

MARK NEWMAN FRS

ANATOL RAPOPORT DISTINGUISHED UNIVERSITY PROFESSOR
DEPARTMENT OF PHYSICS AND CENTER FOR THE STUDY OF COMPLEX SYSTEMS
UNIVERSITY OF MICHIGAN

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EDUCATION

1988 B.A., physics, University of Oxford
1991 Ph.D., physics, University of Oxford

EMPLOYMENT

1991-1994 Postdoctoral Fellow, Department of Physics, Cornell University
1994-1996 Research Associate, Cornell Theory Center, Cornell University
1996-1998 Postdoctoral Fellow, Santa Fe Institute
1998-2002 Research Professor, Santa Fe Institute
2002-2005 Assistant Professor, Department of Physics, University of Michigan
2005-2007 Associate Professor, Department of Physics, University of Michigan
2007-present Full Professor, Department of Physics, University of Michigan
2007-present Professor, Center for the Study of Complex Systems, University of Michigan
2008-2015 Paul Dirac Collegiate Professor of Physics, University of Michigan
2015-present Anatol Rapoport Distinguished University Professor, University of Michigan

VISITING POSITIONS

2000 Visiting Professor, Center for Applied Mathematics, Cornell University
2002-present External Faculty member, Santa Fe Institute
2006 Visiting Professor, McCormick School of Engineering, Northwestern University
2008-2009 Visiting Professor, Santa Fe Institute
2016 Visiting Professor, Rudolf Peierls Centre for Theoretical Physics, University of Oxford
2016 Visiting Professor, Isaac Newton Institute for Mathematical Sciences, University of Cambridge
2022 Visiting Professor, Simons Institute for the Theory of Computation, UC Berkeley

RECENT FUNDED RESEARCH

2020-2023 National Science Foundation, \$329,712: Structure and function in large-scale complex networks
2017-2020 National Science Foundation, \$294,514: Broad-scale modeling of complex networks
2014-2017 National Science Foundation, \$265,000: Large-scale structure in complex networks

2012–2016	Defense Advanced Research Projects Agency, \$2.9 million: Statistical inference for detecting structures and anomalies in networks
2011–2014	National Science Foundation, \$320,000: Large-scale structure in complex networks
2009–2011	James S. McDonnell Foundation, \$417,576: Statistical inference and machine learning for complex networks
2008–2011	National Science Foundation, \$150,000: The structure and dynamics of social networks and other networked systems
2004–2007	National Science Foundation, \$268,421: The structure and dynamics of social networks and other networked systems
2002–2008	James S. McDonnell Foundation, \$408,000: Networks and contagion among computers and people
2001–2004	National Science Foundation, \$144,236: The structure and dynamics of social networks and other networked systems

AWARDS AND HONORS

2022	Fellow of the Royal Society
2021	Euler Award, Network Science Society
2021	Clarivate Citation Laureate
2018	Fellow of the Network Science Society
2016	Guggenheim Fellow
2016	Simons Fellow in Theoretical Physics
2014	ISI Lagrange Prize 2014
2014	Fellow of the American Association for the Advancement of Science
2014	Top 1% Highest Cited Physicists in the world, Thomson-Reuters Science Citation Index
2013	Senior Fellow, Michigan Society of Fellows
2012	Excellence in Education Award, University of Michigan
2011	Faculty Recognition Award, University of Michigan
2008	Gold Prize of the Geographic Association for <i>The Atlas of the Real World</i>
2007	Fellow of the American Physical Society
2004	Robert D. and Janet E. Neary Research Award, University of Michigan
2003	Harold C. Earley Faculty Research Award, University of Michigan
1992	NATO Postdoctoral Fellow
1991	Lindemann Trust Fellow

HONORARY LECTURESHIPS

2023	Henry Russel Lecturer, University of Michigan
2018	Myhill Lectures in Mathematics, University of Buffalo
2016	The Gentry Lectures, Wake Forest University
2016	Turing Lecture, Alan Turing Institute, London
2015	Sandia Distinguished Lecture, Sandia National Laboratory, Albuquerque
2013	Badger Lecture in Network Medicine, Harvard University
2013	Distinguished Lecture on Scientific Computing, Simon Fraser University
2011	Hitachi Distinguished Lecture, University of Oklahoma
2011	Ockham Lecture, Oxford University
2010	Ulam Lectures, Santa Fe Institute

2009	Distinguished Lecture on Network Science, Pennsylvania State University
2008	NICO Distinguished Lecture, Northwestern University
2008	NSF ADVANCE Distinguished Lecture, Kansas State University
2007	John Wiley Jones Distinguished Lecture in Science, Rochester Institute of Technology

PROFESSIONAL SOCIETIES

Fellow	Royal Society of London
Fellow	American Physical Society
Fellow	American Association for the Advancement of Science
Fellow	Network Science Society
Member	Society for Industrial and Applied Mathematics

CURRENT AND FORMER STUDENTS AND POSTDOCS

	Degree/Position	Date(s)	Current position
Michelle Girvan	Ph.D.	2003	Professor, University of Maryland
Michael Gastner	Ph.D.	2005	Assistant Professor, Yale-NUS College, Singapore
Petter Holme	Postdoc	2005–2006	Professor, Aalto University
Juyong Park	Ph.D.	2006	Associate Professor, KAIST, South Korea
Elizabeth Leicht	Ph.D.	2008	Research division, Facebook Corporation
Gourab Ghoshal	Ph.D.	2009	Professor, University of Rochester
Bethany Percha	M.P.H.	2010	Assistant Prof., Mount Sinai School of Medicine
Brian Karrer	Ph.D.	2011	Research division, Facebook Corporation
Brian Ball	Ph.D.	2014	Dotomi Inc.
Travis Martin	Ph.D.	2016	Google Inc.
Xiao Zhang	Ph.D.	2017	Amazon A9 Inc.
Maria Riolo	Postdoc	2015–2018	Postdoctoral Fellow, Santa Fe Institute
George Cantwell	Ph.D.	2020	Postdoctoral Fellow, Santa Fe Institute
Jean-Gabriel Young	Postdoc	2018–2020	Assistant Professor, University of Vermont
Alec Kirkley	Ph.D.	2021	Assistant Professor, University of Hong Kong
Max Jerdee	Ph.D. candidate	2022–	
Austin Polanco	Ph.D. pre-candidate	2021–	

