — & J. Chang, *Stroke* **52**, 4010–4020 (2021).

106. "The association between hippocampal volume and memory in pathological aging is mediated by functional redundancy," S. Langella*, —, K. S. Giovanello & E. Dayan, *Neurobiology of Aging* **108**, 179–188 (2021).

105. "Synchronization of coupled Kuramoto oscillators under resource constraints," K. A. Kroma-Wiley*, — & D. S. Bassett, *Physical Review E* **104**, 014211 (2021).

104. "A metric on directed graphs and Markov chains based on hitting probabilities," Z. M. Boyd, N. Fraiman, J. L. Marzuola, —, B. Osting & J. Weare, *SIAM Journal on Mathematics of Data Science* **3**, 467–493 (2021).

103. "Accrual of functional redundancy along the lifespan and its effects on cognition," M. U. Sadiq, S. Langella*, K. S. Giovanello, — & E. Dayan, *NeuroImage* **229**, 117737 (2021).

102. "Tunable eigenvector-based centralities for multiplex and temporal networks," D. Taylor, M. A. Porter & —, *Multiscale Modeling and Simulation* **19**, 113–147 (2021).

101. "Fecal IgA, antigen absorption, and gut microbiome composition are associated with food antigen sensitization in genetically susceptible mice," J. M. Smeekens*, B. T. Johnson-Weaver, A. L. Hinton*, M. A. Azcarate-Peril, T. P. Moran, R. M. Immormino, J. R. Kesselring, E. C. Steinbach, K. A. Orgel, H. F. Staats, A. W. Burks, —, M. T. Ferris & M. D. Kulis, *Frontiers in Immunology* **11**, 3421 (2021).

100. "Lower functional hippocampal redundancy in mild cognitive impairment," S. Langella*, M. U. Sadiq, —, K. S. Giovanello & E. Dayan, *Translational Psychiatry* **11**, 61 (2021).

99. "Positive psychological states and stress responses in caregivers of adults receiving an allogeneic bone marrow transplant: A study protocol," K. R. Tan*, S. J. Santacroce, W. A. Wood, D. K. Mayer, H. Santos, —, T. A. Schwartz & B. L. Fredrickson, *Journal of Advanced Nursing* **77**, 2073–2084 (2021).

98. "Dynamics of social network emergence explain network evolution," C. Pomeroy*, R. M. Bond, — & S. J. Cranmer, *Scientific Reports* **10**, 21876 (2020).

97. "Network interconnectivity and community detection in HIV/syphilis contact networks among men who have sex with men," R. M. Billock*, —, E. Samoff, A. M. Dennis, B. W. Pence, J. L. Lund & K. A. Powers, *Sexually Transmitted Diseases* **47**, 726–732 (2020).

96. "Multilayer modularity belief propagation to assess detectability of community structure," W. H. Weir*, B. Walker*, L. Zdeborová & —, *SIAM Journal on Mathematics of Data Science* **2**, 872–900 (2020).

95. "The emergence of a functionally flexible brain during early infancy," W. Yin*, T. Li, S.-C. Hung, H. Zhang, L. Wang, D. Shen, H. Zhu, —, J. R. Cohen & W. Lin, *Proceedings of the National Academy of Sciences* **117**, 23904–23913 (2020).

94. "Hierarchy and the provision of order in international politics," K. Beardsley, H. Liu*, —, D. A. Siegel & J. Tellez*, *Journal of Politics* **82**, 731–746 (2020).

93. "Local symmetry and global structure in adaptive voter models," P. S. Chodrow* & —, *SIAM Journal on Applied Mathematics* **80**, 620–638 (2020).

92. "Emotion semantics show both cultural variation and universal structure," J. C. Jackson*, J. Watts, T. R. Henry, J.-M. List, R. Forkel, —, S. J. Greenhill, R. D. Gray & K. A. Lindquist, *Science* **366**, 1517–1522 (2019).

*: graduate students, †: undergraduate students

REFEREED RESEARCH PUBLICATIONS (continued)

91. "Concurrency and reachability in tree-like temporal networks,"
E. Lee, S. Emmons[†], R. Gibson[†], J. Moody & —, *Physical Review E* **100**, 062305 (2019).

90. "Assessing the robustness of cluster solutions obtained from sparse count matrices,"
K. M. Gates, Z. F. Fisher*, C. Arizmendi*, T. R. Henry, K. A. Duffy & —,
Psychological Methods **24**, 675–689 (2019).

89. "Feature-based classification of networks,"
I. Barnett, N. Malik, M. L. Kuijjer, — & J.-P. Onnela, *Network Science* **7**, 438–444 (2019).

88. "Metabolomic networks connect host-microbiome processes to human *Clostridioides difficile* infections,"
J. I. Robinson, W. H. Weir*, J. R. Crowley, T. Hink, K. A. Reske, J. H. Kwon, C.-A. D. Burnham,
E. R. Dubberke, — & J. P. Henderson, *Journal of Clinical Investigation* **129**, 3792–3806 (2019).

87. "Comparing shared patient networks across payers," J. G. Trogdon, W. H. Weir*, S. Shai, —, T. M. Kuo,
A. M. Meyer & K. B. Stitzenberg, *Journal of General Internal Medicine* **34**, 2014–2020 (2019).

86. "Map equation with metadata: Varying the role of attributes in community detection,"
S. Emmons[†] & —, *Physical Review E* **100**, 022301 (2019).

85. "Stochastic block models with multiple continuous attributes,"
N. Stanley*, T. Bonacci, R. Kwitt, M. Niethammer & —, *Applied Network Science* **4**, 54 (2019).

84. "Social clustering in epidemic spread on coevolving networks,"
H.-W. Lee*, N. Malik, F. Shi & —, *Physical Review E* **99**, 062301 (2019).

83. "Infectivity enhances prediction of viral cascades in Twitter,"
W. Li, S. J. Cranmer, Z. Zheng & —, *PLOS ONE* **14**, e0214453 (2019).

82. "Functional classification of long non-coding RNAs by k-mer content," J. M. Kirk*, S. O. Kim, K. Inoue,
M. J. Smola, D. M. Lee*, M. D. Schertzer*, J. S. Wooten, A. R. Baker, D. Sprague, D. W. Collins,
C. R. Horning, S. Wang, Q. Chen, K. M. Weeks, — & J. M. Calabrese,
Nature Genetics **50**, 1474–1482 (2018).

81. "Multi-layer large-scale functional connectome reveals infant brain developmental patterns,"
H. Zhang, N. Stanley*, —, W. Yin*, W. Lin & D. Shen, *Intl. Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 136–144 (2018).

80. "Rigid graph compression: Motif-based rigidity analysis for disordered fiber networks," S. Heroy*,
D. Taylor, F. Shi, M. G. Forest & —, *Multiscale Modeling and Simulation* **16**, 1283–1304 (2018).

