

## Curriculum Vitae

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### EDUCATION

- A. B. University of California, Berkeley; physics (highest honors) 1984  
Thesis: "Paramagnetic form factors for transition metals"  
Advisor: Professor Leo M. Falicov
- Ph. D. Cornell University; physics 1989  
Thesis: "Criticality in bulk and semi-infinite systems:  
Advisor: Professor Michael E. Fisher

### POSITIONS HELD

- Jan 2021-  
-present Director, Center for Soft and Living Matter at the University of Pennsylvania
- June 2010-  
-present Hepburn Professor of Physics
- January 2010-  
-present Secondary faculty appointment, Department of Chemistry  
University of Pennsylvania
- Jan 2009-  
Dec 2013 Edmund J. and Louise W. Kahn Term Professor in the Natural Sciences  
University of Pennsylvania
- July 2004  
-present Professor, Department of Physics and Astronomy  
University of Pennsylvania
- July 2002  
-July 2004 Professor, Department of Chemistry & Biochemistry  
University of California, Los Angeles
- July 1999  
-June 2002 Associate Professor, Department of Chemistry & Biochemistry  
University of California, Los Angeles
- July 1993  
-June 1999 Assistant Professor, Department of Chemistry & Biochemistry  
University of California, Los Angeles
- Sept. 1991  
-April 1994 Postdoctoral Associate, Department of Chemical & Nuclear Engineering  
University of California, Santa Barbara  
Advisor: Professor Glenn H. Fredrickson
- Sept. 1989  
-Sept. 1991 Postdoctoral Fellow, Exxon Research & Engineering Company  
Advisor: Dr. Samuel A. Safran

### VISITING POSITIONS

- 2014 Visiting Professor, Institute for Advanced Study, Princeton, NJ. Host: Stanislas Leibler
- 2001 Visiting Scientist (CNRS Poste Rouge) at Université Louis Pasteur,

Inst. de Physique, Strasbourg France. Host: Carlos Marques

1997 Visiting Scientist, Elf-Aquitaine/CNRS laboratory, Paris France. Host: Ludwik Leibler

#### **HONORS AND AWARDS**

2017 Member, National Academy of Sciences  
2015 Simons Investigator in Theoretical Physics  
2013 Simons Fellow in Theoretical Physics  
2012 Fellow, American Association for the Advancement of Science  
2010 Member, American Academy of Arts and Sciences  
2004 Fellow, American Physical Society  
2002 UCLA Herbert Newby McCoy Award  
2000 UCLA Glenn Seaborg Award  
1996 National Science Foundation Career Award  
1984 -1987 National Science Foundation Graduate Fellowship  
1984 Sage Fellowship; Cornell University  
1984 James M. McDonald Physics Scholarship; UC Berkeley  
1983 Phi Beta Kappa, UC Berkeley  
1980-1983 Regents Scholar; UC Berkeley

#### **NAMED LECTURES**

2019 Dow Lecture, Northwestern University  
2019 Willard Lectures, University of Wisconsin  
2017 Jones Seminar, Dartmouth University  
2016 Bertman Physics Colloquium, Wesleyan University  
2014 Robert Scott Lecture, UCLA  
2009 Daniel Kivelson Lecture, UCLA  
2008 Colloquium Ehrenfestii, Lorentz Institute, Leiden University

#### **PROFESSIONAL ACTIVITIES**

2021 Member, NSF KITP review committee  
2021 Participant, DOE BES Roundtable Workshop on Cryo-Electron Microscopy  
2020-2024 Member, Science Advisory Board, Ross M. Brown Family Foundation  
2021 Member, Burroughs Wellcome Fund Advisory Committee for Career Awards at the Scientific Interface  
2021-2023 Member, Advisory Board, Center for Theoretical Biological Physics at Rice University  
2020 Member, International jury for Inst. Philippe Meyer Prize in Theoretical Physics  
2020-2021 Member, National Academy of Sciences Biological Physics Decadal Study Committee  
2019 Member, NSF Committee of Visitors for the Division of Materials Research  
2019-2022 Chair line, Physics Section of AAAS  
2019-2022 Speaker line, APS Council  
2019-2021 Member, Advisory Board of Max Planck Institute for Dynamics and Self-Organization  
2018-2021 Member, APS Board of Directors  
2017-2020 Member, IUPAP Working Group on Soft Matter  
2017 Co-organizer of “Different is different,” a workshop in honor of Susan Coppersmith’s 60<sup>th</sup> Birthday

2017 Member of Steering Committee, NSF workshop on “Advancing and Accelerating Materials Innovation Through the Synergistic Interaction among Computation, Experiment and Theory: Opening New Frontiers”

2017 Workshop leader, NSF Workshop on “Robustness, Reliability, and Reproducibility in Scientific Research”

2017-2020 General Councilor, American Physical Society

2016-2017 Member, Advisory Board, Center for Theoretical Biological Physics at Rice University

2014-2015 Co-organizer, Aspen 2015 Winter Conference on “Unifying Concepts in Glass Physics”

2013-2014 Co-organizer, NSF Workshop on “Opportunities in Theoretical and Computational Polymeric Materials and Soft Matter” and co-author of workshop report

2011-2013 Chair, Nominating Committee, Division of Condensed Matter Physics, American Physical Society

2010-2012 Co-chair, Committee on Societal Benefits from Condensed Matter and Materials Research

2008-2011 Member, Condensed Matter and Materials Research Committee of the National Research Council

2008-2013 General Member, Aspen Center for Physics

2007 Co-organizer (with N. Menon and E. Weeks): Workshop on Jamming at the Aspen Center for Physics (Aspen, CO, August 2007).

2006-2009 Member, American Physical Society Committee on the Status of Women in Physics

2006-2007 Member, National Research Council decadal study committee for condensed matter physics and materials physics (CMMP 2010)

2004-2005 Phi Beta Kappa Visiting Lecturer

2003-2006 Member, Advisory Board and Steering Committee, Kavli Institute of Theoretical Physics

2003-2005 Member, Editorial Board, Journal of Statistical Physics

2003 Co-organizer (with Timothy Lodge): ACS Symposium on Physical Chemistry of Complex Fluids (New York, NY, Sep. 7-11, 2003).

2003-2006 Member-at-Large, Division of Condensed Matter Physics, American Physical Society

2000-2003 Member-at-Large, Topical Group on Statistical and Nonlinear Physics, American Physical Society

1998-2003 Member of Editorial Board, Physical Review E

1996-1997 Co-organizer (with S. F. Edwards, S. R. Nagel and M. R. Robbins): ITP Workshop on Jamming and Rheology (Santa Barbara, CA, Aug. 11-Dec. 19, 1997)

#### **DEPARTMENTAL, SCHOOL AND UNIVERSITY SERVICE**

2020-2023 Director, Center for Soft and Living Matter

2017-2018 Department PIK Committee

2017 SAS Advisory Committee on Faculty Honors

2016-2019 Departmental Planning Committee

2015-2016 SAS Planning Group on Energy, Sustainability and the Environment

2015-2017 SAS Advisory Committee on IT

2015-present Department Mentoring Committee for Eleni Katifori

2014-2017 SAS Dean’s Planning and Priorities Committee

2014-2015 SAS Committee on Committees

2012-2013	SAS Evolution Cluster Committee
2010-2013	Faculty Senate Committee on the Economic Status of the Faculty
2010	SEAS MSE Chair Search Committee
2009-2010	University Council on Honorary Degrees
2009-2012	SAS Personnel Committee
Every year	Faculty promotion committees in Physics and/or Chemistry
Every year	Graduate student thesis committees in Physics, MSE, Chemistry, CBE

## COLLABORATIONS SINCE 2017

### Within UPenn

P. Arratia (MEAM, SEAS), R. Carpick (MEAM, SEAS), D. E. Discher (CBE, SEAS), D. J. Durian (Phys, SAS), Z. Fakhraai (Chem, SAS), Roger A. Greenberg (Cancer Bio, SOM), D. R. Jerolmack (EES, SAS), E. Katifori (Phys, SAS), M. Lampson (Bio, SAS), Daeyeon Lee (CBE, SEAS), B. J. Prosser (Physiology, SOM), R. Riggleman (CBE, SEAS), D. Srolovitz (MSE, SEAS), K. T. Turner (MEAM, SEAS), A. G. Yodh (Phys, SAS)

### At other institutions

G. Biroli (CEA Saclay), E. Corwin (Oregon), O. Dauchot (ESPCI), D. S. Gianola (UCSB), A. L. Graves (Swarthmore), H. Jaeger (Chicago), E. Kaxiras (Harvard), D. Kiefer (Duke), J. Kurchan (ENS Paris), J. Li (MIT), M. L. Manning (Syracuse), S. R. Nagel (Chicago), J. J. dePablo (UChicago), Z. Rocklin (GA Tech), C. Schmidt (Duke), P. Sinnis (Johns Hopkins), D. Reichman (Columbia), J. Rottler (UBC), J. P. Sethna (Cornell)

## CURRENT FUNDED COLLABORATIONS

*Cracking the Glass Problem* (Simons Foundation) with S. R. Nagel (Chicago, Director), L. Berthier (Montpelier), G. Biroli (CEA Saclay), P. Charbonneau (Duke), E. Corwin (Oregon), S. Franz (Paris-Sud), J. Kurchan (ENS Paris), M. L. Manning (Syracuse), G. Parisi (Roma), D. Reichman (Columbia), M. Wyart (Lausanne), F. Zamponi (ENS Paris)

*Design of functional materials based on new principles of disorder* (DOE) with S. R. Nagel (Chicago)

*Liver cancer: pre-malignant stiffening, membrane transduction and nuclear rheology* (NIH-NCI Physical Sciences Oncology Center at Penn) with D. E. Discher (director), T. Baumgart, J. Crocker, C. van Dang, E. Furth, R. Greenberg, W. Guo, D. Kaplan, P. Janmey, M. Lampson, M. Lemmen, R. Radhakrishnan, V. Shenoy, R. Wells

*Rearrangements and Softness in Disordered Solids* (NSF UPENN MRSEC IRG1) with P. Arratia and D. J. Durian (co-leaders), R. Carpick, Z. Fakhraai, Daeyeon Lee, R. Riggleman, K. Turner, A. G. Yodh

## TEACHING SINCE SPRING 2016

Statistical Mechanics (Phys 611)  
 Soft Matter Physics (Phys 661)  
 Condensed Matter Physics (Phys 518)  
 Statistical Physics of Disordered Solids (Phys 696)  
 Analytical Mechanics (Phys 351)

## CURRENT AND FORMER GRADUATE STUDENTS

Ian K. Ono (SAIC), Amelia M. Lapeña (LA County Clerk), Glenna Z. Sowa (Loyola Marymount), Kun-Chun Lee (self-employed), Thomas K. Haxton (LBL), Edward J. Banigan (MIT), Carl P. Goodrich (IAS Vienna), Samuel S. Schoenholz (Google Brain), Jason Rocks (BU). **Current:** Sean Ridout.