SERVICE AND ADMINISTRATION

2023–2024	Faculty Search Committee, Michigan Physics
2023–2024	Graduate Admissions Committee, Michigan Physics
2023	External Review Committee, American Physical Society/Physical Review E
2023	Erdős–Rényi Prize Committee, Network Science Society
2021–2022	Faculty Search Committee (chair), Michigan Physics
2021	Promotion Evaluations Committee, Office of the Provost, University of Michigan
2020–2021	Graduate Admissions Committee, Michigan Physics
2020–2021	Curriculum Committee, Michigan Physics
2020	Promotion Evaluations Committee, Office of the Provost, University of Michigan
2019–2020	Faculty Search Committee (chair), Michigan Complex Systems
2019–2020	Curriculum Committee, Michigan Physics
2019	Distinguished University Professorship committee, University of Michigan

2019 Promotion Evaluations Committee, Office of the Provost, University of Michigan
 2018–2019 Graduate admissions committee, Michigan Physics
 2017–2018 Faculty search committee (chair), Michigan Complex Systems
 2017–2018 Distinguished University Professorship committee, University of Michigan
 2016–2017 Graduate awards committee, Michigan Physics
 2015–2016 Faculty search committee, Michigan Complex Systems
 2015 Promotion Evaluations Committee, Office of the Provost, University of Michigan
 2014–2015 Faculty search committee, Michigan Complex Systems
 2014–2015 Graduate admissions committee, Michigan Physics
 2014 Faculty Recognition Awards committee, University of Michigan
 2013–2014 Faculty search committee, Michigan Complex Systems
 2013–2014 Colloquium organizer, Michigan Physics
 2013 International Conference on Network Science (NetSci 2013), program committee
 2013 Faculty Recognition Awards committee, University of Michigan
 2013 European Physical Society Outstanding Referee
 2013 Faculty Grievance Board, University of Michigan
 2012 Faculty Recognition Awards committee, University of Michigan
 2012–2013 Faculty search committee, Michigan Complex Systems
 2012–2013 Faculty search committee, Michigan Physics
 2012–2013 Third Century Initiative steering committee, University of Michigan
 2011 Santa Fe Institute Complex Systems Summer School, co-organizer
 2011–2014 Northwestern University NSF program on complex networks, advisory board
 2010–2011 SIAM Mathematics Awareness Month, organizing committee
 2010–2011 Long-range planning committee, Michigan Physics
 2010–2011 IT committee, Michigan Physics
 2010–present International Faculty Advisor, University of Michigan
 2009–2014 Santa Fe Institute Science Board
 2009–2010 Editorial committee, Michigan Physics
 2008–present Guest editor, *Proceedings of the National Academy of Sciences*
 2008–2009 Graduate qualifying exam committee, Michigan Physics
 2008 American Physical Society Outstanding Referee
 2008 NSF panel on Foundations for Complex Systems Research in the Physical Sciences
 2007–2008 Departmental Executive Committee, Michigan Physics
 2007–2008 Faculty search committee, Michigan Physics
 2007–2008 Graduate qualifying exam committee, Michigan Physics
 2007–present International Advisory Board, CABDyN Complexity Center, University of Oxford
 2005–2006 Faculty search committee (chair), Michigan Physics
 2005–2006 Faculty search committee (chair), Michigan Complex Systems
 2005–2006 Graduate qualifying exam committee, Michigan Physics
 2005–2006 Undergraduate concerns committee, Michigan Physics
 2005–2006 Computing committee, Michigan Physics
 2004–2005 Graduate qualifying exam committee, Michigan Physics
 2003–2004 Graduate qualifying exam committee, Michigan Physics
 2002–2003 Condensed matter seminar organizer, Michigan Physics
 Regular tenure and promotion panels

Refereeing: American Physical Society Outstanding Referee 2008, European Physical Society Distinguished Referee 2013

Referee for *Nature*, *Nature Physics*, *Science*, *Science Advances*, *Proceedings of the National Academy*, *Physical Review Letters*, *Physical Review B*, *Physical Review E*, *Physical Review X*, *Proceedings of the Royal Society*, *Journal of the Royal Society Interface*, *Journal of Statistical Physics*, *Journal of Statistical Mechanics*, *Physica A*, *Physica D*, *Europhysics Letters*, *European Physical Journal B*, *Journal of Physics A*, *Physics Letters A*, *International Journal of Modern Physics C*, *American Journal of Physics*, *Journal of Complex Networks*, *Advances in Complex Systems*, *Complexity*, *PLOS Computational Biology*, *PLOS One*, *Scientific Reports*, *Journal of Theoretical Biology*, *Journal of Machine Learning Research*, *Chaos*, *Physics Reports*, *Reviews of Modern Physics*, *Social Networks*.

TEACHING

Course	Title	Institution	Year
Physics 406	Statistical and Thermal Physics	University of Michigan	2002
Physics 406	Statistical and Thermal Physics	University of Michigan	2003
Complex Systems 535	Network Science	University of Michigan	2004
Physics 406	Statistical and Thermal Physics	University of Michigan	2004
Complex Systems 535	Network Science	University of Michigan	2005
Complex Systems 511	Theory of Complex Systems	University of Michigan	2006
Physics 406	Statistical and Thermal Physics	University of Michigan	2007
Complex Systems 511	Theory of Complex Systems	University of Michigan	2007
Physics 390	Introduction to Modern Physics	University of Michigan	2008
Complex Systems 535	Network Science	University of Michigan	2009
Physics 390	Introduction to Modern Physics	University of Michigan	2010
Complex Systems 535	Network Science	University of Michigan	2010
Physics 411	Computational Physics	University of Michigan	2011
Complex Systems 535	Network Science	University of Michigan	2011
Physics 411	Computational Physics	University of Michigan	2012
Complex Systems 535	Network Science	University of Michigan	2012
Physics 411	Computational Physics	University of Michigan	2013
Complex Systems 535	Network Science	University of Michigan	2013
Physics 411	Computational Physics	University of Michigan	2014
Complex Systems 535	Network Science	University of Michigan	2014
Physics 390	Introduction to Modern Physics	University of Michigan	2015
Complex Systems 535	Network Science	University of Michigan	2015
Physics 411	Computational Physics	University of Michigan	2017
Complex Systems 535	Network Science	University of Michigan	2017
Physics 411	Computational Physics	University of Michigan	2018
Complex Systems 535	Network Science	University of Michigan	2018
Physics 411	Computational Physics	University of Michigan	2019
Complex Systems 535	Network Science	University of Michigan	2019
Physics 288	Physics of Music	University of Michigan	2020
Complex Systems 535	Network Science	University of Michigan	2020
Physics 288	Physics of Music	University of Michigan	2021
Complex Systems 535	Network Science	University of Michigan	2021
Physics 288	Physics of Music	University of Michigan	2022
Complex Systems 535	Network Science	University of Michigan	2023

Also: Santa Fe Institute Complex Systems Summer School, Santa Fe, New Mexico, Summer 1996, 1998,

2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2011, 2012, and 2015 as well as occasional other schools.