79. "Testing alignment of node attributes with network structure through label propagation,"
N. Stanley*, M. Niethammer & —, *Intl. Workshop on Mining and Learning with Graphs (MLG)* (2018).

78. "Compressing networks with super nodes,"
N. Stanley*, R. Kwitt, M. Niethammer & —, *Scientific Reports* **8**, 10892 (2018).

77. "Epidemic spreading in localized environments with recurrent mobility patterns,"
C. Granell & —, *Physical Review E* **97**, 052302 (2018).

76. "Care coordination and multispecialty teams in the care of colorectal cancer patients," J. G. Trogdon,
Y. Chang, S. Shai, —, T.-M. Kuo, A. M. Meyer & K. B. Stitzenberg, *Medical Care* **56**, 430–435 (2018).

75. "Network-ensemble comparisons with stochastic rewiring and von Neumann entropy,"
Z. Li[†], — & D. Taylor, *SIAM Journal on Applied Mathematics* **78**, 897–920 (2018).

74. "Evolutionary prisoner's dilemma games coevolving on adaptive networks,"
H.-W. Lee*, N. Malik & —, *Journal of Complex Networks* **6**, 1–23 (2018).

73. "The scaling structure of the global road network," E. Strano, A. Giometto, S. Shai, E. Bertuzzo, — &
A. Rinaldo, *Royal Society Open Science* **4**, 170590 (2017).

72. "Super-resolution community detection for layer-aggregated multilayer networks,"
D. Taylor, R. S. Caceres & —, *Physical Review X* **7**, 031056 (2017).

*: graduate students, †: undergraduate students

REFEREED RESEARCH PUBLICATIONS (continued)

71. "Post-processing partitions to identify domains of modularity optimization,"
W. H. Weir*, S. Emmons†, R. Gibson†, D. Taylor & —, *Algorithms* **10**, 93 (2017).

70. "Core-periphery structure in networks (revisited),"
P. Rombach, M. A. Porter, J. H. Fowler & —, *SIAM Review* **59**, 619–646 (2017).

69. "A local perspective on community structure in multilayer networks,"
L. G. S. Jeub*, M. W. Mahoney, — & M. A. Porter, *Network Science* **5**, 144–163 (2017).

68. "Eigenvector-based centrality measures for temporal networks," D. Taylor, S. A. Myers†, A. Clauset,
M. A. Porter & —, *Multiscale Modeling and Simulation* **15**, 537–574 (2017).

67. "Transitivity reinforcement in the coevolving voter model,"
N. Malik, F. Shi, H.-W. Lee* & —, *Chaos* **26**, 123112 (2016).

66. "Enhanced detectability of community structure in multilayer networks through layer aggregation,"
D. Taylor, S. Shai, N. Stanley* & —, *Physical Review Letters* **116**, 228301 (2016).

65. "Clustering network layers with the strata multilayer stochastic block model,"
N. Stanley*, S. Shai, D. Taylor & —, *IEEE Trans. Network Science and Engineering* **3**, 95–105 (2016).

64. "Climate shocks and migration: An agent-based modeling approach," B. Entwisle, N. E. Williams,
A. M. Verdery*, R. R. Rindfuss, S. J. Walsh, G. P. Malanson, —, B. G. Frizzelle, P. M. McDaniel,
X. Yao, B. W. Heumann*, P. Prasartkul, Y. Sawangdee & A. Jampaklay,
Population and Environment **38**, 47–71 (2016).

63. "Spatiotemporal patterns and trends of Indian monsoonal rainfall extremes,"
N. Malik, B. Bookhagan & —, *Geophysical Research Letters* **43**, 1710–1717 (2016).

62. "Network structure and biased variance estimation in respondent driven sampling,"
A. M. Verdery*, T. Mouw, S. Bauldry & —, *PLOS ONE* **10**, e0145296 (2015).

61. "Kantian fractionalization predicts the conflict propensity of the international system," S. J. Cranmer,
E. J. Menninga* & —, *Proceedings of the National Academy of Sciences* **112**, 11812–11816 (2015).

60. "Network analysis reveals sex- and antibiotic resistance-associated antivirulence targets in clinical
uropathogens," K. S. Parker, J. D. Wilson*, J. Marschall, — & J. P. Henderson,
ACS Infectious Diseases **1**, 523–532 (2015).

59. "Topological data analysis of contagion maps for examining spreading processes on networks,"
D. Taylor, F. Klimm*, H. A. Harrington, M. Kramár, K. Mischaikow, M. A. Porter & —,
Nature Communications **6**, 7723 (2015).

58. "Modeling of virion collisions in cervicovaginal mucus reveals limits on agglutination as the protective
mechanism of secretory immunoglobulin A," A. Chen, S. A. McKinley, F. Shi, S. Wang*, —, D. Harit,
M. G. Forest, S. K. Lai, *PLOS ONE* **10**, e0131351 (2015).

57. "Think locally, act locally: Detection of small, medium-sized, and large communities in large networks,"
L. G. S. Jeub*, P. Balachandran, M. A. Porter, — & M. W. Mahoney,
Physical Review E **91**, 012821 (2015).

56. "A testing based extraction algorithm for identifying significant communities in networks,"
J. D. Wilson*, S. Wang*, —, S. Bhamidi & A. B. Nobel, *Annals of Applied Statistics* **8**, 1853–1891 (2014).

55. "Nonaxisymmetric high-aspect-ratio ellipsoids under shear: Lowest-order correction for finite aspect
ratios," F. Shi* & —, *Physical Review E* **90**, 013005 (2014).

54. "Modeling neutralization kinetics of HIV by broadly neutralizing monoclonal antibodies in genital secre-
tions coating the cervicovaginal mucosa," S. A. McKinley, A. Chen, F. Shi*, S. Wang*, —, M. G. Forest
& S. K. Lai, *PLOS ONE* **9**, e100598 (2014).

53. "Fluctuation of similarity (FLUS) to detect transitions between distinct dynamical regimes in short time
series," N. Malik, N. Marwan, Y. Zou, — & J. Kurths, *Physical Review E* **89**, 062908 (2014).

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*: graduate students, †: undergraduate students

REFEREED RESEARCH PUBLICATIONS (continued)

52. "A narrow-band gradient-augmented level set method for multiphase incompressible flow,"
C. Lee*, J. Dolbow & —, *Journal of Computational Physics* **273**, 12–37 (2014).

51. "Transient antibody-mucin interactions produce a dynamic molecular shield against viral invasion,"
A. Chen, S. A. McKinley, S. Wang*, F. Shi*, —, M. G. Forest & S. K. Lai,
Biophysical Journal **106**, 2028–2036 (2014).

50. "Dynamics on modular networks with heterogeneous correlations,"
S. Melnik, M. A. Porter, — & J. P. Gleeson, *Chaos* **24**, 023106 (2014).