#### **CURRENT AND FORMER POSTDOCS**

James P. Donley (Center for Naval Analyses), Bae-Yeun Ha (U. Waterloo), Shubha Tewari (UMass Amherst), Corey S. O'Hern (Yale), Itamar Borukhov (Compugen), Catherine Barentin (U. Lyon), Leo E. Silbert (SIU-Carbondale), Jennifer M. Schwarz (Syracuse), Ajay Gopinathan (UC Merced), Ning Xu (USTC), Vincenzo Vitelli (UChicago), Wouter G. Ellenbroek (TU Eindhoven), Yair Shokef (Tel Aviv), Michael Schmiedeberg (Dusseldorf), Oleg Kogan (Cal Poly San Luis Obispo), Timon Idema (TU Delft), Daniel M. Sussman (Emory), Kevin Chiou (AbbVie), Rachel Bennett (UBristol), Francois Landes (Orsay), Tristan Sharp (MemComputing, Inc), Daniel Hexner (Technion), Horst-Holger Boltz (Zuse Institute), Miguel Ruiz-Garcia (U Politecnica Madrid), Farshid Jafarpour (TU Utrecht). **Current:** Ge Zhang, Rahul Chacko, Indrajit Tah, Menachem Stern.

## PUBLICATION LIST

1. S. H. Liu and A. J. Liu, Phys. Rev. B **32**, 4753-4755 (1985).  
"Spectral Dimension of elastic Sierpinski gaskets with general elastic forces."
2. J. F. Cooke, S. H. Liu and A. J. Liu, J. Appl. Phys., **57**, 3027-3029 (1985).  
"Paramagnetic form factors from itinerant electron theory."
3. S. H. Liu, A. J. Liu and J. F. Cooke, J. Mag. and Mag. Mat., **54**, 953-954 (1986).  
"Paramagnetic form factors of hcp transition metals."
4. S. H. Liu and A. J. Liu, Phys. Rev. B, **34**, 343-346 (1986).  
"Anomalous diffusion on and elastic vibrations of two square hierarchical lattices."
5. S. H. Liu, A. J. Liu and J. F. Cooke, Phys. Rev. B, **36**, 9521-9527 (1987).  
"Theoretical paramagnetic form factors for hcp transition metals."
6. J. F. Cooke, S. H. Liu and A. J. Liu, Phys. Rev. B, **37**, 289-295 (1988).  
"Paramagnetic form factors for cubic itinerant electron systems."
7. S. H. Liu, J. F. Cooke and A. J. Liu, Physica B **149**, 134-138 (1988).  
"A fast and accurate method for the calculation of orbital susceptibility and form factor of paramagnetic transition metals."
8. A. J. Liu and M. E. Fisher, Physica A **156**, 35-76 (1989).  
"The three-dimensional Ising model revisited numerically."
9. A. J. Liu and M. E. Fisher, Phys. Rev. A **40**, 7202-7221 (1989).  
"Universal critical adsorption profile from optical experiments."
10. A. J. Liu and M. E. Fisher, J. Stat. Phys. **58**, 431-442 (1990).  
"On the corrections to scaling in three-dimensional Ising models."
11. A. J. Liu, D. J. Durian, E. Herbolzheimer and S. A. Safran, Phys. Rev. Lett. **65**, 1897-1900 (1990).  
"Wetting transitions in cylindrical pores."
12. A. J. Liu and G. S. Grest, Phys. Rev. A **44**, R7894-7897 (1991).  
"Wetting in confined geometries--a Monte Carlo study."
13. A. J. Liu and G. H. Fredrickson, Macromolecules **25**, 5551-5553 (1992).  
"Influence of nematic fluctuations on phase separation in polymer blends."
14. L. Monette, A. J. Liu and G. S. Grest, Phys. Rev. A **46**, 7664-7679 (1992).  
"Kinetics of domain growth in small pores."
15. S. A. Langer, A. J. Liu and J. Toner, Phys. Rev. Lett. **70**, 2443-2446 (1993); **70**, 3180 (1993) [erratum].  
"Hydrodynamics of two dimensional smectics on fluid surfaces."
16. A. J. Liu and G. H. Fredrickson, Macromolecules **26**, 2817-2824 (1993).

"Free energy functionals for liquid crystalline polymer solutions and blends."

17. S. T. Milner and A. J. Liu, *Phys. Rev. E* **48**, 449-454 (1993).

"Concentration dependence of long-time tails in colloidal suspensions."

18. G. H. Fredrickson, A. J. Liu and F. S. Bates, *Macromolecules* **27**, 2503-2511 (1994).

"Entropic corrections to the Flory-Huggins theory of polymer blends: architectural and conformational effects."

19. C. Singh, M. Goulian, A. J. Liu and G. H. Fredrickson, *Macromolecules* **27**, 2974-2798 (1994).

"Phase behavior of semiflexible diblock copolymers."

20. S. K. Lee, A. O. Oertli, M. Gannon, A. J. Liu, D. S. Pearson, H.-W. Schmidt and G. H. Fredrickson, *Macromolecules* **27**, 3955-3962 (1994).

"Phase behavior of liquid crystalline polymer/model compound mixtures: theory and experiment."

21. T.-A. Tran, A. J. Liu and P. Pincus, *J. de Phys. II*, **8**, 1417-1426 (1994).

"Interaction between two polymer brushes in a binary solvent mixture."

22. Glenn H. Fredrickson and A. J. Liu, *J. Polym. Sci. B: Polym. Phys. Ed.*, **33**, 1203-1212 (1995).

"Design of miscible polyolefin copolymer blends."

23. A. J. Liu, S. Ramaswamy, T. G. Mason, H. Gang and D. A. Weitz, *Phys. Rev. Lett.*, **76**, 3017-3020 (1996).

"Anomalous viscous loss in emulsions and foams."

24. A. J. Liu and G. H. Fredrickson, *Macromolecules*, **29**, 8000-8009 (1996).

"Phase separation kinetics of rod/coil mixtures."

25. J. P. Donley and A. J. Liu, *Phys. Rev. E* **55**, 539-543 (1997).

"Phase behavior of near-critical fluids confined in periodic gels."

26. J. P. Donley, J. Rudnick and A. J. Liu, *Macromolecules* **30**, 1188-1193 (1997).

"Chain structure in polyelectrolyte solutions at nonzero concentrations."

27. S. A. Langer and A. J. Liu, *J. Phys. Chem. B* **101**, 8667-8671 (1997).

"Effect of random packing on stress relaxation in foam."

28. B.-Y. Ha and A. J. Liu, *Phys. Rev. Lett.* **79**, 1289-1292 (1997).

"Counterion-mediated attraction between two like-charged rods."

29. A. J. Liu, *Liq. Cryst. Today* **7** (4), 1-3 (1997).

"Morphology development in liquid-crystal/polymer mixtures."

30. B.-Y. Ha and A. J. Liu, *Phys. Rev. Lett.* **81**, 1011-1014 (1998).

"Effect of non-pairwise additive interactions on bundles of rodlike polyelectrolytes."

31. B. -Y. Ha and A. J. Liu, *Physica A* **259**, 235-244 (1998).  
"Interfaces in Solutions of Randomly Charged Rods."
32. B. -Y. Ha and A. J. Liu, *Phys. Rev. E* **58**, 6281-6286 (1998).  
"Charge oscillations and many-body effects in bundles of like-charged rods."
33. J. P. Donley, J. J. Rajasekaran and A. J. Liu, *J. Chem. Phys.* **109**, 10499-10512 (1998).  
"Density pair correlation functions for molecular liquids: approximations for polymers."
34. R. M. Nyquist, B.-Y. Ha and A. J. Liu, *Macromolecules* **32**, 3481-3487 (1999).  
"Counterion condensation in solutions of rigid polyelectrolytes."
35. B. -Y. Ha and A. J. Liu, *Europhys. Lett.* **46**, 624-630 (1999).  
"Kinetics of bundle formation in DNA condensation."
36. B. -Y. Ha and A. J. Liu, *Phys. Rev. E* **60**, 803-813 (1999).  
"Counterion-mediated, non-pairwise-additive attractions in bundles of like-charged rods."
37. A. M. Lapeña, S. C. Glotzer, S. A. Langer and A. J. Liu, *Phys. Rev. E* **60**, R29-32 (1999).  
"Effect of Ordering on Spinodal Decomposition of Liquid-Crystal/Polymer Mixtures."
38. B. Drovetsky, A. J. Liu and C. H. Mak, *J. Chem. Phys.* **111**, 4334-4342 (1999).  
"Nematic-isotropic interfaces in semiflexible blends."
39. B. -Y. Ha and A. J. Liu, *Phys. Rev. Lett.* **83**, 2681 (1999).  
"The nature of attraction between like-charged rods—Reply."
40. S. Tewari, D. Schiemann, D. J. Durian, C. M. Knobler, S. A. Langer and A. J. Liu, *Phys. Rev. E* **60**, 4385-4396 (1999).  
"Statistics of shear-induced rearrangements in a two-dimensional model foam."
41. S. A. Langer and A. J. Liu, *Europhys. Lett.* **49**, 68-74 (2000).  
"Sheared foam as a supercooled liquid?"
42. B. -Y. Ha and A. J. Liu, *Phys. Rev. E* **63**, 02289: 5 pages (2001).  
"Effect of nonzero chain diameter on "DNA" condensation."
43. C. S. O'Hern, S. A. Langer, A. J. Liu and S. R. Nagel, *Phys. Rev. Lett.* **86**, 111-114 (2001).  
"Force distributions near the jamming and glass transitions."
44. I. Borukhov, R. F. Bruinsma, W. M. Gelbart and A. J. Liu, *Phys. Rev. Lett.* **86**, 2182-2185 (2001).  
"Elastically driven linker aggregation between two semiflexible polyelectrolytes."
45. C. Barentin and A. J. Liu, *Europhys. Lett.* **55**, 432-438 (2001).  
"Shear-thickening in dilute solutions of wormlike micelles."
46. C. S. O'Hern, S. A. Langer, A. J. Liu and S. R. Nagel, *Phys. Rev. Lett.* **88**, 075507: 4 pages (2002).  
"Random packings of frictionless particles."