THESIS COMMITTEES

Name	Department	Role	Graduation date
Jaeil Kim	Physics	Member	Winter 2002
Christopher Warren	Physics	Member	Summer 2003
Brett Pearson	Physics	Member	Winter 2004
Michael Gastner	Physics	Chair	Fall 2005
Han Peters	Mathematics	Cognate	Summer 2005
Sudin Bhattacharya	Mechanical Engineering	Member	Summer 2006
Juyong Park	Physics	Chair	Summer 2006
Dongxiao Zhu	Bioinformatics	Member	Summer 2006
Gunes Erkan	Computer Science	Cognate	Summer 2007
Daimian Wang	Physics	Member	Winter 2007
Elizabeth Leicht	Physics	Chair	Summer 2008
Althea Moorhead	Physics	Member	Summer 2008
Sarah Feldt	Physics	Member	Summer 2009
Gourab Ghoshal	Physics	Chair	Fall 2009
Kevin Haworth	Applied Physics	Member	Winter 2009
Jong-Hoon Kim	Epidemiology	Member	Fall 2009
Eva-Marie Proszkow	Physics	Member	Summer 2009
Casey Schneider-Mizell	Physics	Member	Summer 2010
Jane Wang	Applied Physics	Member	Fall 2010
David Adams	Physics	Member	Winter 2011
Eytan Bakshy	School of Information	Cognate	Fall 2011
Shanna Shaked	Applied Physics	Member	Winter 2011
Justin Gillespie	Naval Architecture	Cognate	Winter 2012
Brian Karrer	Physics	Chair	Winter 2012
Kevin Xu	Electrical Engineering	Cognate	Summer 2012
Li Zhang	Physics	Member	Fall 2012
Yunpeng Zhao	Statistics	Cognate	Summer 2012
Navid Dianati	Physics	Member	Winter 2013
Yen Ting Lin	Physics	Member	Summer 2013
Brian Ball	Physics	Chair	Summer 2014
Morgan Parker	Naval Architecture	Cognate	Summer 2014
Maria Riolo	Applied Mathematics	Member	Fall 2014
Adam Sypniewski	Physics	Member	Winter 2014
Daniel Wilcox	Physics	Member	Winter 2015
Pablo Damasceno	Chemical Engineering	Cognate	Summer 2015
Jieshi Fang	Civil Engineering	Cognate	Summer 2015
Travis Martin	Computer Science	Co-chair	Summer 2016
Yuan Zhang	Statistics	Cognate	Summer 2016
Andrew Elliot	Mathematics (Oxford)	External examiner	Winter 2017
Xiao Zhang	Physics	Chair	Summer 2017
Christopher Henry	Epidemiology	Cognate	Summer 2017
Meryl Spencer	Physics	Member	Summer 2018

Leyou Zhang	Physics	Member	Winter 2019
Fang-Yi Yu	Computer Science	Cognate	Spring 2019
Yike Liu	Physics	Member	Spring 2019
Ojan Khatib-Damavandi	Physics	Member	Summer 2019
Harry Richmond	Mathematics	Cognate	Summer 2020
George Cantwell	Physics	Chair	Summer 2020
Andrei Klishin	Physics	Member	Summer 2020
Alec Kirkley	Physics	Chair	Fall 2021
James Coller	Naval Architecture	Cognate	Fall 2022

PRESS COVERAGE

New York Times, 15 August 2018; The Economist, 18 August 2018; BBC Radio 5, 10 August 2018; Los Angeles Times, 10 August 2018; The Guardian, 9 August 2018; The Times of London, 9 August 2018; The Independent, 9 August 2018; Washington Post, 8 August 2018; New Scientist, 8 August 2018; Boston Globe, 8 August 2018; Washington Post, November 1, 2016; BBC News online, October 21, 2013; Science News, November 7, 2012; Times Higher Education, June 2, 2011; and many others, including Science, Nature, The Lancet, National Public Radio, Chicago Tribune, CNN Television News, Discovery Channel, Atlantic Monthly, Vanity Fair magazine, Esquire magazine, Daily Telegraph, Der Spiegel magazine, ABC News online, Salon.com, and Die Zeit.

PUBLICATIONS

Citation record (August 21, 2023):

	Total citations	Cites per year (since 2018)	h-index
Web of Science	102,187	7,525	86
Google Scholar	236,456	17,394	110

BOOKS

1. Mark Newman, *The Science of Music*, Amazon KDP (2023).
2. Mark Newman, *Networks*, 2nd edition, Oxford University Press, Oxford (2018).
3. Mark Newman, *Computational Physics*, Createspace Independent Publishing (2012).
4. Daniel Dorling, Mark Newman, and Anna Barford, *The Atlas of the Real World*, Thames & Hudson, London (2008).
5. M. E. J. Newman, A.-L. Barabási, and D. J. Watts, *The Structure and Dynamics of Networks*. Princeton University Press, Princeton (2006).
6. M. E. J. Newman and G. T. Barkema, *Monte Carlo Methods in Statistical Physics*. Oxford University Press, Oxford (1999).
7. J. J. Binney, N. J. Dowrick, A. J. Fisher, and M. E. J. Newman, *The Theory of Critical Phenomena*. Oxford University Press, Oxford (1992).