49. "Resolving structural variability in network models and the brain,"
F. Klimm†, D. S. Bassett, J. M. Carlson & —, *PLOS Computational Biology* **10**, e1003491 (2014).

48. "Network-based assessments of percolation-induced current distributions in sheared rod macromolecular
dispersions," F. Shi*, S. Wang*, M. G. Forest, — & R. Zhou,
Multiscale Modeling and Simulation **12**, 249–264 (2014).

47. "Core-periphery structure in networks," M. P. Rombach*, M. A. Porter, J. H. Fowler & —,
SIAM Journal on Applied Mathematics **74**, 167–190 (2014).

46. "Cross-linked structure of network evolution,"
D. S. Bassett, N. F. Wymbs*, M. A. Porter, — & S. T. Grafton, *Chaos* **24**, 013112 (2014).

45. "Multiopinion coevolving voter model with infinitely many phase transitions,"
F. Shi*, — & R. Durrett, *Physical Review E* **88**, 062818 (2013).

44. "Percolation-induced exponential scaling in the large current tails of random resistor networks,"
F. Shi*, S. Wang*, M. G. Forest & —, *Multiscale Modeling and Simulation* **11**, 1298–1310 (2013).

43. "Role of social environment and social clustering in spread of opinions in coevolving networks,"
N. Malik & —, *Chaos* **23**, 043123 (2013).

42. "Task-based core-periphery organization of human brain dynamics,"
D. S. Bassett, N. F. Wymbs*, M. P. Rombach*, M. A. Porter, — & S. T. Grafton,
PLOS Computational Biology **9**, e1003171 (2013).

41. "Dynamic network centrality summarizes learning in the human brain,"
A. V. Mantzaris, D. S. Bassett, N. F. Wymbs*, E. Estrada, M. A. Porter, —, S. T. Grafton &
D. J. Higham, *Journal of Complex Networks* **1**, 83–92 (2013).

40. "Portrait of political party polarization," J. Moody & —, *Network Science* **1**, 119–121 (2013).

39. "Robust detection of dynamic community structure in networks," D. S. Bassett, M. A. Porter,
N. F. Wymbs*, S. T. Grafton, J. M. Carlson & —, *Chaos* **23**, 013142 (2013).

38. "Design of an agent-based model to examine population-environment interactions in Nang Rong District,
Thailand," S. J. Walsh, G. P. Malanson, B. Entwisle, R. R. Rindfuss, —, B. W. Heumann*,
P. M. McDaniel, B. G. Frizzelle, A. Verdery*, N. Williams, Y. Xiaozheng & D. Ding,
Applied Geography **39**, 183–198 (2013).

37. "Taxonomies of networks from community structure," J.-P. Onnela, D. J. Fenn*, S. Reid†,
M. A. Porter, —, M. D. Fricker & N. S. Jones, *Physical Review E* **86**, 036104 (2012).

36. "Dynamical clustering of exchange rates," D. J. Fenn*, M. A. Porter, —, M. McDonald, S. Williams,
N. F. Johnson & N. S. Jones, *Quantitative Finance* **12**, 1493-1520 (2012).

35. "Differential recruitment of the sensorimotor putamen and frontoparietal cortex during motor chunking
in humans," N. F. Wymbs*, D. S. Bassett, —, M. A. Porter & S. T. Grafton, *Neuron* **74**, 936–946 (2012).

34. "Social structure of Facebook networks,"
A. L. Traud*, — & M. A. Porter, *Physica A* **391**, 4165–4180 (2012).

33. "Graph fission in an evolving voter model," R. Durrett, J. P. Gleeson, A. L. Lloyd, —, F. Shi*, D. Sivakoff,
J. E. S. Socolar & C. Varghese*, *Proc. National Academy of Sciences* **109**, 3682–3687 (2012).

∗: graduate students, †: undergraduate students

REFEREED RESEARCH PUBLICATIONS (continued)

32. "Accuracy of mean-field theory for dynamics on real-world networks,"
    J. P. Gleeson, S. Melnik, J. A. Ward, M. A. Porter & —, *Physical Review E* **85**, 026106 (2012).

31. "Community structure in the United Nations General Assembly,"
    K. T. Macon[†], — & M. A. Porter, *Physica A* **391**, 343–361 (2012).

30. "A new method for simulating rigid body motion in incompressible two-phase flow,"
    J. Sanders[*], J. E. Dolbow, — & T. A. Laursen, *Int. J. Numerical Methods in Fluids* **67**, 713–732 (2011).

29. "Comparing community structure to characteristics in online collegiate social networks,"
    V. Red[†], E. D. Kelsic[†], — & M. A. Porter, *SIAM Review* **53**, 526–543 (2011).

28. "Dynamic reconfiguration of human brain networks during learning,"
    D. S. Bassett, N. F. Wymbs[*], M. A. Porter, —, J. M. Carlson & S. T. Grafton,
    Proceedings of the National Academy of Sciences **108**, 7641–7646 (2011).

27. "The unreasonable effectiveness of tree-based theory for networks with clustering,"
    S. Melnik, A. Hackett[*], M. A. Porter, — & J. P. Gleeson, *Physical Review E* **83**, 036112 (2011).

26. "Community structure in time-dependent, multiscale, and multiplex networks,"
    —, T. Richardson[†], K. Macon[†], M. A. Porter & J.-P. Onnela, *Science* **328**, 876–878 (2010).

25. "Mutually-antagonistic interactions in baseball networks,"
    S. Saavedra, S. Powers[†], T. McCotter[†], M. A. Porter & —, *Physica A* **389**, 1131–1141 (2010).

24. "Fluid simulation with articulated bodies," N. Kwatra[*], C. Wojtan[*], M. Carlson, I. Essa, — & G. Turk,
    IEEE Transactions on Visualization and Computer Graphics **16**, 70–80 (2010).

23. "Virtual rheoscopic fluids," F. Hecht[*], — & G. Turk,
    IEEE Transactions on Visualization and Computer Graphics **16**, 147–160 (2010).

22. "Spectral tripartitioning of networks,"
    T. Richardson[†], — & M. A. Porter, *Physical Review E* **80**, 036111 (2009).

21. "Velocity fluctuations in a low-Reynolds-number fluidized bed,"
    S.-Y. Tee, —, M. P. Brenner & D. A. Weitz, *Journal of Fluid Mechanics* **596**, 467–475 (2008).

20. "Community structure in Congressional cosponsorship networks," Y. Zhang[†], A. J. Friend[†],
    A. L. Traud[†], M. A. Porter, J. H. Fowler & —, *Physica A* **387**, 1705–1712 (2008).

19. "Velocity fluctuations of initially stratified sedimenting spheres,"
    S.-Y. Tee, —, M. P. Brenner & D. A. Weitz, *Physics of Fluids* **19**, 113304 (2007).