47. I. Borukhov, K. C. Lee, R. F. Bruinsma, W. M. Gelbart, A. J. Liu, M. J. Stevens, *J. Chem. Phys.* **117**, 462-280 (2002).  
“Association of two semiflexible polyelectrolytes by inter-chain linkers: theory and simulations.”
48. I. K. Ono, C. S. O’Hern, S. A. Langer, A. J. Liu and S. R. Nagel, *Phys. Rev. Lett.* **89**, 095703: 4 pages (2002).  
“Effective temperatures of a driven system near jamming.”
49. I. K. Ono, S. Tewari, S. A. Langer and A. J. Liu, *Phys. Rev. E.* **67**, 061503: 16 pages (2003).  
“Velocity fluctuations in a steadily-sheared model foam.”
50. C. S. O’Hern, L. E. Silbert, A. J. Liu, S. R. Nagel, *Phys. Rev. E* **68**, 011306 (2003).  
“Jamming at zero temperature and zero applied stress: the epitome of disorder.”
51. R. P. Ojha, P.-A. Lemieux, P. K. Dixon, A. J. Liu and D. J. Durian, *Nature* **427**, 521 (2004).  
“Statistical mechanics of a gas-fluidized particle.”
52. K. C. Lee, I. Borukhov, W. M. Gelbart, A. J. Liu, M. J. Stevens, *Phys. Rev. Lett.* **93**, 128101 (2004).  
“Effect of mono- and multivalent salts on angle-dependent attractions between charged rods.”
53. C. S. O’Hern, A. J. Liu and S. R. Nagel, *Phys. Rev. Lett.* **93**, 165702 (2004).  
“Effective temperatures in driven systems: Static vs. time-dependent relations.”
54. C. S. O’Hern, L. E. Silbert, A. J. Liu, S. R. Nagel, *Phys. Rev. E* **70**, 043302 (2004).  
Reply to Comment on PRE 68, 011306 (2003).
55. I. Borukhov, R. F. Bruinsma, W. M. Gelbart and A. J. Liu, *Proc. Nat. Acad. Sci.* **102**, 3673-3678 (2005).  
“Structural polymorphism of the cytoskeleton: a model of linker-assisted filament aggregation.”
56. L. E. Silbert, A. J. Liu and S. R. Nagel, *Phys. Rev. Lett.* **95**, 098301 (2005).  
“Vibrations and diverging length scales near the unjamming transition.”
57. J. M. Schwarz, A. J. Liu, L. Chayes, *Europhys. Lett.* **73**, 560-566 (2006).  
“Jamming as the sudden emergence of an infinite k-core cluster.”
58. L. E. Silbert, A. J. Liu and S. R. Nagel, *Phys. Rev. E.* **73**, 041304 (2006).  
“Structural signatures of the unjamming transition at zero temperature.”
59. G. Z. Sowa, D. C. Cannell, A. J. Liu and E. Reisler, *J. Phys. Chem. B* **110**, 22279-22284 (2006).  
“Polyamine-induced bundling of F-actin.”
60. N. Xu, M. Wyart, A. J. Liu and S. R. Nagel, *Phys. Rev. Lett.* **98**, 175502 (2007).  
“Excess vibrational modes and the boson peak in model glasses.”
61. A. Gopinathan, K. C. Lee, J. M. Schwarz and A. J. Liu, *Phys. Rev. Lett.* **99**, 058103 (2007).  
“Branching, capping, and severing in dynamic actin structures.”

62. R. D. Kamien and A. J. Liu, Phys. Rev. Lett. **99**, 155501 (2007).  
"Why is Random Close Packing Reproducible?"
63. T. K. Haxton and A. J. Liu, Phys. Rev. Lett. **99**, 195701 (2007).  
"Activated dynamics and effective temperature in a steady state sheared glass."
64. K. -C. Lee and A. J. Liu, Biophys. J. **95**, 4529-4539 (2008).  
"New proposed mechanism for actin-polymerization-driven motility."
65. N. Xu, V. Vitelli, M. Wyart, A. J. Liu and S. R. Nagel, Phys. Rev. Lett. **102**, 038001 (2009).  
"Energy transport in jammed sphere packings."
66. L. E. Silbert, A. J. Liu and S. R. Nagel, Phys. Rev. E **79**, 021308 (2009).  
"Normal modes in model jammed systems in three dimensions."
67. Z. Zhang, N. Xu, D. T. N. Chen, P. Yunker, A. M. Alsayed, K. B. Aptowicz, P. Habdas, A. J. Liu, S. R. Nagel and A. G. Yodh, Nature **459**, 230 (2009).  
"Thermal vestige of the zero-temperature jamming transition."
68. Z. Zeravcic, N. Xu, A. J. Liu, S. R. Nagel and W. van Saarloos, Europhys. Lett. **87**, 26001 (2009).  
"Excitations of ellipsoid packings near jamming."
69. K. -C. Lee and A. J. Liu, Biophys. J. **97**, 1295 (2009).  
"Force-velocity relation for actin-polymerization-driven motility from Brownian dynamics simulations."
70. D. A. Christian, A. W. Tian, W. G. Ellenbroek, I. Levental, K. Rajagopal, P. A. Janmey, A. J. Liu, T. Baumgart and D. E. Disher, Nat. Mat. **8**, 843-849 (2009).  
"Spotted vesicles, striped micelles and Janus assemblies induced by ligand binding."
71. A. Souslov, A. J. Liu and T. C. Lubensky, Phys. Rev. Lett. **103**, 205503 (2009).  
"Elasticity and response in nearly isostatic periodic lattices."
72. N. Xu, T. K. Haxton, A. J. Liu and S. R. Nagel, Phys. Rev. Lett. **103**, 245701 (2009).  
"Equivalence of glass transition and colloidal glass transition in the hard-sphere limit."
73. V. Vitelli, N. Xu, M. Wyart, A. J. Liu and S. R. Nagel, Phys. Rev. E **81**, 021301 (2010).  
"Heat transport in model jammed solids."
74. Y. Shokef and A. J. Liu, Europhys. Lett. **90**, 26005 (2010).  
"Jamming mechanisms and density dependence in a kinetically constrained model."
75. N. Xu, V. Vitelli, A. J. Liu and S. R. Nagel, Europhys. Lett. **90**, 56001 (2010).  
"Anharmonicity and quasi-localization of the excess low-frequency vibrations in jammed solids."
76. K. Chen, W. G. Ellenbroek, Z. X. Zhang, D. T. N. Chen, P. J. Yunker, S. Henkes, C. Brito, O. Dauchot, W. van Saarloos, A. J. Liu and A. G. Yodh, Phys. Rev. Lett. **105**, 025501 (2010).  
"Low-frequency vibrations of soft colloidal glasses."

77. T. K. Haxton and A. J. Liu, *Europhys. Lett.* **90**, 66004 (2010).  
“Kinetic heterogeneities at dynamical crossovers.”
78. P. J. Yunker, K. Chen, Z. Zhang, W. G. Ellenbroek, A. J. Liu and A. G. Yodh, *Phys. Rev. E* **83**, 011403 (2011).  
“Rotational and translational phonon modes in glasses composed of ellipsoidal particles.”
79. T. K. Haxton, M. Schmiedeberg and A. J. Liu, *Phys. Rev. E* **83**, 031503 (2011).  
“Universal jamming phase diagram in the hard-sphere limit.”
80. N. Xu, D. Frenkel and A. J. Liu, *Phys. Rev. Lett.* **106**, 245502 (2011).  
“Direct determination of the size of basins of attractions of jammed solids.”
81. E. J. Banigan, M. A. Gelbart, Z. Gitai, N. Wingreen and A. J. Liu, *PLoS Comp. Bio.* **7**, 1002145 (2011).  
“Filament depolymerization can explain chromosome pulling during bacterial mitosis.”
82. M. L. Manning and A. J. Liu, *Phys. Rev. Lett.* **107**, 108302 (2011).  
“Vibrational modes identify soft spots in a sheared disordered packing.”
83. K. Chen, M. L. Manning, P. J. Yunker, W. G. Ellenbroek, Z. Zhang, A. J. Liu and A. G. Yodh, *Phys. Rev. Lett.* **107**, 108301 (2011). “Measurement of correlations between low-frequency vibrational modes and particle rearrangements in quasi-two-dimensional colloidal glasses.”
84. M. Schmiedeberg, T. K. Haxton, S. R. Nagel and A. J. Liu, *Europhys. Lett.* **96**, 36010 (2011).  
“Mapping the glassy dynamics of soft spheres onto hard-sphere behavior.”
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## **EDITORIALS**

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“Jamming is not just cool anymore.” (editorial)
2. A. J. Liu and S. R. Nagel, *Soft Matter*, **6**, 2869-2870 (2010).  
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“Opportunities in theoretical and computational polymeric materials and soft matter.”

## **REVIEW ARTICLES**

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2. B. -Y. Ha and A. J. Liu, in “Physical Chemistry of Polyelectrolytes,” ed. T. Radeva (Marcel Dekker, New York, 2001). pp. 163-180.  
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4. A. J. Liu, S. R. Nagel, W. van Saarloos and M. Wyart, in “Dynamical Heterogeneities in Glasses, Colloids, and Granular Media, ed. Ludovic Berthier, Giulio Biroli, Jean-Philippe Bouchaud, Luca Cipelletti, and Wim van Saarloos (Oxford, New York, 2011).
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## **EDITED BOOKS**

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## **ARTICLES IN POPULAR PRESS ABOUT LIU’S RESEARCH**

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## RESEARCH SUPPORT

U54 CA193417 Discher (PI) 06/16/15-05/31/21 \$10M Total  
NIH-NCI *Liver cancer: pre-malignant stiffening, membrane transduction and nuclear rheology*  
Overall aims of center are to measure and model the biophysical determinants of liver cancer. I am the PI of Core-2, the theory core, which also includes Vivek Shenoy and Ravi Radhakrishnan.

