

CURRICULUM VITÆ

Douglas J. DURIAN

Soft Matter Physics, Experiment

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Citizenship: USA

EDUCATION

Ph.D. Physics, Cornell University (1989); thesis: "The influence of temperature & surface chemistry on the wetting behavior of binary-liquid mixtures"; advisor: Carl Franck

M.S. Physics, Cornell University (1987)

A.B. Physics, with honors, The University of Chicago (1984)

A.B. Applied Mathematics, fulfilled, The University of Chicago (1984)

POSITIONS

2021 – present Mary Amanda Wood Professor of Physics, University of Pennsylvania

2021 – present Associate Director, Center for Soft and Living Matter, University of Pennsylvania

2022 – present Secondary Faculty Dept. of Mech. Eng. & Appl. Mech. University of Pennsylvania

2004 – 2021 Professor of Physics University of Pennsylvania

2002 – 2004 Professor of Physics University of California - Los Angeles

1998 – 2002 Associate Prof. of Physics University of California - Los Angeles

1991 – 1998 Assistant Prof. of Physics University of California - Los Angeles

1989 – 1991 Postdoctoral Fellow Exxon Res. & Eng. Co.; advisor: David Weitz

VISITING POSITIONS

Sep.-Dec. 2023 Member, Isaac Newton Institute for Mathematical Sciences, Cambridge UK
program: New statistical physics in living matter: non equilibrium states under adaptive control

Jan.-June 2023 Guest Researcher, Simons Foundation – Center for Computational Biology
host: Michael Shelley

July 2014 Professeur Invité, chair Total, ESPCI – Paris. France
host: Eric Clément

June 2005 Member, Kavli Institute for Theoretical Physics, University of California – Santa Barbara
program: Granular Physics

July 2002 Member, Isaac Newton Institute for Mathematical Sciences, Cambridge UK
program: Foams and Minimal Surfaces

April-July 2001 Visiting Scientist at Université Louis Pasteur, Inst. de Physique, Strasbourg France
host: Carlos Marques

Dec. 1997 Member, Institute for Theoretical Physics, University of California – Santa Barbara
program: Jamming and Rheology

June 1997 Visiting Scientist at joint Elf-Aquitaine/CNRS laboratory, Paris France
host: Ludwik Liebler

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PROFESSIONAL ACTIVITIES

- Lecturer, ICTS program on Soft and Living Matter (Bengaluru India, August 2023)
- Chair Line, APS Topical Group on Statistical and Nonlinear Physics (2023-present)
- Program Chair for APS March Meeting for the Topical Group on Statistical and Nonlinear Physics (2023)
- Scientific Advisory Board, Norwegian University of Science and Technology / University of Oslo - Porous Media Laboratory (August 2022 – present)
- Associate Editor, Frontiers in Soft Matter – Foams (2022-present)
- Co-founder and Associate Director, Penn Center for Soft and Living Matter (2020-present)
- Section Editor, Papers in Physics (2020-present)
- Chair Line, APS Division of Soft Matter (2017-2021)
- Lead Organizer – 18th Mid-Atlantic Soft Matter Meeting (May 2017)
- Editorial Board, NPJ Microgravity (2014-present)
- Editorial Board, Journal of Statistical Mechanics: Theory and Experiment (2007-present)
- Associate Editor, Research Letters in Physics (2007-2017)
- Vice-chair / Chair – Gordon Research Conference on Granular Physics (2014/2016)
- Organizer – session on emulsions and foams at 88th ACS Colloids Symposium (June 2014)
- Lead Organizer – 12th Mid-Atlantic Soft Matter Meeting (January 2014)
- Lecturer, Cargese Summer School on Soft Matter Physics (2010)
- Lecturer, Princeton Summer School on Condensed Matter Physics (2009)
- Founder and co-organizer, Penn-NYU Soft Matter Workshop (2006-2012)
- Member at Large, APS Topical Group on Statistical and Nonlinear Physics (2005-8)
- Co-organizer, EuroFoam (Noordwijk, 2008)
- Co-organizer, Dynamics Days (2005 at UCI and 2006 at UMD)
- Co-organizer, EuroFoam (Paris, 2004)
- Panelist, NSF Europe (Condensed Matter Physics) proposal evaluation Virtual Panel (2003)
- Lecturer, Boulder School for Condensed Matter and Materials Physics, 2002 School: Physics of Soft Matter
- Lecturer, International Center for Theoretical Physics (Trieste, Italy), Spring College on “The statistical mechanics of and dynamics of soft condensed matter” (1998)
- Panelist, Round Table Session on “Bubble Rafts and Foams”, Rutgers Statistical Mechanics Conference (1997)
- Co-organizer, UCLA-UCSB Workshops on Complex Fluids (1995-8)
- Co-organizer, Materials Research Society Symposium “Disordered Materials and Interfaces” (1995)
- Panelist, NASA review committee for grants in “Low temperature and Fundamental Physics” (1993)