18. "Random walker ranking for NCAA Division I-A football,"
    T. Callaghan[†], — & M. A. Porter, *American Mathematical Monthly* **114**, 761–777 (2007).

17. "Statistical reconstruction of velocity profiles for nanoparticle image velocimetry,"
    C. Hohenegger[*] & —, *SIAM Journal on Applied Mathematics* **68**, 239–252 (2007).

16. "Animating corrosion and erosion," C. Wojtan[*], M. Carlson, — & G. Turk,
    Eurographics Workshop on Natural Phenomena, 15–22 (2007).

15. "Community structure in the United States House of Representatives,"
    M. A. Porter, —, M. E. J. Newman & A. J. Friend[†], *Physica A* **386**, 414–438 (2007).

14. "Diffusion-induced bias in near-wall velocimetry," R. Sadr, C. Hohenegger[*], H. Li[*], — & M. Yoda,
    Journal of Fluid Mechanics **577**, 443–456 (2007).

13. "Keyframe control of complex particle systems using the adjoint method," C. Wojtan[*], — & G. Turk,
    ACM SIGGRAPH/Eurographics Symposium on Computer Animation, 15–23 (2006).

12. "Particle-based simulation of granular materials," W. N. Bell[†], Y. Yu & —,
    ACM SIGGRAPH/Eurographics Symposium on Computer Animation, 77–86 (2005).

∗: graduate students, †: undergraduate students

REFEREED RESEARCH PUBLICATIONS (continued)

11. "Water drops on surfaces," H. Wang*, — & G. Turk,
    ACM Transactions on Graphics (SIGGRAPH) **24**, 921–929 (2005).

10. "A network analysis of committees in the U.S. House of Representatives," M. A. Porter, —, M. E. J. Newman & C. M. Warmbrand†, *Proceedings of the National Academy of Sciences* **102**, 7057–7062 (2005).

9. "Rigid Fluid: Animating the interplay between rigid bodies and fluid,"
    M. Carlson*, — & G. Turk, *ACM Transactions on Graphics (SIGGRAPH)* **23**, 377–384 (2004).

8. "A model for velocity fluctuations in sedimentation," —, S.-Y. Tee*, D. A. Weitz, B. I. Shraiman & M. P. Brenner, *Journal of Fluid Mechanics* **501**, 71–104 (2004).

7. "A Stokes flow boundary integral measurement of tubular structure cross sections in two dimensions," M. Niethammer*, E. Pichon, A. Tannenbaum & —, *IEEE Intl. Conf. Image Processing*, 825–828 (2003).

6. "Diffusivities and front propagation in sedimentation,"
    — & M. P. Brenner, *Physics of Fluids* **15**, 1305–1313 (2003).

5. "Nonuniversal velocity fluctuations of sedimenting particles," S.-Y. Tee*, —, L. Cipelletti, S. Manley*, M. P. Brenner, P. N. Segrè & D. A. Weitz, *Physical Review Letters* **89**, 054501 (2002).

4. "Melting and flowing," M. Carlson*, —, B. Van Horn* & G. Turk,
    ACM SIGGRAPH/Eurographics Symposium on Computer Animation, 167–174 (2002).

3. "Fast fluid analysis for multibody micromachined devices," X. Wang*, — & J. White,
    Tech. Proc. of the Fourth Intl. Conference on Modeling and Simulation of Microsystems, 19–22 (2001).

2. "Partial screening in dense lattice-configuration suspensions,"
    —, I. Goldhirsch, S. A. Orszag & M. Vergassola, *Physical Review Letters* **83**, 3414–3417 (1999).

1. "Spectroscopic study of electrons emitted in Ar^{q+} $(8 \leq q \leq 16)$ on Ar at 2.3q keV collision energy," J. Vancura, — & V. O. Kostroun, *Physical Review A* **53**, 2379–2390 (1996).

∗: graduate students, †: undergraduate students

EXPOSITORY & NON-REFEREED PUBLICATIONS

20. "The effects of message sorting in the diffusion of information in online social media," D. F. M. Oliveira, K. S. Chan & —, to appear in *Complex Networks and Their Applications XI*, R. N. Cherifi et al. (eds.).

19. "Structural cohesion & cohesive groups," J. Moody & —, to appear in *Sage Handbook of Social Network Analysis*, P. Carrington (eds.).

18. "Case studies in network community detection," S. Shai, N. Stanley*, C. Granell, D. Taylor & —,
    in *The Oxford Handbook of Social Networks*, R. Light, J. Moody (eds.), 311–333 (2020).

17. "FastPG: Fast clustering of millions of single cells," T. Bodenheimer, M. Halappanavar, S. Jefferys, R. Gibson*, S. Liu*, —, N. Stanley, J. S. Parker & S. R. Selitsky, doi:10.1101/2020.06.19.159749 (2020).

16. "Exploring concurrency and reachability in the presence of high temporal resolution,"
    E. Lee, J. Moody & —, in *Temporal Network Theory*, P. Holme, J. Saramäki (eds.), 129–145 (2019).

15. "Supracentrality analysis of temporal networks with directed interlayer coupling," D. Taylor, M. A. Porter & —, in *Temporal Network Theory*, P. Holme, J. Saramäki (eds.), 325–344 (2019).

14. "5 tips on surviving your first year as a department head,"
    R. Kramer & —, *The Chronicle of Higher Education*, July 30 (2018) [https://goo.gl/mT3WYS].

13. "What can Political Science learn from Mathematics? An interview with Peter Mucha", —,
    in *The Oxford Handbook of Political Networks*, J. N. Victor, A. H. Montgomery, M. Lubell (eds.), 921–924 (2017).

12. "Scientific training in the era of big data: A new pedagogy for graduate education,"
    J. Aikat, T. M. Carsey, K. Fecho, K. Jeffay, A. Krishnamurthy, —, A. Rajasekar & S. C. Ahalt,
    Big Data **5**, 12–18 (2017).

Expository & Non-Refereed Publications (continued)

11. "Mathematical genealogy and department prestige,"
    S. A. Myers[†], — & M. A. Porter, *Chaos* **21**, 041104 (2011).

10. "Party polarization in Congress: A network science approach,"
    A. S. Waugh[*], L. Pei[†], J. H. Fowler, — & M. A. Porter, arXiv:0907.3509v3 (2011).

9. "Communities in multislice voting networks," — & M. A. Porter, *Chaos* **20**, 041108 (2010).

8. "Visualization of communities in networks,"
   A. L. Traud[*], C. Frost[†], — & M. A. Porter, *Chaos* **19**, 041104 (2009).

7. "Communities in networks," M. A. Porter, J.-P. Onnela & —,
   Notices of the American Mathematical Society **56**, 1082–1097 & 1164–1166 (2009).

6. "Community structure in the U.S. House of Representatives,"
   M. A. Porter, A. J. Friend[†], — & M. E. J. Newman, *Chaos* **16**, 041106 (2006).