Sub-award from Duke University Kiehart (PI) \$52K Total  
*Morphogenesis: Biophysics and genetics of dorsal closure*  
Aim is to understand mechanics of the amnioserosa during dorsal closure.

NSF-DMR-1506625 Liu (PI) 08/01/15-07/31/20 \$460K Total  
*Theoretical studies of mechanics of active matter*  
Aim is to develop a theoretical framework for active solids in which energy is injected at the microscopic scale via stress generation.

NSF-DMR-2005749 Liu (PI) 01/01/21-12/31/25 \$670K Total  
*Theoretical studies of tunable networks*  
Aim is to explore a new possible organizing principle for phenomena ranging from protein allostery to morphological processes during development based on networks with link properties that are different and mutable.

NSF-DMR-1720530 Yodh (PI) 09/01/17-08/31/23 \$540K Total (my share)  
*University of Pennsylvania Materials Research Science and Engineering Center*

DOE-DE- FG02-05ER46199 Liu (PI) 09/01/16-11/30/21 \$525K Total  
*Design of functional materials based on new principles of disorder*  
Aim is to further understand jamming and to build on this insight to design new mechanical metamaterials.

DOE-DE-SC0020963 Liu (PI) 08/01/20-07/31/23 \$450K Total  
Bio-mimetic material design based on principles of disorder  
Aim is to develop approaches to design materials to perform biologically-inspired functions and to gain microscopic understanding of how they develop such collective functions.

Simons Foundation 327939 Liu (PI) 09/01/15-08/31/25 \$1.2M Total  
*Simons Investigator in Theoretical Physics*  
This Simons Foundation program funds investigators, so funds may be spent on research on any topic.

Simons Foundation 454945 Liu (PI) 05/01/20-04/30/23 \$330K Total (my share)  
*Cracking the glass problem*  
This is a 13-PI collaboration to develop a unified understanding of the glassy state of matter and the glass transition.

## **SEMINARS AND COLLOQUIA**

1. Oak Ridge National Laboratory, Solid State Division, seminar (Oak Ridge, TN, 1988);  
"What can critical adsorption experiments tell us?"
2. AT&T Bell Laboratories, seminar (Murray Hill, NJ, 1990);  
"Wetting in pores."
3. IBM Zurich Research Laboratory, seminar (Zurich, Switzerland, 1990);  
"Wetting in a pore."
4. University of Maine, Physics colloquium (Bangor, ME, 1990);  
"Wetting transitions in porous media."
5. University of Pittsburgh, Physics colloquium (Pittsburgh, PA, 1990);  
"Wetting transitions in porous media."
6. University of Oxford, Theoretical Physics seminar (Oxford, England, 1991);  
"Wetting in confined geometries."
7. University of Bristol, Physics seminar (Bristol, England, 1991);  
"Wetting in confined geometries."
8. UCI, condensed matter physics seminar (Irvine, CA, 1991);  
"Two-phase systems in porous media."
9. Weizmann Institute, Polymer department seminar (Rehovot, Israel, 1991);  
"Wetting in porous media."
10. UCLA, solid state seminar (Los Angeles, CA, 1991);  
"Near-critical binary liquids in porous media--RFIM or confinement?"
11. UCSB, condensed matter physics seminar (Santa Barbara, CA 1991);  
"Near-critical binary liquids in porous media--RFIM or confinement?"
12. UCSD, condensed matter physics seminar (San Diego, CA, 1992);  
"Liquid crystalline polymers."
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14. Simon Fraser Univ., Physics colloquium (Burnaby, BC Canada, 1993);  
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15. AT & T Bell Laboratories, seminar (Murray Hill, NJ, December 1993);  
"Phase behavior of polymer blends: beyond Flory-Huggins theory."
16. NIST, Polymer Division seminar (Gaithersburg, MD, December 1993);  
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17. Biosym Technologies Inc., seminar (San Diego, CA, May 1994);  
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18. UC Irvine, Physical Chemistry seminar, (Irvine, CA, October 1994);  
"Liquid crystalline polymers."
19. UC Riverside, Chemical Physics seminar (Riverside, CA, November 1994);  
"Liquid crystalline polymers."
20. UC Davis, Physical Chemistry seminar (Davis, CA, February 1995);  
"Phase behavior of polymer mixtures."
21. Oregon State University, Physical Chemistry seminar (Corvallis, OR, February 1995);  
"Conformational effects on phase behavior in polymer mixtures."
22. UC Santa Barbara, UCLA-UCLA Complex Fluids Workshop (Santa Barbara, CA, May 1995);  
"Rheology of emulsions and foams."
23. Kent State University, Physics department colloquium (Kent State, OH, Sept. 1995);  
"Liquid crystalline polymer mixtures."
24. University of Maryland, Chemical Physics and Physical Chemistry seminar (College Park, MD, Sept. 1995);  
"Polyelectrolyte solutions."
25. University of California, condensed matter physics seminar (Santa Barbara, CA, October 1995);  
"Electrolyte and polyelectrolyte solutions."
26. Caltech, chemical physics seminar (Pasadena, CA, January 1996);  
"Fluids in porous media."
27. Institut Charles Sadron, Seminar (Strasbourg, France, June 1996);  
"Electrolyte and polyelectrolyte solutions."
28. Laboratoire de Physico-Chimie Theorique, ESPCI, Seminar (Paris, France, July 1996);  
"Chain structure in polyelectrolyte solutions."
29. NIST, Polymer science seminar (Gaithersburg, MD, July 1996);  
"Chain structure in polyelectrolyte solutions."
30. University of Mainz (Mainz, Germany, September 1996);  
"Chain structure in polyelectrolyte solutions."
31. Caltech, Condensed matter physics seminar (Pasadena, CA, October 1996);  
"The physics of polyelectrolyte solutions."
32. University of Pennsylvania, condensed matter physics seminar (Philadelphia, PA, May 1997);  
"Conformation and counterion condensation in solutions of charged chains."

33. University of Massachusetts, polymer science department seminar (Amherst, MA, May 1997);  
"Conformation and counterion condensation in solutions of charged chains."
34. Laboratoire de Physico-Chimie Theorique, ESPCI, seminar (Paris, France, June 1997);  
"Dissipation and dynamics in foam."
35. Systèmes Macromoléculaires Hétérogènes, seminar (Paris, France, June 1997);  
"Conformation and counterion condensation in solutions of charged chains."
36. UCSB, Physics colloquium (Santa Barbara, CA, October 1997);  
"Why do like-charged rods attract?"
37. UN Reno, Physics colloquium (Reno, NV, November 1997);  
"Dissipation and dynamics in foam."
38. USC, Physical chemistry seminar (Los Angeles, CA, November 1997);  
"Why do like-charged rods attract?"
39. ITP Blackboard lunch seminar (Santa Barbara, CA, December 1997);  
"Foam as a supercooled liquid?"
40. Cal State Dominguez Hills, physics colloquium (Los Angeles, CA, April 1998);  
"Physical problems suggested by DNA condensation."
41. Univ. of Oregon, physics colloquium (Eugene, OR, April 1998);  
"Why do like-charged rods attract?"
42. Univ. of Wisconsin, physical chemistry seminar (Madison, WI, April 1998);  
"Why do like-charged rods attract?"
43. Univ. of Minnesota, polymer seminar (Minneapolis, MN, April 1998);  
"Attractive interactions in polyelectrolyte solutions."
44. Univ. of Chicago, James Franck Institute colloquium (Chicago, IL, June 1998);  
"Why do like-charged rods attract?"
45. Univ. of Illinois, condensed matter physics seminar (Urbana, IL, June 1998);  
"Fluctuations in flowing foam."
46. Univ. of Pennsylvania, physics colloquium (Philadelphia, PA, October 1998);  
"Why do like-charged rods attract?"
47. UC Berkeley, physics colloquium (Berkeley, CA, November 1998);  
"Why do like-charged rods attract?"
48. NEC, condensed matter seminar (Princeton, NJ, December 1998);  
"Fluctuations in flowing foam."
49. U. Washington, physical chemistry seminar (Seattle, WA, April 2000);  
"Why do like-charged rods attract?"

50. University of Fribourg, physics seminar (Fribourg, Switzerland, July 2000);  
"Jamming."
51. University of California, Irvine, physical chemistry seminar (Irvine, CA, February 2001);  
"Self-assembly of charged biopolymers in solution."
52. Laboratoire de Dynamiques des Fluides Complexes (Strasbourg, France, June 2001);  
"Self-assembly of charged biopolymers in solution."
53. Laboratoire de Physico-Chimie Theorique, ESPCI (Paris, France, July 2001);  
"Jamming."
54. Physico-Chimie Curie, Institut Curie (Paris, France, July 2001);  
"Self-assembly of F-Actin in solution."
55. Laboratoire de Physique, Ecole Normale Superieure (Lyon, France, July 2001);  
"Jamming."
56. University of California, San Diego, physical chemistry seminar (La Jolla, CA, September 2001);  
"Self-assembly of biopolymers in solution."
57. University of California, Irvine, condensed matter physics seminar (Irvine, CA, October 2001);  
"Jamming."
58. University of Akron, Polymer Science Lecturer (Akron, OH, October 2001);  
"Self-assembly of charged biopolymers in solution."
59. University of Indiana, Bloomington, Physics Colloquium (Bloomington, IN, January 2001);  
"Jamming."
60. University of Pennsylvania, Condensed Matter Physics Seminar (Philadelphia, PA, October 2002);  
"Jamming."
61. University of British Columbia, Physics Colloquium (Vancouver, BC, Canada, November 2002);  
"Jamming."
62. Simon Fraser University, Physics Colloquium (Vancouver, BC, Canada, November 2002);  
"Actin self-assembly and the cellular cytoskeleton."
63. University of Washington, Condensed Matter Physics seminar (Seattle, WA, December 2002);  
"Jamming."
64. University of Pennsylvania, Physics Seminar (Philadelphia, PA, February 2003);  
"Actin self-assembly and the cellular cytoskeleton."