1. M. E. J. Newman, Efficient computation of rankings from pairwise comparisons. *Journal of Machine Learning Research* **24**, 238 (2023).
2. M. E. J. Newman, Message passing methods on complex networks. *Proc. R. Soc. London A* **479**, 20220774 (2023).
3. S. Fortunato and M. Newman, 20 years of network community detection. *Nature Physics* **18104**, 848–850 (2022).
4. A. Kirkley and M. E. J. Newman, Representative community divisions of networks. *Communications Physics* **5**, 40 (2022).
5. M. E. J. Newman, Ranking with multiple types of pairwise comparisons. *Proc. R. Soc. London A* **478**, 20220517 (2022).
6. K. G. Leyba, J. J. Daymude, J.-G. Young, M. E. J. Newman, J. Rexford, and S. Forrest, Cutting through the noise to infer autonomous system topology. In *Proceedings of the IEEE Conference on Computer Communications (INFOCOM 2022)*, pp. 1609–1618, Institute of Electrical and Electronics Engineers, New York (2022).
7. J.-G. Young, A. Kirkley, and M. E. J. Newman, Clustering of heterogeneous populations of networks. *Phys. Rev. E* **105**, 014312 (2022).
8. G. T. Cantwell, A. Kirkley, and M. E. J. Newman, The friendship paradox in real and model networks. *Journal of Complex Networks* **9**, cnab011 (2021).
9. J.-G. Young, F. S. Valdovinos, and M. E. J. Newman, Reconstruction of plant-pollinator networks from observational data. *Nature Communications* **12**, 3911 (2021).
10. A. Kirkley, G. T. Cantwell, and M. E. J. Newman, Belief propagation for networks with loops. *Science Advances* **7**, eabf1211 (2021).
11. J.-G. Young, G. T. Cantwell, and M. E. J. Newman, Bayesian inference of network structure from unreliable data. *Journal of Complex Networks* **8**, cnaa046 (2021).
12. M. E. J. Newman, G. T. Cantwell, and J.-G. Young, Improved mutual information measure for clustering, classification, and community detection. *Phys. Rev. E* **101**, 042304 (2020).
13. M. A. Riolo and M. E. J. Newman, Consistency of community structure in complex networks. *Phys. Rev. E* **101**, 052306 (2020).
14. M. Newman and C. R. Ferrario, Improved demand curve for food or drug consumption in behavioral experiments. *Psychopharmacology* **237**, 943–955 (2020).
15. G. T. Cantwell and M. E. J. Newman, Message passing on networks with loops. *Proc. Natl. Acad. Sci. USA* **116**, 23398–23403 (2019).
16. M. E. J. Newman, Spectra of networks containing short loops. *Phys. Rev. E* **100**, 012314 (2019).
17. M. E. J. Newman, X. Zhang, and R. R. Nadakuditi, Spectra of random networks with arbitrary degrees. *Phys. Rev. E* **99**, 042309 (2019).
18. G. T. Cantwell and M. E. J. Newman, Mixing patterns and individual differences in networks. *Phys. Rev. E* **99**, 042306 (2019).
19. E. E. Bruch and M. E. J. Newman, Structure of online dating markets in US cities. *Sociological Science* **6**, 219–234 (2019).
20. A. Kirkley, G. T. Cantwell, and M. E. J. Newman, Balance in signed networks. *Phys. Rev. E* **99**, 012320 (2019).

21. M. E. J. Newman, Estimating network structure from unreliable measurements. *Phys. Rev. E* **98**, 062321 (2018).
22. E. E. Bruch and M. E. J. Newman, Aspirational pursuit of mates in online dating markets. *Science Advances* **4**, eaap9815 (2018).
23. M. E. J. Newman, Network structure from rich but noisy data. *Nature Physics* **14**, 542–545 (2018).
24. X. Zhang, C. Moore, and M. E. J. Newman, Random graph models for dynamic networks. *Eur. Phys. J. B* **90**, 200 (2017).
25. M. A. Riolo, G. T. Cantwell, G. Reinert, and M. E. J. Newman, Efficient method for estimating the number of communities in a network. *Phys. Rev. E* **96**, 032310 (2017).
26. M. E. J. Newman, Equivalence between modularity optimization and maximum likelihood methods for community detection. *Phys. Rev. E* **94**, 052315 (2016).
27. M. E. J. Newman and G. Reinert, Estimating the number of communities in a network. *Phys. Rev. Lett.* **117**, 078301 (2016).
28. M. E. J. Newman and A. Clauset, Structure and inference in annotated networks. *Nature Communications* **7**, 11863 (2016).
29. T. Martin, B. Ball, and M. E. J. Newman, Structural inference for uncertain networks. *Phys. Rev. E* **93**, 012306 (2016).
30. P. Zhang, C. Moore, and M. E. J. Newman, Community detection in networks with unequal groups. *Phys. Rev. E* **93**, 012303 (2016).
31. X. Zhang and M. E. J. Newman, Multiway spectral community detection in networks. *Phys. Rev. E* **92**, 052808 (2015).
32. M. E. J. Newman and T. P. Peixoto, Generalized communities in networks. *Phys. Rev. Lett.* **115**, 088701 (2015).
33. X. Zhang, T. Martin, and M. E. J. Newman, Identification of core-periphery structure in networks. *Phys. Rev. E* **91**, 032803 (2015).
34. M. E. J. Newman and T. Martin, Equitable random graphs. *Phys. Rev. E* **90**, 052824 (2014).
35. B. Karrer, M. E. J. Newman, and L. Zdeborová, Percolation on sparse networks. *Phys. Rev. Lett.* **113**, 208702 (2014).
36. T. Martin, X. Zhang, and M. E. J. Newman, Localization and centrality in networks. *Phys. Rev. E* **90**, 052808 (2014).
37. X. Zhang, R. R. Nadakuditi, and M. E. J. Newman, Spectra of random graphs with community structure and arbitrary degrees. *Phys. Rev. E* **89**, 042816 (2014).
38. M. A. Riolo and M. E. J. Newman, First-principles multiway spectral partitioning of graphs. *Journal of Complex Networks* **2**, 121–140 (2014).
39. M. E. J. Newman, Prediction of highly cited papers. *EPL* **105**, 28002 (2014).
40. M. E. J. Newman, Spectral methods for network community detection and graph partitioning. *Phys. Rev. E* **88**, 042822 (2013).
41. M. E. J. Newman and C. R. Ferrario, Interacting epidemics and coinfection on contact networks. *PLOS One* **8**, e71321 (2013).
42. M. E. J. Newman, Community detection and graph partitioning. *Europhys. Lett.* **103**, 28003 (2013).
43. T. Martin, B. Ball, B. Karrer, and M. E. J. Newman, Coauthorship and citation patterns in the Physical Review. *Phys. Rev. E* **88**, 012814 (2013).