5. "Modeling of debris deposition in an extrusion filter medium,"
   C. L. Cox, E. W. Jenkins & —, *Proc. of 21st Annual Meeting of the Polymer Processing Society* (2005).

4. "The Bowl Championship Series: A mathematical review,"
   T. Callaghan[†], — & M. A. Porter, *Notices of the American Mathematical Society* **51**, 887–893 (2004).

3. "That sinking feeling," M. P. Brenner & —, *Nature* **409**, 568–570 News & Views (2001).

2. "On zero Reynolds number microhydrodynamics of particulate suspensions,"
   Ph. D. Thesis, Princeton University, 1998 (Advisors: S. A. Orszag & I. Goldhirsch).

1. "Finite deformation of an elastic membrane: A model for epiretinal membrane separation,"
   M. Phil. Thesis, University of Cambridge, 1994 (Advisor: M. Warner).

Software Packages

2. "CHAMP package: Convex Hull of Admissible Modularity Partitions in Python and MATLAB,"
   W. H. Weir[*], R. Gibson[†] & —, http://github.com/wweir827/CHAMP (2017).

1. "A generalized Louvain method for community detection implemented in MATLAB,"
   L. G. S. Jeub[*], M. Bazzi[*], I. S. Jutla[†] & —, http://netwiki.amath.unc.edu/GenLouvain (2011–2019).

*: graduate students, †: undergraduate students

Active Research Grants

7/2021–4/2026	"Metabolomic Signatures of Urologic Chronic Pelvic Pain Syndrome," NIDDK R01-DK125860, $2,833,737 [PI: Jeffrey Henderson (WashU-StL)].
1/2021–12/2023	"HNDS-I: IDEANet: Integrating Data Exchange and Analysis of Networks," NSF BCS-2140024, $383,608 [as Co-PI to Jim Moody (Duke), BCS-2024271, $710,417].
7/2019–4/2024	"Land use change, transmission potential networks and disease spread in Madagascar," NIH FIC R01-TW011493, $2,384,812 [PI: Charles Nunn (Duke)].
7/2018–7/2023	"Multiscale integration of neural, social, and network theory to understand and predict transitions from illness to wellness," ARO W911NF-18-1-0244, $6,250,000 [Co-PI on MURI award with Emily Falk (Penn), Dani Bassett (Penn), Zach Boyd (BYU), David Lydon-Staley (Penn) & Kevin Ochsner (Columbia)].

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Previous Research Grants

9/2019–5/2022	"An integrative machine learning framework for analyzing compositional omics data," HHMI Gilliam Fellowship, $150,000 [Advisor paired with fellow Andrew Hinton].
1/2013–12/2021	"Community detection in networks across time," James S. McDonnell Foundation Scholar Award #220020315, $450,000 [Sole PI].
12/2017–11/2021	"Metabolomic mechanisms of nutritional immunity in the urinary tract," NIDDK R01-DK111930, $1,371,873 [Co-PI with Jeffrey Henderson (WashU-StL)].
9/2016–8/2021	"Dynamic network analysis: analyzing the chronnectome," NSF ECCS-1610762, $356,420 [Co-PI with Marc Niethammer].
6/2016–5/2020	"A network-science-integrated feedback loop for design of multifunctional polymeric rod-like nanocomposites," ARO W911NF-16-1-0356, $750,787 [Co-PI with Forest, Dingemans].
9/2013–12/2018	"Models and tools for dynamic health-relevant diffusion over complex networks," NICHD R01-HD075712, $1,740,568 [Co-PI with Jim Moody (Duke)].
9/2016–9/2017	"Intestinal metabolomic factors affecting *C. difficile* colonization and infection," CDC, $498,427 [under award 200-2016-91965 with Jeffrey Henderson (WashU-StL)].
9/2016–8/2017	"Metabolomic mechanisms of nutritional immunity in the urinary tract," NIDDK R56-DK111930, $125,160 [Co-PI with Jeffrey Henderson (WashU-StL)].
1/2015–12/2016	"Multi-layer networks in cancer care," UNC UCRF Innovation Award, $362,064 [Co-PI with Justin Trogdon, Anne Marie Meyer, Karyn Stitzenberg].
5/2012–4/2016	"Multiscale mathematics of nano-particle-endowed active membranes & films," AFOSR subcontract from U.SC, $399,375 [PI: Qi Wang (U.SC), UNC PI: Greg Forest].
10/2012–10/2015	"Statistical multiscale property metrics for nanorod and nanoplatelet composite membranes and films," ARO W911NF-13-1-0013, $300,000 [Co-PI with Greg Forest].
8/2011–7/2014	"Identifying essential network properties for disease spread," NIGMS R21-GM099493, $364,568 [Sole PI].
7/2007–6/2013	"CAREER: Model fluid-solid interactions, networks REUs, and BioCalculus," NSF DMS-0645369, $417,500 [Sole PI].
7/2011–6/2012	"An interdisciplinary approach to computational politics and policy," UNC Interdisciplinary Initiative Seed Grant, $10,000 [w/S. Bhamidi, J. Gross, J. C. Scott].
9/2007–6/2012	"Dynamically integrating macro and micro processes," NIEHS R21-ES016729, $1,149,885 [PI: Barbara Entwisle].
9/2007–2/2012	"DHB: Marginality in a marginal environment: An agent-based approach to population-environment relationships," NSF BCS-0728822, $699,960 [PI: Barbara Entwisle].
9/2006–8/2010	"MSPA-MCS: Simulation and visualization of flow at interfaces," NSF CCF-0625190, $84,729 [as co-PI to Greg Turk (Georgia Tech) on NSF CCF-0625264, $383,204].
7/2009–6/2010	"Dyadic dependence and modularity in international conflict," UNC Odum Institute Seed Award, $8,400 [Co-PI with Skyler Cranmer].
7/2009–6/2010	"Network-aware modeling of HIV," Pilot Award in Racial/Ethnic Health Disparities, UNC ECHO, $14,909 [Sole PI].
9/2003–8/2007	"Model interacting particle systems for simulation and macroscopic description of particulate suspensions," DOE ASCR, DE-FG-02-03ER25567, $299,591 [Sole PI].
6/2002–5/2005	"Simulations and models for sedimentation at small Reynolds numbers," NSF DMS-0204309, $118,429 [Sole PI].
7/1999–6/2002	Mathematical Sciences Postdoctoral Research Fellowship, NSF DMS-9902363, $90,000. [Sole PI].

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Teaching Experience

Dartmouth College (2021–present)

Math 13	*Calculus of Vector-Valued Functions*, Winter 2022, 15 students.	
Math 36	*Mathematical Models in the Social Sciences*, Fall 2022, 12 students.	
Math 46	*Introduction to Applied Mathematics*, Spring 2023.	
Math 146	*Current Problems in Applied Mathematics (Networks)*, Fall 2021, 13 students.	