65. California State University, Northridge, Condensed Matter Physics Seminar (October, 2003).  
“Jamming.”
66. Brandeis University, Condensed Matter Physics Seminar (Waltham, MA; November 2003);  
“Effective temperatures of sheared glassy systems.”
67. Harvard University, Physical Chemistry Seminar (Cambridge, MA, November 2003); “Actin self-assembly and the cellular cytoskeleton.”
68. Iowa State University, Physics Colloquium (Ames, IA, April 2004);  
“Actin self-assembly and the cellular cytoskeleton.”
69. Southern Methodist University, Phi Beta Kappa Lectures (Dallas, TX, Sept. 2004).  
Public lecture: “Jamming.”  
Classroom discussion: “Women in Academic Science.”  
Classroom lecture: “Effective temperatures in driven systems.”
70. Truman State University, Phi Beta Kappa Lectures (Kirksville, MO, Sept. 2004).  
Brown bag lunch talk: “Women in Academic Science.”  
Physics colloquium: “Jamming.”  
Public Lecture: “How Cells Crawl and Listeria Spreads.”  
Classroom lecture: “Effective temperatures in driven systems.”
71. University of South Dakota, Phi Beta Kappa Lectures (Vermilion, SD, Oct. 2004).  
Biology seminar: “How cells crawl and Listeria spreads.”  
Women in science discussion: “Women in academic science.”  
Public Lecture: “Jamming.”  
Classroom lecture: “Effective temperatures in driven systems.”
71. University of Pennsylvania, Physical Chemistry seminar (Philadelphia, PA, Oct. 2004).  
“Actin self-assembly and the cellular cytoskeleton.”
73. Georgia Tech, Physical Chemistry Seminar (Atlanta, GA, November 2004);  
“Actin self-assembly and the cellular cytoskeleton.”
74. Temple University, Physics Colloquium (Philadelphia, PA, November 2004).  
“Jamming.”
75. West Virginia University, Phi Beta Kappa Lectures (Morgantown, WV, Dec. 2004).  
Public Lecture: “Jamming.”  
Physics Colloquium: “Actin Self-Assembly and Cell Crawling.”  
Classroom lecture: “Effective temperatures in driven systems.”
76. Institute for Advanced Study, Statistical Mechanics Seminar (Princeton, NJ, Dec. 2004).  
“Jamming and k-core percolation.”
77. MIT, Physics Colloquium (Cambridge, MA, February 2005).  
“Jamming.”
78. University of San Diego, Phi Beta Kappa Lectures (San Diego, CA, March 2005).



Classroom Lecture: "Structural polymorphism in the cellular cytoskeleton."

Brown bag lunch talk: "Women in Academic Science."

Public Lecture: "The Physics of How Cells Crawl and Listeria Spreads."

79. Bucknell College, Phi Beta Kappa Lectures (PA, April 2005).

Public Lecture: "The Physics of How Cells Crawl and Listeria Spreads."

Classroom Lecture: "Liquid Crystals and Polymorphism in the Actin Cytoskeleton."

Physics Colloquium: "Jamming."

80. Swarthmore College (Swarthmore, PA, September 2005).

Public Lecture: "Women in Academic Science: Balancing Career and Family."

81. City College of New York, Joint Physics-Levich Institute Colloquium (New York, NY, September 2005).

"Effective temperatures of driven systems near jamming."

(CANCELLED DUE TO FAMILY EMERGENCY)

82. Duke University, (Raleigh-Durham, NC, October 2005).

Physical Chemistry Seminar: "Actin self-assembly and Listeria motility."

Center of Nonlinear and Complex Systems Seminar: "Jamming."

(CANCELLED DUE TO FAMILY EMERGENCY)

83. St. Joseph's University, Physics Colloquium (Philadelphia, PA, October 2005).

"Jamming."

84. Courant Institute, New York University, Applied Mathematics Seminar (New York, NY, November 2005).

"Jamming."

85. University of Pennsylvania, Applied Mathematics Colloquium (Philadelphia, PA, January 2006).

"Jamming."

86. Swarthmore College, Physics Colloquium (Swarthmore, PA, January 2006).

"Jamming."

87. Brown University, Physics Colloquium (Providence, RI, February 2006).

"Jamming."

88. Yale University, Physics Colloquium (New Haven, CT, February 2006).

"Jamming."

89. McGill University, Physics Colloquium (Montreal, Quebec, Canada, April 2006).

"Jamming."

90. Carnegie-Mellon University, Physics Colloquium (Pittsburgh, PA, April 2006).

"Jamming."

91. University of Pennsylvania, Materials Science and Engineering Seminar (Philadelphia, PA, September 2006).

"Actin self-assembly and cell-crawling."

92. Penn State University, Physics Colloquium (University Park, PA, October 2006).  
“Jamming.”  
(CANCELLED DUE TO FAMILY EMERGENCY.)
93. Courant Institute, Applied Mathematics Seminar (New York, NY, October 2006).  
“Actin self-assembly and cell crawling.”
94. University of Massachusetts, Physics Colloquium (Amherst, MA, November 2006).  
“Jamming.”
95. New Jersey Institute of Technology, Physics Colloquium (Newark, NJ, January 2007).  
“Jamming.”
96. Case Western Reserve University, Physics Colloquium (Cleveland, OH, April 2007).  
“Jamming.”
97. Cornell University, Condensed Matter Physics Seminar (Ithaca, NY, April 2007).  
“Jamming.”
98. Johns Hopkins University, Physics Colloquium (Baltimore, MD, April 2007).  
“Jamming.”
99. FOM-Institute for Atomic and Molecular Physics (AMOLF), Colloquium (Amsterdam, The Netherlands, September 2008).  
“The physics of cell crawling and Listeria motility.”
100. University of Amsterdam, Physics colloquium (Amsterdam, The Netherlands, September 2008).  
“Effective temperatures in driven systems.”
101. Lorentz Institute, Colloquium Ehrenfestii (Leiden, The Netherlands, September 2008).  
“Jamming.”
102. Technical University of Eindhoven, Soft matter seminar (Eindhoven, The Netherlands, September 2008).  
“The physics of cell crawling and Listeria motility.”
103. Caltech, Physics Colloquium (Pasadena, CA, October 2008).  
“Jamming.”
104. Duke University, Physical Chemistry Seminar (Durham, NC, October 2008).  
“Jamming.”
105. University of Delaware, Condensed matter seminar (Newark, DE, November 2008).  
“The physics of cell crawling and Listeria motility.”
106. University of Chicago, Computations in Science seminar (Chicago, IL, January 2008).  
“The physics of cell crawling and Listeria motility.”
107. University of Pennsylvania, Penn Muscle Institute seminar (Philadelphia, PA, October 2008).

108. McMaster University, Physics Colloquium (Hamilton, ON, Canada, November 2008).  
“The physics of cell crawling and Listeria motility.”
109. University of Toronto, Physics Colloquium (Toronto, ON, Canada, November 2008).  
“Jamming.”
110. Lehigh University, Physics Colloquium (Bethlehem, PA, November 2008).
111. Cornell University, Physics Colloquium (Ithaca, NY, January 2009).  
“The physics of cell crawling.”
112. UCLA, Kivelson Lecture (Los Angeles, CA, March 2009).  
“Jamming and the glass Transition.”
113. Princeton University, Biophysics Seminar (Princeton, NJ, April 2009).  
“New proposed mechanism for actin-polymerization-driven motility.”
114. University of Maryland, Biophysics Seminar (College Park, MD, April 2009).  
“Cell motility driven by actin polymerization: a new proposed mechanism.”
115. University of Maryland, Statistical Physics Seminar (College Park, MD, April 2009).  
“Jamming and the glass transition.”
116. New York University, Physics colloquium (New York, NY, May 2009).  
“Jamming and the glass transition.”
117. University of Pennsylvania, Physics colloquium (Philadelphia, PA, January 2010).  
“Jamming and glasses.”
118. Princeton University, Chemical Engineering Seminar (Princeton, NJ, March 2010).  
“Jamming and the glass transition.”
119. Rochester Institute of Technology, Physics Colloquium (Rochester, NY, April 2010).  
“Jamming and the glass transition.”
120. University of Colorado, Physics Colloquium (Boulder, CO, April 2010).  
“The physics of cell crawling.”
120. University of Colorado, Condensed Matter Physics Seminar (Boulder, CO, April 2010).  
“Jamming and glasses.”
121. University of Michigan, Physical Chemistry Seminar (Ann Arbor, MI, May 2010).  
“A tale of two tails: a new mechanism for motility in cells.”
122. University of Central Florida, Physics Colloquium (Orlando, FL, April 2011).  
“A tale of two tails: a new mechanism for motility in cells.”
123. Arizona State University, Physics Colloquium (Tempe, AZ, April 2012).  
“Jamming.”

124. Georgetown University, Physics Colloquium (Washington, DC, April 2012).  
“Cell Motility and Migration.”
125. University of California, Merced, Quantitative Biology seminar (Merced, CA, March 2013).  
“Mechanical wavefronts in developing embryos.”
126. Boston University, Physics Colloquium (Boston, MA, April 2013).  
“Jamming as the extreme limit of a solid.”
127. Drexel University, Physics Colloquium (Philadelphia, PA, November 2013).  
“Mechanical reaction-diffusion equations in biological systems.”
128. Washington University, Physics Colloquium (St. Louis, MO, January 2014).  
“Mechanical reaction-diffusion equations in biological systems.”
129. University of California, San Diego, Physics Colloquium (San Diego, CA, January 2014).  
“Jamming and the anticrystal.”
130. New York University, Courant Institute Applied Mathematics Seminar (New York, NY, March 2014).  
“Mechanical reaction-diffusion equations in biological systems.”
131. ESPCI Theoretical Soft Matter seminar (Paris, France, July 2014).  
“How disordered solids flow.”
132. University of California, Los Angeles, Robert Scott Lecture in Chemistry (Los Angeles, CA, November 2014).  
“Mechanical excitability in the embryonic heart.”
133. Harvard University, Applied Physics Colloquium (Cambridge, MA, December 2014).  
“The anticrystal.”
134. University of Virginia, Physics Colloquium (Charlottesville, VA, January 2015).  
“Jamming and the anticrystal.”
135. University of Chicago, Physics Colloquium (Chicago, IL, March 2015).  
“Mechanical excitability in the embryonic heart.”
136. Rutgers University, Statistical Physics Seminar (New Brunswick, NJ, April 2015).  
“Tuning by pruning.”
137. Rockefeller University, Theoretical Biological Physics Seminar (New York, NY, January 2016).  
“Jamming and allostery.”
138. Tufts University, Physics Colloquium (Boston, MA, February 2016).  
“Jamming: a tale of two rigidities.”
139. Johns Hopkins University, Physics Colloquium (Baltimore, MD, March 2016).  
“Mechanical signaling in the early embryonic heart.”