44. B. Ball and M. E. J. Newman, Friendship networks and social status. *Network Science* **1**, 16–30 (2013).
45. R. R. Nadakuditi and M. E. J. Newman, Spectra of random graphs with arbitrary expected degrees. *Phys. Rev. E* **87**, 012803 (2013).
46. R. R. Nadakuditi and M. E. J. Newman, Graph spectra and the detectability of community structure in networks. *Phys. Rev. Lett.* **108**, 188701 (2012).
47. M. E. J. Newman, Communities, modules and large-scale structure in networks. *Nature Physics* **8**, 25–31 (2012).
48. B. Ball, B. Karrer, and M. E. J. Newman, An efficient and principled method for detecting communities in networks. *Phys. Rev. E* **84**, 036103 (2011).
49. B. Karrer and M. E. J. Newman, Competing epidemics on complex networks. *Phys. Rev. E* **84**, 036106 (2011).
50. B. Percha, M. E. J. Newman, and B. Foxman, Transmission probabilities and durations of immunity for three pathogenic group B Streptococcus serotypes. *Infection, Genetics, and Evolution* **11**, 1407–1412 (2011).
51. M. E. J. Newman, Complex systems. *Am. J. Phys.* **79**, 800–810 (2011).
52. B. Karrer and M. E. J. Newman, Stochastic blockmodels and community structure in networks. *Phys. Rev. E* **83**, 016107 (2011).
53. B. Karrer and M. E. J. Newman, Random graphs containing arbitrary distributions of subgraphs. *Phys. Rev. E* **82**, 066118 (2010).
54. R. Guimerà, D. B. Stouffer, M. Sales-Pardo, E. A. Leicht, M. E. J. Newman, and L. A. N. Amaral, Origin of compartmentalization in food webs. *Ecology* **91**, 2941–2951 (2010).
55. B. Karrer and M. E. J. Newman, A message passing approach for general epidemic models. *Phys. Rev. E* **82**, 016101 (2010).
56. A. Clauset, C. R. Shalizi, and M. E. J. Newman, Power-law distributions in empirical data. *SIAM Review* **51**, 661–703 (2009).
57. M. E. J. Newman, Random graphs with clustering. *Phys. Rev. Lett.* **103**, 058701 (2009).
58. B. Karrer and M. E. J. Newman, Random graph models for directed acyclic networks. *Phys. Rev. E* **80**, 046110 (2009).
59. G. Ghoshal, V. Zlatic, G. Caldarelli, and M. E. J. Newman, Random hypergraphs and their applications. *Phys. Rev. E* **79**, 066118 (2009).
60. M. E. J. Newman, The first-mover advantage in scientific publication. *EPL* **86**, 68001 (2009).
61. B. Karrer and M. E. J. Newman, Random acyclic networks. *Phys. Rev. Lett.* **102**, 128701 (2009).
62. A. Clauset, C. Moore, and M. E. J. Newman, Hierarchical structure and the prediction of missing links in networks. *Nature* **453**, 98–101 (2008).
63. M. Newman, The physics of networks. *Physics Today*, November 2008, pp. 33–38.
64. B. Karrer, E. Levina, and M. E. J. Newman, Robustness of community structure in networks. *Phys. Rev. E* **77**, 046119 (2008).
65. M. E. J. Newman and G. Ghoshal, Bicomponents and the robustness of networks to failure. *Phys. Rev. Lett.* **100**, 138701 (2008).
66. E. A. Leicht and M. E. J. Newman, Community structure in directed networks. *Phys. Rev. Lett.* **100**, 118703 (2008).

67. M. E. J. Newman, Component sizes in networks with arbitrary degree distributions. *Phys. Rev. E* **76**, 045101 (2007).
68. M. A. Porter, P. J. Mucha, M. E. J. Newman, and A. J. Friend, Community structure in the United States House of Representatives. *Physica A* **386**, 414–438 (2007).
69. E. A. Leicht, G. Clarkson, K. Shedden, and M. E. J. Newman, Large-scale structure of time evolving citation networks. *Eur. Phys. J. B* **59**, 75–83 (2007).
70. G. Ghoshal and M. E. J. Newman, Growing distributed networks with arbitrary degree distributions. *Eur. Phys. J. B* **58**, 175–184 (2007).
71. M. E. J. Newman and E. A. Leicht, Mixture models and exploratory analysis in networks. *Proc. Natl. Acad. Sci. USA* **104**, 9564–9569 (2007).
72. P. Holme and M. E. J. Newman, Nonequilibrium phase transition in the coevolution of networks and opinions. *Phys. Rev. E* **74**, 056108 (2006).
73. C. Moore, G. Ghoshal, and M. E. J. Newman, Exact solutions for models of evolving networks with addition and deletion of nodes. *Phys. Rev. E* **74**, 036121 (2006).
74. M. E. J. Newman, Finding community structure in networks using the eigenvectors of matrices. *Phys. Rev. E* **74**, 036104 (2006).
75. M. T. Gastner and M. E. J. Newman, Optimal design of spatial distribution networks. *Phys. Rev. E* **74**, 016117 (2006).
76. M. E. J. Newman, Modularity and community structure in networks. *Proc. Natl. Acad. Sci. USA* **103**, 8577–8582 (2006).
77. L. Ancel Meyers, M. E. J. Newman, and B. Pourbohloul, Predicting epidemics on directed contact networks. *J. Theor. Bio.* **240**, 400–418 (2006).
78. M. T. Gastner and M. E. J. Newman, The spatial structure of networks. *Eur. Phys. J. B* **49**, 247–252 (2006).
79. B. Foxman, M. Newman, B. Percha, K. K. Holmes, and S. O. Aral, Measures of sexual partnerships: Lengths, gaps, overlaps and sexually transmitted infection. *Sexually Transmitted Diseases* **33**, 209–214 (2006).
80. E. A. Leicht, P. Holme, and M. E. J. Newman, Vertex similarity in networks. *Phys. Rev. E* **73**, 026120 (2006).
81. M. T. Gastner and M. E. J. Newman, Shape and efficiency in spatial distribution networks. *J. Stat. Mech.* **2006**, P01015 (2006).
82. D. Dorling, A. Barford, and M. Newman, Worldmapper: The world as you’ve never seen it before. *IEEE Transactions on Visualization and Computer Graphics* **12**, 757–764 (2006).
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BOOK CHAPTERS