University of North Carolina at Chapel Hill (2005–2021)

Appl 350	*Data Science for Applied Science and Engineering*, Spring 2021, 6 students.
Math 89	*Networks: The Science of the Connected World*, Fall 2013, First Year Seminar, 21 students.
Math 190	*Introduction to Research in Network Data Science*, Spring 2019, Pilot course for UNC "First Year Launch" initiative, 25 students.
Math 231	*BioCalculus I*, Fall 2005–2008, for biology and health science majors, 13–33 students.
Math 232	*BioCalculus II*, Spring 2006, for biology and health science majors, 20 students.
Math 233	*Multivariable Calculus*, Fall 2009, Fall 2011 & Spring 2018, 39–131 students.
Math 528	*Mathematical Methods for the Physical Sciences I*, Fall 2007, 34 students.
Math 529	*Mathematical Methods for the Physical Sciences II*, Spring 2008 & 2010, 30–35 students.
Math 590	*Topics in Data Science*, Fall 2019, 5 students.

Duke University (visiting faculty, 2016–17)

Math 790	*Analysis of Network Data*, Fall 2016, one-credit graduate module, 22 students.

Georgia Institute of Technology (2001–05)

Math 2403	*Differential Equations*, 5 times in 2002–2005, following Edwards & Penney, 38–165 students each semester.
Math 6514	*Industrial Mathematics*, Fall 2003, 2004, for mathematics and engineering graduate students, including asymptotics, modeling and computation, 10–32 students each semester.
Math 6640	*Introduction to Numerical Methods for Partial Differential Equations*, Fall 2001, 2002, for mathematics and engineering graduate students, 20–25 students each year.
Math 6646	*Numerical Methods for Ordinary Differential Equations*, Spring 2002, 2004, for mathematics and engineering graduate students, 21–33 students each year.

Massachusetts Institute of Technology (1998–01)

18.022	*Multivariable Calculus* Sections, Fall 1998, 1999, following Rogers, ~55 students each year.
18.086	*Mathematical Methods for Engineers II*, Spring 1999, for engineering graduate students, focusing on differential equations and introductory numerical methods, 60 students.
18.336	*Numerical Methods of Applied Mathematics II*, Fall 2000, for mathematics and engineering graduate students, with emphasis on partial differential equations, 12 students.

The College of New Jersey (adjunct faculty, Fall 1997)

Math 229	*Multivariable Calculus*, Fall 1997, 24 students.

Teaching and Training Grants (as PI/Co-PI)

8/2010–7/2017	"EMSW21-RTG: Laboratory and Mathematical Fluid Dynamics: Experiments, Computation and Modeling," NSF DMS-0943851, $1,199,980 [Co-PI, PI: Richard McLaughlin].
9/2005–8/2009	"UBM: Quantitative Systems Biology," NSF DMS-0531908, $300,000 [Co-PI, PI: Mark Borodovsky].

Research Collaborations with Trainees

Other students indicated in publications were student collaborators officially supervised elsewhere.

Ph.D. Students (13)

2022–	Anna Vasenina, Department of Mathematics, Dartmouth.
2020–	DJ Passey, Department of Mathematics, UNC.
2019–	Xie He, Department of Mathematics, UNC/Dartmouth.
2018–2022	Austin Ferguson, Department of Mathematics, UNC (T32 postdoc, UNC Psychiatry).
2018–2022	Andrew Hinton,[a] Curriculum in Bioinformatics & Computational Biology, UNC (data scientist at Aetna).
2016–2020	William Weir,[b] M.D./Ph.D. Curriculum in Bioinformatics & Computational Biology, UNC (otolaryngology resident at University of Arkansas for Medical Sciences).
2014–2018	Sam Heroy,[c] Department of Mathematics, UNC (postdoc, University College London; previously postdoc at Oxford).
2014–2018	Natalie Stanley, Curriculum in Bioinformatics & Computational Biology, UNC (tenure-track faculty, UNC; previously postdoc at Stanford).
2013–2016	Hsuan-Wei "Wayne" Lee, Department of Mathematics, UNC (research fellow, Academia Sinica; previously postdoc at University of Nebraska-Lincoln).
2010–2014	Simi Wang,[c] Department of Mathematics, UNC (machine learning scientist, Amazon).
2008–2013	Feng "Bill" Shi,[c] Department of Mathematics, UNC (applied scientist, Amazon; previously data scientist at Odum Institute, UNC; postdoc at University of Chicago).
2003–2006	Christel Hohenegger, School of Mathematics, GT (tenured faculty, University of Utah; previously postdoc at Courant Institute, NYU).
2001–2004	Mark Carlson,[d] College of Computing, GT (research and games devtech, NVIDIA; previously at Dreamworks Animation, Walt Disney Animation, DNA Productions).

M.S. Students (8)

Ryan Gibson (2019–20), Alexis Sparko (2014–15), Joan Pharr (2013–14), Veronica Red (2008–10), Benjamin Perryman (2008–9), Swathi Guda (2005–6), Svetlana Bukharina (2004–5), Radleigh Santos (2004–5).

Undergraduate Research Leading to Publications, Packages or Honors Theses (23)

Vanessa Lin (2018–2022), Daniel Paydarfar (2018–21), Rachel Augustine (2017–20), Scott Emmons (2016–19), Ryan Gibson (2016–19), Nic Larsen (2015–18), Zichao Li (2015–16), Lauren Friedmann (2013–14), Florian Klimm (Humboldt, Summer 2012), Inderjit Jutla (Berkeley, Summer 2011), Nils Hultgren (Duke, 2010–11), Sean Myers (2009–13), Kevin Macon (2008–10), Christina Frost (St. Scholastica, Summer 2008), Nitin Krishnan (2007–11), Scott Powers (2007–9), Trent McCotter (2007–8), Thomas Richardson (2006–8), Veronica Red (2006–8), A. J. Friend (2005),[e] Thomas Callaghan (2003–5),[e] Casey Warmbrand (2003),[e] W. Nathan Bell (2002–3). *Other undergraduate research supervisions: 40.*

Mentoring Collaborations with Postdoctoral Scholars (13)

2021–	Alice Schwarze.
2021–	Zhao Song.
2020–2022	Diego Fregolent Mendes De Oliveira (research faculty at University of Maryland).
2018–2021	Zach Boyd (tenure-track faculty at BYU).
2018–2020	Emily "Emma" Smith (statistician at EEOC).
2018–2020	Eun Lee (tenure-track faculty at Pukyong National University).
2016–2018	Peter Diao.
2016–2017	Clara Granell (researcher at Universitat Rovira i Virgili).
2014–2017	Saray Shai (tenure-track faculty at Wesleyan University).
2013–2017	Dane Taylor (tenure-track faculty at University at Buffalo).
2011–2015	Nishant Malik (tenure-track faculty at RIT).
2009–2011	Bruce Rogers (research faculty at Duke Medical Center).
2003–2005	Mason Porter (tenured faculty at UCLA) [one of three co-mentors].

a: co-advised with Wesley Burks & Mike Kulis, *b*: co-advised with William Kim, *c*: co-advised with Greg Forest, *d*: co-advised with Greg Turk, *e*: co-advised with Mason Porter.