140. New York University, Physics Colloquium (New York, NY, March 2016).  
“Jamming: a tale of two rigidities.”
141. University of Michigan, Physics Colloquium (Ann Arbor, MI, April 2016).  
“Jamming: a tale of two rigidities.”
142. Wesleyan University, Bertman Physics Colloquium (Middletown, CT, April 2016).  
“Jamming: a tale of two rigidities.”
143. University of Chicago, Brown Bag Lunch Seminar (Chicago, IL, July 2016).  
“Softness: a new way of looking at glassiness and plasticity.”
144. Princeton University, Condensed Matter Physics seminar (Princeton, NJ, November 2016).  
“Jamming and the glass transition.”
145. Duke University, Physics colloquium (Durham, NC, January 2017).  
“Tuning by pruning: exploiting disorder to design adaptive functional networks.”
146. Dartmouth University, Jones Seminar (Hanover, NH, April 2017).  
“Tuning by pruning: exploiting disorder to design adaptive functional networks.”
147. UCLA Biophysics Seminar (Los Angeles, CA, May 2018).  
“Correlated structure and dynamics in glassy liquids and model tissues.”  
(TALK GIVEN VIA BLUEJEANS)
148. Duke University, Soft Matter Symposium (Durham, NC, October 2019).  
“Machine-learned softness in glassy systems and tissues.”
149. Duke University, public lecture (Durham, NC, October 2019).  
“The importance of communication: from stadium waves to the heartbeat.”
150. McGill University, physics colloquium (Montreal, Canada, November 2019).  
“Tuning by pruning: exploiting disorder to design biologically-inspired function.”
151. University of Wisconsin, Willard Lectures (Madison, WI, April 2019).  
“Tuning by pruning: exploiting disorder to design biologically-inspired function.”  
“How glasses relax and go with the flow.”
152. Villanova University Mechanical Engineering Seminar (Bryn Mawr, PA, September 2019).  
“Exploiting the malleability of disorder to design functional materials.”
153. UC Berkeley physics colloquium (Berkeley, CA, September 2019).  
“Exploiting the Malleability of Disorder to Design Biologically-Inspired Function.”
154. Rice University Center for Theoretical Biophysics Seminar (Houston, TX, September 2019).  
“Exploiting the Malleability of Disorder to Design Biologically-Inspired Function.”
155. Northwestern University Dow Lecture in Materials Science (Evanston, IL, November 2019).  
“Exploiting the malleability of disorder to design functional materials.”
156. AMOLF colloquium (Amsterdam, Netherlands, November 2019).

“Exploiting the malleability of disorder to design functional materials.”

157. IST Austria Physics Colloquium (Virtual talk, May 2020).

“Doing “Statistical Mechanics” with big data.”

158. UPENN Physics Colloquium (Virtual talk, June 2020).

“Doing “Statistical Mechanics” with big data.”

159. APS GSNP klogW Virtual Colloquium (Virtual talk, August 2020).

“Doing “Statistical Mechanics” with big data.”

160. Physics Webinar, TIFR-Hyderabad (Virtual talk, August 2020).

“Learning glassy dynamics.”

161. Physics Colloquium, UMass Amherst (Virtual talk, September 2020).

“Exploiting the malleability of disorder to design biologically-inspired function.”

162. Physics Colloquium, Dalhousie University (Virtual talk, October 2020).

“Exploiting the malleability of disorder to design biologically-inspired function.”

163. NSCS Webinar, Bar-Ilan/Ben Gurion/Hebrew/Technion/Tel Aviv/Weizmann (Virtual talk, October 2020).

“How glasses relax and go with the flow.”

164. Physics Colloquium, University of Oregon (Virtual talk, October 2020).

“Exploiting the malleability of disorder to design biologically-inspired function.”

165. Physics Colloquium, University of Minnesota (Virtual talk, December 2020).

“Exploiting the malleability of disorder to design biologically-inspired function.”

166. Physics Colloquium, Colorado State Fort Collins (Virtual talk, February 2021).

“Doing “Statistical Mechanics” with big data.”

167. Mathematical Physics Seminar, Rutgers University (Virtual talk, March 2021).

“How materials can learn to function.”

168. Physics Colloquium, Penn State University (Virtual talk, March 2021).

“Doing “Statistical Mechanics” with big data.”

169. Physics Colloquium, University of Bath (Virtual talk, March 2021).

“How materials can learn to function.”

170. Physics Colloquium, Georgia Tech (Virtual talk, March 2021).

“How materials can learn to function.”

171. “On Broken Glass” lecture series on glass, Beirut, Lebanon (Virtual talk, April 2021).

“How glasses relax and go with the flow.”

172. Physical Chemistry Seminar, UNC Chapel Hill (Virtual talk, April 2021).

“How materials can learn to function.”

## INVITED TALKS AT CONFERENCES AND WORKSHOPS

1. APS March Meeting (Cincinnati, OH, 1991);  
"Wetting in confined geometries."
2. Workshop on Complex Fluids, Aspen Center for Physics (Aspen, CO, 1992);  
"Liquid crystalline polymer blends."
3. Symposium on Porous Materials; Materials Research Society Meeting (Boston, MA, 1992);  
"Interfaces in liquid crystalline polymer blends."
4. West Coast Theoretical Chemistry Conference (Los Angeles, CA, June 1993);  
"Phase behavior of semiflexible diblock copolymers."
5. Symposium on Surfactant Solutions; ACS Fall Meeting (Chicago, IL, August 1993);  
"Hydrodynamics of surfactant monolayers."
6. Symposium on Theoretical Physical Chemistry; ACS Regional Meeting (Pasadena, CA, October 1993);  
"Phase diagrams of liquid crystalline polymer/model compound blends."
7. Symposium on interfaces and surfaces in the rheology of polymers; ACS Meeting (Anaheim, CA, April 1995);  
"Rheology of foams and emulsions."
8. Workshop: Modeling and Simulation of Structure Formation in Liquid Crystals, Polymers, and their Mixtures (NIST, Gaithersburg, MD, June 1995).  
"Morphology development in liquid crystal/polymer mixtures."
9. Chemistry and Physics of Liquids Gordon Conference (Plymouth, NH, August 1995);  
"Binary liquid mixtures in dilute porous media."
10. Complex Fluids Gordon Conference (New London, NH, August 1995);  
"Electrolyte and polyelectrolyte solutions."
11. Fine Particle Society Meeting (Chicago, IL, August 1995);  
"Anomalous viscous loss in dense emulsions and foams."
12. UCSD Symposium in honor of Maria Goeppert Mayer (La Jolla, CA, March 1996);  
"Electrolyte and polyelectrolyte solutions."
13. NIST, Workshop on Phase Ordering Kinetics (Gaithersburg, MD, July 1996);  
"Phase separation kinetics in complex fluids."
14. US-Germany Polymer Workshop (Leipzig, Germany, September 1996);  
"Chain structure in polyelectrolyte solutions."
15. Materials Research Society Meeting (San Francisco, CA, April 1997);  
"Morphology development in liquid-crystal/polymer mixtures."
16. SIAM Meeting (Philadelphia, PA, May 1997);

"Morphology development in liquid-crystal/polymer mixtures."

17. 3rd International Discussion Meeting on Relaxations in Complex Systems (Vigo, Spain, July 1997);

"Glassy behavior in foams."

18. ITP Conference on Jamming and Rheology (Santa Barbara, CA, October 1997);

"Recent developments in foams and emulsions."

19. Materials Research Society Meeting (Boston, MA, December 1997);

"Temperature of a flowing foam."

20. Aspen Conference on Condensed Matter Physics (Aspen, CO, January 1998);

"Jamming in foams."

21. Colloidal and Macromolecular Solutions Gordon Conference (Ventura, CA, February 1998);

"Conformation and counterion condensation in solutions of charged chains."

22. Spring College on Statistical Mechanics of Soft Condensed Matter, International Centre for Theoretical Physics (Trieste, Italy, May 1998);

3 lectures on "Polyelectrolyte solutions," and 1 lecture on "Foam."

23. International Conference of Composite Engineers (Las Vegas, NV, July 1998);

"Morphology development in liquid-crystal/polymer composites."

24. Polymer Physics Gordon Conference (Newport, RI, July 1998);

"Attractive interactions in polyelectrolyte solutions."

25. NSF Workshop on Opportunities in Materials Theory (Arlington, VA, October 1998);

"Polyelectrolyte solutions."

26. ITP Conference on "Electrostatic effects in complex fluids and biophysics (Santa Barbara, CA, October 1998);

"Bundle-formation in polyelectrolyte solutions."

27. ACS Meeting; Physical Chemistry Division Symposium on "Frontiers of Statistical Mechanics: in honor of Ben Widom" (Anaheim, CA, March 1999).

"When like-charged chains attract: Physical questions posed by DNA condensation."

28. APS Meeting; Symposium on "Chemical Dynamics in the Liquid State: Experiment and Theory" (Atlanta, GA, March 1999). (CANCELLED DUE TO ILLNESS)

"Fluctuations in Flowing Foam."

29. American Conference on Theoretical Chemistry (Boulder, CO, July 1999).

"When like-charged chains attract: Physical questions posed by DNA condensation."

30. Complex Materials Conference in honor of Philip A. Pincus (Santa Barbara, CA, August 1999).

"Jamming with foam."