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3. M. E. J. Newman, Who is the best connected scientist? A study of scientific coauthorship networks. In E. Ben-Naim, H. Frauenfelder, and Z. Toroczkai (eds.), *Complex Networks*, number 650 in Lecture Notes in Physics, pp. 337–370, Springer, Berlin (2004).
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6. R. V. Solé and M. E. J. Newman, Patterns of extinction and biodiversity in the fossil record. In T. Munn (ed.), *Encyclopedia of Global Environmental Change*, John Wiley, New York (2001).
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8. G. T. Barkema and M. E. J. Newman, New Monte Carlo algorithms for classical spin systems. In D. Ferguson, J. I. Siepmann, and D. G. Truhlar (eds.), *Monte Carlo Methods in Chemical Physics*, John Wiley, New York (1999).

PRESENTATIONS

INVITED CONFERENCE PRESENTATIONS:

- International Conference on Mathematics for Risk and Decisions, University College London (online), March 15–18, 2022, invited speaker
- Networks 2021, Joint meeting of the Network Science Society and INSNA (online), July 6, 2021, plenary speaker
- Workshop on Community Structure in Networks, Networks 2021 (online), July 1, 2021, keynote speaker
- American Physical Society March Meeting (online), March 15–19, 2021, invited speaker
- Workshop on Sustainable Exit Strategies for COVID-19, Arizona State University (online), May 28 and 29, 2020, invited speaker
- International Conference on Network Science (NetSci 2019), Burlington, Vermont, May 29–31, 2019, keynote speaker
- Workshop on Statistical Inference for Network Models (SINM 2019), Burlington, Vermont, May 27, 2019, invited panelist
- SIAM Workshop on Network Science (NS17), Pittsburgh, Pennsylvania, July 13 and 14, 2017, keynote speaker
- 3rd Annual Conference on Financial Stability, Center on Finance, Law, and Policy, Ann Arbor, Michigan, November 16 and 17, 2017, invited panelist
- APS Ohio Section Annual Meeting, Eastern Michigan University, May 5-6, 2017, invited speaker
- Symposium on Spatial Networks, University of Oxford, September 7-8, 2016, invited speaker
- Workshop on Statistical Network Analysis, Isaac Newton Institute, Cambridge University, July 11-15, 2016, invited speaker
- Workshop on Cultural Patterns: Multiscale Data-driven Models, Institute for Pure and Applied Mathematics, UCLA, Los Angeles, California, May 9-13, 2016, invited speaker
- Inference on Networks, Santa Fe Institute workshop, Santa Fe, New Mexico, December 14–18, 2015, invited speaker
- Complex Systems Summer School, Santa Fe, New Mexico, June 2015, principal lecturer
- International Conference on Social Computing, Behavioral Modeling, and Prediction, Washington, DC, March 31–April 3, 2015, keynote speaker
- 6th Workshop on Complex Networks (CompleNet 2015), New York City, March 25–27, 2015, keynote speaker
- Conference on Complexity Science, Brighton, UK, August 19–22, 2014, keynote speaker
- Conference on Computational Physics (CCP 2014), Boston, Mass., August 11–14, 2014, invited speaker
- International Conference on Network Science (NetSci 2014), Berkeley, California, June 2–6, 2014, invited speaker
- Cambridge Networks Day, Cambridge University, UK, May 23, 2014, keynote speaker

111th Rutgers Statistical Mechanics Meeting, New Brunswick, New Jersey, May 11-13, 2014, invited speaker

Santa Fe Institute Annual Science Symposium, Santa Fe, New Mexico, May 2, 2014, invited speaker

Statistical Mechanics Foundations of Complexity, Santa Fe Institute, May 8-10, 2014, invited speaker

American Physical Society March Meeting, Denver, Colorado, March 3-7, 2014, invited speaker

Neural Information Processing Systems (NIPS 2013), Lake Tahoe, Nevada, December 5-10, 2013, invited speaker

DIMACS Workshop on Statistical Analysis of Network Dynamics and Interactions, Rutgers University, New Jersey, November 7-8, 2013, keynote speaker

Deep Computation in Statistical Physics, Santa Fe, New Mexico, August 1-3, 2013, invited speaker

Structure, Statistical Inference, and Dynamics in Networks, Santa Fe, New Mexico, May 6-9, 2013, invited speaker

Dynamics Days, Denver Colorado, January 3-6, 2013, invited speaker

Lawrence Livermore Workshop on Current Challenges in Computing, Napa, CA, August 27-29, 2012, invited speaker

Complex Systems Summer School, Santa Fe, New Mexico, June 2012, principal lecturer

12th Experimental Chaos and Complexity Conference, Ann Arbor, Michigan, May 16-19, 2012, invited speaker

International Conference on Complex Systems, Boston, Massachusetts, June 26 to July 1, 2011, plenary speaker

4th Annual Political Networks Conference, Ann Arbor, Michigan, June 14-18, 2011, plenary speaker

Complex Systems Summer School, Santa Fe, New Mexico, June 2011, co-organizer and lecturer

Conference on Computation as a Lens on the Sciences, Berkeley, California, May 7 and 8, 2011, invited speaker

Conference on Complex Systems, Northwestern University, Evanston, Illinois, March 6 and 7, 2011, keynote speaker

Conference on Statistics of Networks, SAMSI, North Carolina, August 29-September 1, 2010, invited speaker

Workshop on Statistics of Networks, Isaac Newton Institute, Cambridge, England, June 24-25, 2010, invited speaker

Workshop on Information, Networks, and Markets, Cambridge, England, June 22, 2010, invited speaker

International Conference on Network Science, Cambridge, Massachusetts, May 11-14, 2010, keynote speaker

American Physical Society March Meeting, Portland, Oregon, March 15-19, 2010, invited speaker

2010 Berkeley Statistical Mechanics Meeting, University of California, Berkeley January 8-10, 2010, invited speaker

2009 INFORMS Marketing Science Conference, University of Michigan, June 4-6, 2009, invited speaker

Society of Industrial and Applied Mathematics Front Range Conference, Denver, Colorado, March 14, 2009, keynote speaker