CONSULTING ACTIVITIES

review proposals for: National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), American Chemical Society – Petroleum Research Fund (ACS-PRF), NATO-ASI, Netherland’s Foundation for Fundamental Research on Matter (FOM), Research Grant Council of Hong Kong, Swiss National Foundation, Kansas NSF EPSCoR, Israel Science Foundation, France’s Agence Nationale de la Recherche

review papers for: Physical Review Letters, Physical Review E, Science, Nature, Nature Physics, PNAS, Europhysics Letters, European Physical Journal E, Optics Letters, Journal of the Optical Society of America A, Optics Express, Journal of Physics C: Condensed Matter, Journal of Applied Physics, Philosophical Magazine B, American Journal of Physics, Journal of Chemical Physics, Langmuir, Journal of Colloid and Interface Science, AIChE Journal, Canadian Journal of Chemical Engineering, Fluid Dynamics Research, Physics of Fluids, Chemical Physics Letters, Journal of the American Chemical Society, Granular Matter, Soft Matter

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HONORS

- NSF/NATO Postdoctoral Fellowship, declined (1989)
- UCLA Academic Senate Faculty Career Development Award (1994/95)
- UCLA Outstanding Teaching Award, Physics 6A – Mechanics for Life Sciences (1995/96)
- Sigma Xi Distinguished Lecturer (2003-2005)
- Fellow, American Physical Society (2005)
- Elected as Member at Large, APS Topical Group on Statistical and Nonlinear Physics (2005-2008)
- Editorial Board, Journal of Statistical Mechanics: Theory and Experiment (2007-present)
- Associate Editor, Research Letters in Physics (2007-2017)
- Distinguished Referee – European Physical Journal (2013)
- Editorial Board, Nature Publishing Group “Microgravity” (2014-present)
- Distinguished Referee – Europhysics Letters (2015)
- Elected to chair line, APS Division of Soft Matter Physics (2017-2021)
- Editorial Board, Papers in Physics (2019-present)
- Mary Amanda Wood Professor of Physics (2021-present)
- Fellow, American Association for the Advancement of Science (2022)
- Elected to chair line, APS Topical Group on Statistical and Nonlinear Physics (2023-present)

PATENTS

1. S. M. Salili, M. J. Harrington, D. J. Durian, “Light-sheet fluorescence imaging with elliptical light shaping diffuser,” Patent No. US 11,709,351 B2 (25 Jul. 2023). <https://patents.google.com/patent/US11709351B2/en>
2. S. Dillavou, D. J. Durian, A. J. Liu, M. Stern, M. Miskin, “Coupled networks for physics-based machine learning,” U.S. Patent Application Publication No. US 2022/0383205 A1 (1 Dec. 2022). Status: Pending