31. APS Meeting; Symposium on "Granular Materials: Jamming and Shaking" (Minneapolis, MN, March 2000).  
"The jamming phase diagram: glasses, foams and granular materials."
32. MRS Meeting (San Francisco, CA, April 2000).  
"Domain morphology in liquid-crystal/polymer blends."
32. Gordon Research Conference on Physics Research and Education (Plymouth, NH, June 2000).  
"Effective temperatures in sheared foam."
33. Polyelectrolytes 2000 (Les Diablerets, Switzerland, July 2000).  
"Physical problems underlying DNA condensation."
34. ACS Meeting (Washington, D. C., August 2000).  
"Jamming in foams and glasses."
35. AIChE meeting (Los Angeles, CA, November, 2000).  
"Shear thickening in solutions of wormlike micelles."
36. AIChE meeting (Los Angeles, CA, November, 2000).  
"Effective temperatures of sheared foam."
37. Dynamics Days (Raleigh, NC, January 2001).  
"Jamming in foams and glasses."
38. Polymers (West) Gordon Conference (Ventura, CA, January 2001).  
"Self-assembly of charged biopolymers in solution."
39. 21<sup>st</sup> Annual Conference of the Center for Nonlinear Studies at Los Alamos National Laboratory on "Physics of Soft Condensed Matter" (Santa Fe, NM, May 2001).  
"Self-assembly of charged biopolymers in solution."
40. Condensed Matter Physics Gordon Conference (Connecticut College, CN, June 2001).  
"Effective temperatures of a model sheared foam."
41. 4<sup>th</sup> Discussion Meeting on Relaxations in Complex Systems (Crete, Greece, June 2001).  
(TALK GIVEN BY DR. COREY S. O'HERN.)  
"Jamming and the glass transition."
42. IUPAC World Chemistry Congress (Brisbane, Australia, July 2001).  
"Physical questions underlying biopolymer bundling."  
(CANCELLED DUE TO ILLNESS)
43. Physics and Chemistry of Liquids Gordon Conference (Plymouth, NH, August 2001).  
"Jamming."
44. Adriatico Research Conference on Interaction and Assembly of Biomolecules (Trieste, Italy, August 2001).  
"Physical questions underlying biopolymer bundling."

45. Electron Interactions and Electronic Dynamics in DNA (Los Angeles, CA, September, 2001).  
“Physical questions underlying DNA condensation.”  
(TALK GIVEN BY DR. ITAMAR BORUKHOV DUE TO ILLNESS)
46. 7th Pacific Polymer Conference (Oaxaca, Mexico, December 2001).  
“Self-assembly of charged biopolymers in solution.”  
(CANCELLED DUE TO ILLNESS.)
47. APS March Meeting, Focus Session on Jamming (Indianapolis, IN, March, 2002).  
“Jamming in glasses and granular materials.”
48. ACS Meeting, Symposium in honor of Charles Knobler (Orlando, FL, April, 2002).  
“Effective temperatures in driven systems.”
49. Statistical Mechanics Conference, Rutgers University (Piscataway, NJ, May 2002).  
“Jamming.”
50. Boulder School for Condensed Matter and Materials Physics (Boulder, CO, July 2002).  
Four lectures on polyelectrolytes.
51. Foams and Minimal Surfaces Workshop, Newton Institute (Cambridge, UK, August 2002).  
“Jamming and Foam.”
52. Foams and Minimal Surfaces Workshop, Newton Institute (Cambridge, UK, August 2002).  
“Effective temperatures in sheared foam.”
53. Physical Chemistry of Polymers, International Rhodia Conference (Bristol, UK, September 2002).  
“Jamming.”
54. Workshop on self-Assembly in biology, chemistry and hard materials (Argonne, IL, July 2003).  
“Actin self-assembly and the cellular cytoskeleton.”
55. ACS Meeting, Symposium in honor of J. Zasadzinski (Anaheim, CA, April 2003).  
“Actin self-assembly and the cellular cytoskeleton.”
56. NSF Workshop on Theoretical Biophysics (Tempe, AZ, May 2004).  
“The amazing world of actin self-assembly.”
57. Sitges Conference on Jamming (Sitges, Spain, June 2004).  
“Jamming.”
58. ACS Meeting, Symposium on Complex Fluids (Philadelphia, PA, August 2004).  
“Actin self-assembly and the cellular cytoskeleton.”
59. Rutgers Statistical Mechanics Meeting (New Brunswick, NJ, December 2004).  
“Jamming and k-core percolation.”
60. Workshop on Biomolecular and Biomimetic Self-Assembly (Merida, Mexico, January 2005).  
“Actin self-assembly, the cellular cytoskeleton and *Listeria* motility.”

61. Mid-Atlantic Meeting on Thermodynamics (College Park, MD, April 2005).  
“Actin self-assembly, the cellular cytoskeleton and Listeria motility.”
62. National Academy of Sciences Annual Meeting, Symposium on “The World Year of Physics: Einstein in the 21st Century” (Washington, D. C., May 2005).  
"Many-particle systems driven far out of equilibrium: how Einstein's ideas are guiding us at this frontier."
63. Frontiers of Soft Condensed Matter Workshop (Clinton, NJ, May 2005).  
“Jamming and the Glass Transition.”
64. American Conference on Theoretical Chemistry (Los Angeles, CA, July 2005).  
“Actin self-assembly and cell motility.”
65. American Physical Society, Division of Fluid Dynamics (Chicago, IL, November 2005).  
“Effective temperatures of sheared glassy systems.”
66. Kavli Institute for Theoretical Physics Workshop (Santa Barbara, CA, April 2006).  
“Actin self-assembly and Listeria motility.”
67. Boulder Summer School for Condensed Matter and Materials Physics (Boulder, CO, July 2006).  
Two lectures on “Self-assembled actin networks.”
68. American Institute of Mathematics, Workshop on Phase Transitions (Palo Alto, CA, August 2006).  
“Mixed phase transitions and jamming.”
69. Rutgers Statistical Mechanics Meeting (Rutgers, NJ, December 2006).  
Panel Discussion Participant on “Statistical Mechanics of static granular packings.”
70. Workshop on Physics of Biological Systems (Puebla, Mexico, January 2007).  
“Actin self-assembly and Listeria motility.”  
(CANCELLED; TALK GIVEN BY AJAY GOPINATHAN)
71. Centre de Physique des Houches, Workshop on “Flow in glassy systems” (Les Houches, France, February 2007).  
“Effective temperatures in sheared glassy systems.”
72. Institute for Pure and Applied Mathematics, Workshop on “Random Shapes, Representation Theory, and Conformal Field Theory” (Los Angeles, CA, March 2007).  
“Jamming and k-core percolation.”  
(CANCELLED DUE TO ILLNESS; TALK GIVEN BY LINCOLN CHAYES)
73. Princeton Center for Theoretical Physics, Packing Problems Workshop (Princeton, NJ, April 2007).  
“The jamming transition of soft sphere packings.”
74. StatPhys23 Conference (Genova, Italy, July 2007).  
“The mixed nature of the jamming phase transition.”

(CANCELLED; TALK GIVEN BY VINCENZO VITELLI)

75. Aspen Center for Physics, Colloquium (Aspen, CO, August 2007).  
“Jamming.”

76. ACS Fall07 Meeting, Symposium on “Emergence of Function in Molecular Assemblies” (Boston, MA, August 2007).  
“Actin self-assembly, cell crawling and *Listeria* motility.”

77. Aspen Center for Physics, 2008 Winter Conference on Condensed Matter (Aspen, CO, February 2008).  
“Jamming.”

78. APS March meeting (New Orleans, LA, March 2008).  
“Jamming: Relating Shear and Effective Temperature.”  
(CANCELLED DUE TO FAMILY EMERGENCY; TALK GIVEN BY MY PHD STUDENT, TOM HAXTON)

79. SIAM Materials Meeting (Philadelphia, PA, May 2008).  
“New proposed mechanism for actin-polymerization-driven motility.”

80. Gordon Research Conference on Granular and Granular Fluid Flow (Colby, MN, June 2008).  
“The jamming transition at non-zero temperature.”

81. ACS Meeting (Philadelphia, PA, August 2008).  
“New proposed mechanism for actin-polymerization-driven motility.”

82. Multiscale Materials Modeling 2008 meeting (Tallahassee, FL, October 2008).  
“New proposed mechanism for actin-polymerization-driven motility.”

83. 100<sup>th</sup> Statistical Mechanics Meeting (Rutgers, NJ, December 2008).  
“Open questions in jamming.”

84. APS Meeting (Pittsburgh, PA, March 2009).  
“New proposed mechanism for actin-polymerization-driven motility.”

85. Workshop on the Statistical Mechanics of Static Granular Media, Lorentz Institute (Leiden, The Netherlands, July 2009).  
“How can random close-packing and random loose-packing be defined?”

86. Gordon Research Conference on the Chemistry and Physics of Liquids (Plymouth, NH, August 2009).  
“Jamming and the glass transition.”

87. Workshop on Multiple Length Scales in Polymers and Complex Fluids (Santa Fe, NM, October 2009).  
“Jamming and glasses.”

89. Northeastern Granular Materials Workshop (Cambridge, MA, June 2010).  
“Vibrations and rearrangements in sphere packings.”

90. Physics of Glasses KITP Conference (Santa Barbara, CA, June 2010).  
“The jamming scenario and glasses.”
91. Cargese Summer School on Physics of Colloidal Suspensions and Granular Media (Cargese, Corsica, September 2010).  
“Jamming.”
92. Aspen Winter Conference on Materials and the Imagination (Aspen, CO, January 2011).  
“A tale of two tails: a new mechanism for motility in cells.”
93. Workshop on Topology (New Brunswick, NJ, February 2011).  
“Towards a mathematical definition of random close-packing.”
94. Workshop in honor of Jerry Gollub: Nonlinear Dynamics and Fluid Instabilities in the 21<sup>st</sup> Century (Haverford, PA, May 2011).  
“Jammed packings under flow.”
95. Mid-Atlantic Soft Matter Workshop (Philadelphia, PA, June 2011).  
“Self-diffusiophoresis in the High Peclet number limit.”
95. Soft Matter Gordon Research Conference (New London, NH, August 2011).  
“Jamming.”
96. Workshop on Complex dynamics of dislocations, defects and interfaces (Los Alamos, NM, November 2011).  
“Vibrations and quasilocalized modes in jammed packings.”
97. Unifying Concepts in Glass Physics (Paris, France, December 2011).  
“Jamming and the glass transition.”
98. Rutgers Statistical Mechanics Meeting (New Brunswick, NJ, December 2011).  
“Finite size scaling near the jamming transition.”
99. Statistical Physics Meeting (Xalapa, Mexico, January 2012).  
“Jamming.”
100. Les Houches Winter School on Materials Deformation: Fluctuations, Scaling, Predictability (Les Houches, France, January 2012).  
“Soft spots in jammed packings.”
101. PREM Symposium on the New Science of Disordered Materials (Puerto Rico, May 2012).  
“A new approach to disordered materials.”
102. American Chemical Society Meeting; Symposium on Dynamics and Jamming in Complex Environments (Philadelphia, PA, August 2012).  
“Jamming and glasses.”
103. International Workshop on Computational Mechanics of Materials, IWCMM22 (Baltimore, MD, September 2012).  
“Soft spots in jammed packings.”
104. Workshop on Pure and Applied Jamming (Chicago, IL, October 2012).