100th Rutgers Statistical Mechanics meeting, New Brunswick, New Jersey, December 13–18, 2008, invited speaker

Workshop on Statistical Inference for Complex Networks, Santa Fe, New Mexico, December 3–5, 2008, invited speaker

Workshop on Advances in Theory of Networks and Strategic Interaction, Northwestern University, Evanston, October 3–4, 2008, invited speaker

Annual Meeting of the Association for the Advancement of Artificial Intelligence (AAAI 2008), Chicago, July 14–18, 2008, invited speaker

Annual Meeting of the Society for Industrial and Applied Mathematics (SIAM), San Diego, California, July 7–11, 2008, plenary speaker

International Conference on Network Science (NetSci 2008), Norwich, England, June 23–27, 2008, plenary speaker

Complex Systems Summer School, Santa Fe, New Mexico, June 2008, principal lecturer

European Conference on Complex Systems, Dresden, Germany, October 1–5, 2007, keynote speaker

23rd International Conference on Statistical Physics (STATPHYS 23), Genoa, Italy, July 9–13, 2007, invited speaker

Conference on Complex Networks: From biology to information technology, Sardinia, Italy, July 2–6, 2007, invited speaker

Complex Systems Summer School, Santa Fe, New Mexico, June 2007, principal lecturer

International Conference on Network Science, New York City, May 21–24, 2007, invited speaker

Workshop on Random and Dynamic Graphs and Networks, Institute for Pure and Applied Mathematics, UCLA, Los Angeles, California, May 7–11, 2007, invited speaker

John Wiley Jones Distinguished Lecture in Science, Rochester Institute of Technology, May 30, 2007

British Applied Mathematics Colloquium, Bristol, England, April 17–19, 2007, plenary speaker

Workshop on Complex Networks and their Applications, Georgia Institute of Technology, Atlanta, Georgia, January 22–24, 2007, plenary speaker

École d'Été de Physique Théorique, Les Houches, France, July 3–7, 2006, invited lecturer

Summer School on Complex Networks, Bristol, England, July 10–14, 2006, invited lecturer

Conference on Optimization in Complex Networks, Los Alamos National Laboratory, New Mexico, June 19–22, 2006, invited speaker

Complex Systems Summer School, Santa Fe, New Mexico, June 2006, principal lecturer

International Conference on Network Science, Spencer, Indiana, May 22–25, 2006, invited speaker

March Meeting of the American Physical Society, Baltimore, March 13–17, 2006, invited speaker

Workshop on Statistics on Networks, National Academy of Sciences, Washington, DC, September 26–27, 2005, invited speaker

Workshop on Mathematical Epidemiology, Banff International Research Station, Banff, Canada, August 21–24, 2005, invited speaker

Santa Fe Institute Public Lecture, Santa Fe, New Mexico, June 15, 2005

Complex Systems Summer School, Santa Fe, New Mexico, June 2005, principal lecturer

Conference on Models of Real-World Random Networks, University of California, Berkeley, April 18–22, 2005, invited speaker

Conference on Network Science: Implications for Biology and Medicine, University of British Columbia, Vancouver, Canada, January 19–22, 2005, keynote speaker

Conference on Complex Systems, Northwestern University, Evanston, Illinois, October 29 and 30, 2004, invited speaker

Intel Corporation, Forum and Workshop on Modeling Complexity, October 5–6, 2004, keynote speaker

13th Annual Conference on Computational Analysis of Social and Organizational Systems, Pittsburgh, Pennsylvania, June 27–29, 2004, keynote speaker

Complex Systems Summer School, Santa Fe, New Mexico, June 2004, invited lecturer

Rutgers Statistical Mechanics Meeting, Piscataway, New Jersey, May 16–18, 2004, invited speaker

March Meeting of the American Physical Society, Montreal, March 22–26, 2004, invited speaker

Annual Meeting of the American Association for the Advancement of Science, Seattle, February 12–16, 2004, invited speaker

Workshop on Networks and the Population Dynamics of Disease Transmission, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, November 17–21, 2003, invited speaker

Conference on Discrete Models for Complex Systems, Lyon, France, June 16–19, 2003, invited speaker

SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 27–31, 2003, invited speaker

CNLS Conference on Networks: Structure, Dynamics and Function, Santa Fe, May 11–16, 2003, invited speaker

National Academy Arthur M. Sackler Colloquium, Irvine, May 9–11, 2003, invited speaker

DIMACS meeting on Spatio-Temporal and Network Modeling of Diseases, Rutgers University, April 22–26, 2003, invited speaker

Annual Meeting of the American Mathematical Society, Baltimore, January 13–17, 2003, invited speaker

Fifteenth International Symposium on Mathematical Theory of Networks and Systems, University of Notre Dame, South Bend, August 12–16, 2002, invited speaker

NEC Lectures on Biophysics, Princeton, June 16–20, 2002, invited lecturer

Sitges Conference on Statistical Mechanics, Barcelona, Spain, June 10–14, 2002, invited speaker

March Meeting of the American Physical Society, Indianapolis, March 18–22, 2002, invited speaker

Berkeley Statistical Mechanics Meeting, UC Berkeley, January 11–13, 2002, invited speaker

Conference on Computational Physics, Aachen, Germany, September 5–8, 2001, plenary speaker

European Physical Society International Conference on Dynamical Networks in Complex Systems, Kiel, Germany, July 25–27, 2001, invited speaker

Summer School on Complex Systems, Central European University, Budapest, Hungary, July 16–20, 2001, principal lecturer

Gordon Conference on Nonlinear Science, Mount Holyoke, Massachusetts, June 17–22, 2001, invited speaker

SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 20–24, 2001, invited speaker

DARPA Principal Investigators Meeting, Santa Fe, April 17 and 18, 2001, keynote speaker
National Academy Arthur M. Sackler Colloquium, Irvine, March 23 and 24, 2001, invited speaker

SEMINARS AND COLLOQUIA:

University of Minnesota, Industrial Engineering seminar, March 29, 2023
University of Toledo, Physics colloquium, March 23, 2023
University of Edinburgh, Statistical Physics and Complexity seminar, March 21, 2023
University of Colorado, Boulder, Physics colloquium, March 15, 2023
Physical Society of London, guest speaker, September 14, 2022
UC Berkeley, Department of Statistics, Neyman Seminar, September 9, 2020
University of Edinburgh, Institute for Adaptive and Neural Computation, seminar, November 18, 2020
Ohio State University, Translational Data Analytics Institute, seminar, October 25, 2019
Northeastern University, Network Science Institute, Distinguished Speaker Seminar, March 27, 2019
Myhill Lectures 2018, Department of Mathematics, SUNY Buffalo, October 24, 25, and 26, 2018
Santa Fe Institute, seminar, July 5, 2018
University of Oxford, Department of Statistics, Distinguished Speaker Seminar, May 18, 2018
University of Oxford, Institute of New Economic Thinking, seminar, May 17, 2018
University of Chicago, Statistics colloquium, February 13, 2017
Gentry Lectures, Wake Forest University, Winston-Salem, NC, November 30–December 1, 2016, invited lecturer
Indiana University, Network Science Lecture, October 24, 2016
Case Western Reserve University, Physics colloquium, October 13, 2016
Cambridge University, Mathematical Sciences seminar, September 15, 2016
Turing Lecture, Alan Turing Institute, London, March 2, 2016
Royal Statistical Society, London, February 10, 2016, invited speaker
Oxford University, Distinguished Seminar in Statistics, March 11, 2016
Oxford University, Physics Colloquium, February 12, 2016
Oxford University, Physics Department public lecture, February 6, 2016
Oxford University, Mathematics Colloquium, January 29, 2016
Sandia Distinguished Lecture, Sandia National Laboratory, Albuquerque, New Mexico, June 25, 2015
Washington University, St. Louis, Physics colloquium, October 16, 2014
Harvard University, School of Engineering and Applied Sciences colloquium, October 6, 2014
University of Pittsburgh, Mathematics colloquium, September 26, 2014
University of Pittsburgh, Department of Mathematics, Theme Semester on Discrete Networks, invited lecturer, September 24-26, 2014
Ohio State University, Physics colloquium, August 26, 2014
UCLA, IPAM seminar, June 6, 2014
UCLA, Physics colloquium, June 5, 2014
Northwestern University, Institute on Complex System seminar, March 12, 2014
Stanford University, Physics colloquium, February 11, 2014
Harvard University, Badger Lecture in Network Medicine, November 19, 2013

Massachusetts Institute of Technology, Information and Decision Systems seminar, November 19, 2013
Center for Complex Network Research, Northeastern University, seminar, May 1, 2013
Boston University, Physics colloquium, April 30, 2013
Distinguished Lecture on Scientific Computing, Simon Fraser University, March 15, 2013
Center for Studies in Physics and Biology, Rockefeller University, seminar, October 8, 2012
Stony Brook University, Physics colloquium, March 20, 2012
Hitachi Distinguished Lecture, University of Oklahoma, November 11, 2011
Oxford University, Theoretical physics colloquium, October 14, 2011
Ockham Lecture, Oxford University, October 16, 2011
University of Chicago, Computation Institute seminar, April 4, 2011
Case Western Reserve University, Biomathematics seminar, March 25, 2011
Florida State University, Mathematics colloquium, January 28, 2011
Florida State University, Physics colloquium, January 27, 2011
Indiana University, Cognitive Science colloquium, November 8, 2010
University of Massachusetts, Amherst, Physics colloquium, October 6, 2010
Center for Computational Molecular Biology, University of Michigan, colloquium, September 29, 2010
Ulam Lectures, Santa Fe Institute (series of three lectures), September 14–16, 2010
University of Colorado, Boulder, Mathematics colloquium, March 13, 2009
Distinguished Lecture on Network Science, Pennsylvania State University, State College, Pennsylvania,
January 14, 2009
2008 NICO Distinguished Lecture, Northwestern University, Evanston, October 13, 2008
NSF ADVANCE Distinguished Lecture, Kansas State University, Manhattan, Kansas, September 4, 2008
Toyota Technological Institute at Chicago, seminar, November 9, 2007
Harvard University Medical School, seminar, November 16, 2006
University of Notre Dame, Condensed Matter seminar, October 27, 2006
Harvard University, Radcliffe Seminar, October 20, 2006
Northwestern University, Engineering Science and Applied Mathematics colloquium, October 16, 2006
Emory University, Physics colloquium, September 22, 2006
Santa Fe Institute, seminar, June 20, 2006
MIT, EECS seminar, May 11, 2006
Harvard University, Dana Farber Cancer Institute, Systems Biology seminar, April 27, 2006
Virginia Tech Corporate Research Center, April 10, 2006
Northwestern University, Industrial Engineering and Management Sciences seminar, April 7, 2006
University of Michigan, School of Information, STIET seminar, February 23, 2006
University of Rochester, Physics colloquium, February 22, 2006
William and Mary College, Physics colloquium, November 11, 2005
Cornell University, Applied Mathematics seminar, October 28, 2005
Perimeter Institute, Waterloo, Ontario, Institute colloquium, September 21, 2005
Harvard University, School of Public Health, seminar, May 2, 2005
Google Corporation, April 20, 2006
Indiana University, Complex Systems seminar, April 18, 2005

Princeton University, Ecology and Evolutionary Biology seminar, November 29, 2004
Syracuse University, Physics Colloquium, November 11, 2004
University of Maryland, Physics colloquium, November 9, 2004
NYU Stern School of Business, Information Systems seminar, October 14, 2004
University of Illinois, Urbana-Champaign, Physics colloquium, September 23, 2004
University of Oxford, Complex Systems seminar, May 11, 2004
Umeå University, Sweden, Physics seminar, May 6, 2004
Michigan State University, “Science on the Edge” seminar, April 30, 2004
University of Delaware, Mathematical Sciences colloquium, April 27, 2004
Georgia Tech, Applied Mathematics seminar, April 2, 2004
Harvard University, Kennedy School of Government, Colloquium on Complexity and Social Networks,
March 15, 2004
Northwestern University, Engineering Science and Applied Mathematics colloquium, March 12, 2004
Microsoft Research, Theory Group seminar, February 13, 2004
Johns Hopkins University, Applied Mathematics and Statistics seminar, February 5, 2004
Wayne State University, Physics colloquium, January 22, 2004