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Invited Presentations

July 12, 2022	Keynote Speaker, *Communities in Networks*, a NetSci satellite (virtual).
May 11, 2022	*Social Networks and Health Scholars Training Program*, Duke Network Analysis Center.
Mar 31, 2022	Keynote Speaker, *Fifth Northeast Regional Conference on Complex Systems (NERCCS)*.
Dec 7, 2021	*ATCO Speaker Series* (virtual series).
May 14, 2021	*Social Networks and Health Scholars Training Program*, Duke Network Analysis Center.
March 19, 2021	*Network Science for Fluid Mechanics Seminar* (virtual series).
Jan 9–10, 2020	*Focus on Math & Discrete Math Seminar*, Brigham Young University.
Sept 23, 2019	*STOR Colloquium*, University of North Carolina, Chapel Hill.
July 22, 2019	*Threshold Networks Conference*, University of Nottingham.
May 30, 2019	Workshop Instructor, *Political Networks Conference*, Duke University.
May 15, 2019	*Social Networks and Health Scholars Training Program*, Duke Network Analysis Center.
Dec 3, 2018	*MathBio Seminar*, University of Pennsylvania.
Nov 2, 2018	*Mathematics Colloquium*, Dartmouth College.
May 16, 2018	*Social Networks and Health Scholars Training Program*, Duke Network Analysis Center.
Dec 12, 2017	*Network Frontier Workshop*, Evanston, IL (virtual workshop).
Oct 18, 2017	*Graduate Group in Applied Mathematics (GGAM) Annual Meeting*, UC Davis.
Oct 17, 2017	*Data Institute SF Annual Conference*, University of San Francisco.
June 20, 2017	"One Great Idea" Session, *Society of Young Network Scientists*, NetSci, Indianapolis, IN.
June 20, 2017	*ISODS III*, a NetSci satellite, Indianapolis, IN.
May 23, 2017	*Social Networks and Health Scholars Training Program*, Duke Network Analysis Center.
May 15, 2017	Plenary Speaker, *SAMSI Interdisciplinary Workshop for Undergraduates*, RTP, NC.
March 23, 2017	*Mathematics Colloquium*, University of Utah.
March 2, 2017	*Algorithms Seminar*, Duke University.
May 18, 2016	*Social Networks and Health Scholars Training Program*, Duke Network Analysis Center.
March 21, 2016	*Generalized Network Structures and Dynamics*, Mathematical Biosciences Institute.
Oct 24, 2015	Plenary Speaker, *Triangle Area Graduate Math Conference*, Raleigh, NC.
Sept 22, 2015	*Widely Applied Mathematics Seminar*, Harvard University.
July 17, 2015	*Graph Exploitation Symposium*, MIT Lincoln Laboratory.
April 17, 2015	*Complex Systems Seminar*, University of Pennsylvania.
Jan 16, 2015	*Political Science Seminar*, Ohio State University.
Jan 11, 2015	*AMS Special Session on Network Science*, Joint Mathematics Meetings, San Antonio, TX.
Nov 24, 2014	*PACM Colloquium*, Princeton University.
May 19, 2014	*SAMSI Undergraduate Modeling Workshop*, RTP, NC.
March 7, 2014	*Wireless Intelligent Sensor Networks Seminar*, Duke University.
Feb 7, 2014	*Institute for Quantitative Theory and Methods*, Emory University.
Jan 4, 2014	*Dynamics Days US*, Atlanta, GA.
Dec 5, 2013	*Network Frontier Workshop*, Evanston, IL.
July 9, 2013	*Workshop on Time-Dependent and Multiplex Networks*, University of Oxford.
May 29–31, 2013	*Summer School in Network Science*, University of South Carolina.
Sept 6, 2012	*Computer Science and Mathematics Division Seminar*, Oak Ridge National Laboratory.
July 19, 2012	Plenary Speaker, *Society for Political Methodology (PolMeth XXIX)*, Chapel Hill, NC.
June 19, 2012	*Networks: the Science of Science & Innovation*, a NetSci satellite, Evanston, IL.
April 23, 2012	*Computational & Applied Mathematics Colloquium*, Rice University.
Nov 4, 2011	*Computational Social Science Seminar*, University of Massachusetts.
Oct 11, 2011	*Mathematics Colloquium*, Rensselaer Polytechnic Institute.
March 30, 2011	*KITP Colloquium*, University of California, Santa Barbara.
July 19, 2010	*Analytical Solutions and Applications*, SAS, Cary, NC.
May 20, 2010	"Ask the Experts" Plenary Panel, *Political Networks Conference*, Duke University.
March 4, 2010	*The Marketplace of Ideas*, Duke University.
Feb 3, 2010	*Mathematics Colloquium*, University of Notre Dame.
Nov 10, 2009	*Seminar*, Santa Fe Institute.
Feb 24, 2009	*Applied Mathematics Seminar*, University of Delaware.
Oct 29, 2008	*Differential Equations Seminar*, North Carolina State University.

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Invited Presentations (continued)