“Marginally jammed solids.”

105. Materials Research Society Meeting (Boston, MA, November 2012).  
“The extreme limits of a solid.”

106. Mini Statistical Mechanics Meeting (Berkeley, CA, January 2013).  
“The extreme limits of a solid.”

107. LRSM Comploids Meeting (Philadelphia, PA, April 2013).  
“Mechanical Excitability in Embryos.”

108. Workshop on “Evolution in colloidal matter” (New York, NY, June 2013).  
“Mechanical reaction-diffusion equations in biological systems.”

109. STATPHYS25 Satellite Workshop on Physics of Glassy and Granular Materials (Kyoto, Japan, July 2013).  
“Linear response in jammed solids.”

110. 7<sup>th</sup> International Discussion Meeting on Relaxations in Complex Systems (Barcelona, Spain, July 2013).  
“Jamming vs. Pinning.”

111. American Physical Society March Meeting (Denver, CO, March 2014).  
“Minimal model for kinetochore-microtubule dynamics.”

112. Dutch Soft Matter Meeting (Amsterdam, The Netherlands, May 2014).  
“Mechanical reaction-diffusion equations in biological systems.”

113. Rutgers Statistical Mechanics Meeting (New Brunswick, NJ, May 2014).  
“Mechanical reaction-diffusion equations in biological systems.”

114. ACS 2014 Colloids and Surface Science Symposium (Philadelphia, PA, June 2014).  
“Where disordered solids flow.”

115. CECAM workshop on “Modelling cellular life: from single molecules to cellular function” (Lausanne, Switzerland, August 2014).  
“Mechanical excitability in the developing heart.”

116. Workshop on “Critical phenomena in random and complex systems” (Capri, Italy, September 2014).  
“Structural signatures of mobility in jammed and glassy systems.”

117. Simons Foundation Annual Meeting (New York, NY, October 2014).  
“Jamming and the anticyrystal.”

118. NSF Workshop on Numerical Methods in Quantitative Cell Biology (San Francisco, CA, March 2015).  
“A minimal model for chromosome dynamics during metaphase.”

119. Argonne APS Upgrade Soft Matter Workshop (Argonne, IL, May 2015).  
“Challenges in soft matter.”

120. Defects, Deformation and Diagnosis ( $D^3$ ) workshop (Philadelphia, PA, May 2015).  
“ $D^6$ ! Data-derived diagnosis of defects determining deformation.”
121. Hidden Orders in a Complex World Workshop in honor of Takeshi Egami’s 60<sup>th</sup> birthday (Oak Ridge, TN, October 2015).  
“Softness: a structural approach to glassy relaxation.”
122. Frontiers in Physics, Pattern Formation and Complex Materials Far From Equilibrium Workshop in honor of James Langer’s 80<sup>th</sup> birthday (Washington DC, October 2015).  
“A scaling theory for the jamming transition.”
123. The Meaning of It All Workshop in honor of Gilles Tarjus’s 60<sup>th</sup> birthday (Paris, France, December 2015).  
“How important is structure to glassy dynamics?”
124. American Physical Society March Meeting (Baltimore, MD, March 2016).  
“Scaling theory of the jamming transition.”
125. SIAM Meeting, Symposium on Mathematical Aspects of Materials Science (Philadelphia, PA, May 2016).  
“What softness can do for you.”
126. 2016 DOE Theoretical condensed matter physics PI meeting (Gaithersburg, MD, August 2016).  
“Scaling theory of the jamming transition.”
127. Self-Assembly from Atoms to Life Workshop in honor of Bill Gelbart’s 70<sup>th</sup> birthday (Tuxtla Gutierrez, Mexico, October 2016).  
“Tuning by pruning: exploiting disorder to design adaptive, robust functional networks.”
128. Rutgers Statistical Mechanics Meeting (New Brunswick, NJ, December 2016).  
“Designing allosteric-inspired function in disordered mechanical networks.”
129. Aspen Winter Conference on Topological Metamaterials (Aspen, CO, January 2016).  
“Designing allosteric-inspired function in disordered networks.”  
TALK CANCELLED DUE TO WEATHER DELAYS.
130. CECAM Glass and Jamming Workshop (Lausanne, Switzerland, January 2016).  
Tutorial: “Jamming.”  
Talk: “Universal signatures of plasticity in disordered solids.”
131. Harvard Engineering and Physical Biology Symposium (Cambridge, MA, April 2017).  
“Tuning by pruning: exploiting disorder to design adaptive, robust, functional networks.”
132. “Ordered is Different: New Forms of Organization in Soft Matter Physics,” a conference in honor of Fyl Pincus (Les Houches, France, May 2017).  
“Tuning by pruning: designing allosteric response.”
133. “The World in a Grain of Sand: A Symposium on the Collective Behavior of Particles,” a workshop in honor of Heinrich Jaeger (Chicago, IL, June 2017).

“Designing allosteric response in mechanical and flow networks.”

134. Boulder Summer School on Frustrated and Disordered Systems (Boulder, CO, July 2017).  
Three lectures on jamming and machine learning approaches to glassy dynamics.  
(CANCELLED DUE TO ILLNESS).

134. Gordon Research Conference on the Chemistry and Physics of Liquids (Holderness, NH, August 2017).  
“Softness: a machine-learned approach to glassy dynamics.”  
(CANCELLED DUE TO ILLNESS).

135. Gordon Research Conference on Soft Matter (Colby-Sawyer College, NH, August 2017).  
“Tuning by pruning: a new way of designing mechanical metamaterials.”  
(CANCELLED DUE TO ILLNESS)

136. Anniversary Symposium for Winfried Denk (Munich, Germany, October 2017).  
“Multitasking phase transition of the vascular network.”  
(CANCELLED DUE TO ILLNESS)

137. Gordon Research Conference on Colloidal, Macromolecular and Polyelectrolyte solutions (Ventura, CA, February 2018).  
“Finding subtle correlations in glassy systems with machine learning.”  
(TALK GIVEN BY MY FORMER STUDENT, S. S. SCHOENHOLZ, DUE TO ILLNESS)

138. American Physical Society March Meeting, GSOF Short Course on Machine Learning and Data Analysis in Soft Matter (Los Angeles, CA, March 2018).  
“What machine learning teaches us about glassy dynamics.”  
(TALK GIVEN BY MY COLLABORATOR, E. D. CUBUK, DUE TO ILLNESS)

139. AJL-80, a Symposium in honor of Tony Leggett’s 80<sup>th</sup> birthday (Urbana-Champaign, IL, March 2018).  
“Heretical ideas on the low-temperature properties of glasses.”  
(CANCELLED DUE TO ILLNESS)

140. Mach 2018 Conference (Annapolis, MD, April 2018).  
“Structure-property relationships from universal signatures of plasticity in thermal and athermal disordered solids.”  
(TALK GIVEN BY MY POSTDOC, TRISTAN SHARP, DUE TO ILLNESS)

141. Mach 2018 Conference (Annapolis, MD, April 2018).  
“A machine learning approach to plasticity in athermal disordered solids.”  
(TALK GIVEN BY MY POSTDOC, GE ZHANG, DUE TO ILLNESS)

142. 119<sup>th</sup> Statistical Mechanics Conference (New Brunswick, NJ, May 2018).  
“How glasses relax and go with the flow.”

143. Rudolf Peierls Symposium for Theoretical Physics (Oxford, England, July 2018).  
“The anticrystal.”

144. International Congress on Mathematical Physics (Montreal, Canada, July 2018).



“Tuning Functional Networks.”

145. Theoretical Biophysics Workshop, Emory University (Atlanta, GA, February 2019).  
“Revisiting the structure-function paradigm in allosteric proteins.”

146. APS March Meeting, GSOF short course (Boston, MA, March 2019).  
“New tools for identifying relevant structure in disordered systems.”

147. APS March Meeting (Boston, MA, March 2019).  
“Probing subtle correlations in glassy systems using machine learning.”

148. ACS National Meeting (Orlando, FL, April 2019).  
“Machine-learned softness as a tool for understanding glass formation and properties.”

149. International Congress on Glasses (Boston, MA, June 2019).  
“Onset of mechanical failure in disordered solids.”

150. Beg Rohu Summer School (Beg Rohu, France, June-July 2019).  
“Jamming.” (7 lectures)

151. PARNET19 International Focus Workshop on Granular and Particulate Networks (Dresden, Germany, July 2019).  
“Machine-learned structure/dynamics relation in sheared disordered packings.”

152. Gordon Conference on Soft Matter Physics (New London, NH, August 2019).  
“Machine learning and marginality in jammed systems.”

153. Keynote Lecture, CUWIP 2020 (Philadelphia, PA, January 2020).  
“Exploiting the malleability of disorder to design functional materials.”

154. Master class, Physics@Veldhoven 2020 (Veldhoven, The Netherlands, January 2020).  
“New tools for uncovering the microscopic underpinnings of macroscopic collective behavior.”

155. Plenary Lecture, Physics@Veldhoven 2020 (Veldhoven, The Netherlands, January 2020).  
“Learning new physics from big data.”

156. CECAM workshop on “Computing Complex Mechanical Systems” (Lausanne, Switzerland, January 2020).  
“Learning new physics from big data.”

157. TMLS Physics from Machine Learning Workshop (Virtual workshop, May 2020).  
“Doing ‘Statistical Physics’ with Big Data.”

158. Keynote Lecture, Edwards Centre Symposium (Cambridge, UK, December 2020).  
“Exploiting the malleability of disorder to design biologically-inspired function.”

159. Invited talk, APS March Meeting 2021 (Virtual, March 2020).  
“Doing ‘Statistical Mechanics’ with Big Data: Understanding Protein Allostery.”