April 30, 2008	*Applied and Computational Math Seminar*, University of North Carolina, Charlotte.
Jan 30, 2007	*Center for Nonlinear and Complex Systems Seminar*, Duke University.
Oct 16, 2006	*Applied Mathematics and Analysis Seminar*, Duke University.
Sept 12, 2006	*SAMSI Program on Computer Models Opening Workshop*, RTP, NC.
Sept 24, 2005	*Southeastern Atlantic Mathematical Sciences Workshop*, Chapel Hill, NC.
April 21, 2005	*Center for Nonlinear Science Seminar*, Georgia Institute of Technology.
March 7, 2005	*Applied Math Colloquium*, University of North Carolina, Chapel Hill.
Jan 26, 2005	*Theoretical & Applied Mechanics Seminar*, Cornell University.
Oct 29, 2004	*Applied Math Colloquium*, University of North Carolina, Chapel Hill.
Sept 8, 2004	*Computations in Science Seminar*, University of Chicago.
June 30, 2004	*Gordon Research Conference on Granular and Granular-Fluid Flow*, Waterville, ME.
June 2, 2004	*Interdisciplinary Fluid Physics Seminar*, University of California, Santa Barbara.
April 28, 2004	*Analysis & Computational Math Seminar*, Clemson University.
April 5, 2004	*Chemical Engineering Seminar*, University of Florida.
Feb 16, 2004	*SAMSI Workshop on Multi-Scale Challenges in Soft Matter*, RTP, NC.
May 6, 2003	*Applied Mathematics Seminar*, University of Delaware.
Feb 26, 2003	*Applied Math – PDE Seminar*, University of Wisconsin.
Feb 3, 2003	*Applied Mathematics Seminar*, University of Illinois.
Nov 5, 2002	*Applied Mathematics Colloquium*, University of Washington.
May 10, 2002	*Dynamical Systems and Nonlinear Science Seminar*, Princeton University.
April 29, 2002	*Applied Mathematics and Analysis Seminar*, Duke University.
Nov 10, 2001	*South East Conference on Applied Mathematics*, Raleigh, NC.
April 24, 2001	*Mathematics Colloquium*, Rensselaer Polytechnic Institute.
Feb 6, 2001	*Microfluid Dynamics Seminar*, Massachusetts Institute of Technology.
Jan 30, 2001	*Mathematics Colloquium*, University of New Mexico.
Jan 25, 2001	*Mathematics Colloquium*, University of Utah.
Jan 16, 2001	*Mathematics Colloquium*, University of Michigan.
Jan 11, 2001	*Mathematics Seminar*, Georgia Institute of Technology, Atlanta, GA.
Dec 14, 2000	*Applied Math Lab Seminar*, New York University.
Oct 10, 2000	*Applied Analysis & Computation Seminar*, University of Massachusetts.
April 24, 2000	*Applied Math Seminar*, Stanford University.
April 20, 2000	*Chemical Engineering Seminar*, University of California, Santa Barbara.
April 4, 2000	*Joint Applied Mathematics & Mechanical Engineering Seminar,* Yale University.
Oct 7, 1999	*Applied Math Lab Seminar*, New York University.
March 19, 1999	*Dynamical Systems and Nonlinear Science Seminar*, Princeton University.
Feb 25, 1998	*Applied Mechanics Colloquium*, Harvard University.
Feb 3, 1998	*Physical Mathematics Seminar*, Massachusetts Institute of Technology.
Feb 18, 1998	*Theory and Modeling Group*, 3M, St. Paul, MN.

Selected Service and Leadership Activities

Leadership Development

July 2014	Leading Strategically Program, Center for Creative Leadership, Colorado Springs, CO.
2013–2014	Faculty Learning Community on Strategy and Leadership, Center for Faculty Excellence, UNC.
Spring 2012	Academic Leadership Program Fellow, Institute for the Arts and Humanities, UNC.
May 2011	Leadership Development Program, Center for Creative Leadership, Greensboro, NC.
2010–2011	Chairs Leadership Program, Institute for the Arts and Humanities, UNC.

Public Outreach

April 14, 2012	"Ask a Scientist" Booth, UNC Science Expo.
Sept 25, 2010	Public Speaker and "Ask a Scientist" Booth, UNC Science Expo.
Dec 4, 2008	Public Speaker, Morehead Planetarium and Science Center Current Science Forum.
May 8, 2004	*CNN* quiz segment in celebration of annual MATHCOUNTS competition.
Dec 30, 2003	*CNN Headline News* segment on college football rankings (with Thomas Callaghan).

SELECTED SERVICE AND LEADERSHIP ACTIVITIES (continued)

Editorial, Conference & Society Service

Sept 2022	Program Committee, SIAM Workshop on Network Science (NS22) [& NS20, NS17, NS15].
Nov-Dec 2021	Program Committee, Complex Networks 2021.
June-July 2021	Senior Program Committee, Networks 2021.
Spring 2021	Faculty Fellow, SAMSI Program on Data Science in the Social and Behavioral Sciences.
2020–	Associate Editor, *Science Advances.*
July 2019	Program Committee, International Conference on Computational Social Science (IC2S2).
May 2019	Co-organizer, SIAM Workshop on Network Science (NS19).
March 2019	Program Committee, CompleNet'19.
2018–2019	Faculty Fellow, SAMSI Program on Precision Medicine.
2018–	SIAM Committee on Science Policy.
Oct 2017	Network Analysis Track Leader, Data Institute SF Annual Conference.
2017–	Associate Editor, *SIAM Journal on Applied Mathematics.*
Sept 2016	Breakout Session Leader, Future Directions in Network Science Workshop, Arlington, VA.
Jan 2016	Program Committee, Dynamics Days.
July 2015	Mentor, NSF-NIH Innovations Lab on Interdisciplinary Biomedical Data Science.
2013–2014	Faculty Fellow, SAMSI Program Year on Computational Methods in Social Sciences.
2013–2017	Editorial Board, *Frontiers in Applied Dynamical Systems: Reviews and Tutorials.*
2010–2011	Faculty Fellow, SAMSI Program Year on Complex Networks.

Campus Committees (Dartmouth)

2022–	Council on Undergraduate Research.
2021–2023	Mentoring Policy Committee, Department of Mathematics.

Campus Committees (University of North Carolina)

2019–2020	Provost's Data Science Steering Committee.
2018–2021	Co-leader, Seminar in Network Analysis at Carolina.
2017–2021	Faculty Committee on University Government (Chair, 2019–20).
Summer 2016	Search Committee for Director of Ethics Education and Policy Management.
Spring 2016	Chair, Administrative Review Committee for Renaissance Computing Institute (RENCI).
Spring 2016	Data Science Professional Science Master's Curriculum Committee.
Spring 2016	Search Committee for Deputy Director of Office of Research Development.
2014–2016	Administrative Board, School of Information and Library Science.
2014–2016	Quality Enhancement Plan Steering Committee.
2013–2016	Chancellor's Advisory Committee (Chair, 2014–15 & 2015–16).
2013–2014	Bowman and Gordon Gray Distinguished Term Professor Selection Committee.
Fall 2013	Internal member, Bioinformatics and Computational Biology Program Review.
2013–2014	Advisory Board, Office of Technology Development.
2013–2014	Faculty Working Group on Data Studies.
2013	Search Committee for Associate Vice Chancellor for Research.
2012–2013	Board of Trustees' Vision Committee on Models of Undergraduate Education.
2012–2013	College Task Force for Transforming Instruction in Large Lecture Classes.
2012–2016	Editor, Carolina Corollaries (Department of Mathematics newsletter).
2012–2018	Co-Director, Social Network Analysis at Carolina interdisciplinary initiative.
2011–2012	Applied Sciences Task Force, College of Arts and Sciences.
2008–2011	Executive Committee, Curriculum in Applied Sciences & Engineering.
2007–2013	Steering Committee, Institute for Advanced Materials, Nanoscience and Technology.
2007–10, 17–20	Chair's Advisory Committee, Department of Mathematics.
2007–2010	Graduate Committee, Department of Mathematics.
2005–2021	UNC-CH Churchill Scholarship Nominating Committee (Chair, 2007–2010).

Campus Committees (Georgia Tech)

2002–2004	Graduate Committee (Chair), School of Mathematics.
2001–2005	Committees for overseas fellowships, incl. Churchill Scholarship Nominations.