POSTDOCTORAL SCHOLARS

1995-1997	Narayanan Menon (now at U.-Mass. Amherst)
1997-1999	Arnaud Saint-Jalmes (now at Université Rennes)
1999-2000	Loïc Vanel (now at Ecole Normale Supérieure, Lyon)
2001-2003	Ranjini Bandyopadhyay (now at Raman Research Institute)
2003-2005	Pamela Korda (now at Arryx Corp.)
2004-2007	Klebert Feitosa (now at James Madison University)
2005-2007	Paulo Arratia (now at University of Pennsylvania)
2005-2007	Hiroaki Katsuragi (now at Nagoya University)
2007-2009	Patrick Mayor (now at Nano-Terra / Swiss National Science Foundation)
2007-2009	Emilie Verneuil (now ESPCI)
2007-2009	Christopher Jones, PhD University of Colorado – Boulder
2009-2012	Yuli Wei, PhD Carnegie Mellon University

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2014-2016	Juha Koivisto, PhD Aalto University (former Helsinki University of Technology)
2014-2017	Carlos Ruiz, PhD North Carolina State University (co-advised with D. Jerolmack)
2016-2018	Seyyed Muhammad Salili, PhD Kent State; Mack Technology Fellow (Wharton)
2015-2018	Matt Harrington, PhD University of Maryland
2018-2022	Hongyi Xiao, PhD Northwestern (now at University of Michigan)
2020-2023	Anthony Chieco, PhD University of Pennsylvania
2020-present	Sam Dillavou, PhD Harvard University
2023-present	Lauren Altman, PhD New York University

GRADUATE STUDENTS

Anthony Gopal, PhD 2000, “The bubble-scale origins of the macroscopic rheology of aqueous foams”
Moin Vera, PhD 2000, “Diffuse-transmission spectroscopy and the optics, structure, and evolution of foams”
Pierre-Anthony Lemieux, PhD 2001, “ n^{th} -Order dynamic light scattering: From a general approach to the intermittency transition in granular flows”
Rajesh Ojha, PhD 2003, "Granular behavior in gas-fluidized beds"
Adam Abate, PhD 2007, “Effective temperatures in granular systems”
Alex Gittings, PhD 2009, “Bubble rearrangement dynamics and light transport in aqueous foams”
Lynn Daniels, PhD 2010, “Air-fluidized grains as a model system: Self-propelling and jamming”
Kerstin Nordstrom, PhD 2010, “Jamming and flow of soft particle suspension”
Ted Brzinski, PhD 2013, “Granular drag and the kinetics of jamming”
Adam Roth, PhD 2013, “Structure and coarsening of foams: Beyond von Neumann’s law”
Charles Thomas, PhD 2015, “Clogging of granular hopper flows”
Jennifer Rieser, PhD 2015, “Deformation of two-dimensional amorphous packings”
Anthony Chieco, PhD 2020, “Quantifying Structure in Amorphous Materials at All Length Scales: From Uncovering Long Range Hidden Order With Hyperuniformity Disorder Length Spectroscopy to Using Local Bubble Shape To Predict Foam Aging Dynamics”
Jesse Hanlan, PhD 2024, “Interplay between structure and dynamics in granular materials and twisted strings”

UNDERGRADUATE STUDENTS

Sidney Park, F92-W93; "Viscous & elastic fingering instabilities in foam" Phys.Rev.Lett. **72**, 3347-50 (1994).
Daryl Neher, W93
Albert Kao, W94-S94
Michael A. Johnson, F94-W95-S95
Grace H. Min, F94 - W95-S95
Alex Oppold, F94-S95
Wayne Yakura, S96
Brian Mercurio, S00
Aubrey A. Cox, W00-S00; “Spatial sampling by diffuse photons”, Applied Optics **40**, 4228-35 (2001).
Jun Uehara, F01-S02; "Low-speed impact cratering in loose granular media", Physical Review Letters **90**, 194301/1-4 (2003).
Michael Ambroso, S02-S04; “Penetration depth for shallow impact cratering” Physical Review E **71**, 051305/1-7 (2005) and “Dynamics of shallow impact cratering” Physical Review E **72**, 041305/1-4 (2005).
Aaron Streets, F02-S03 (winner of 2002-3 Undergraduate Research Scholars Program fellowship)
Katie Newhall, 2003 NSF-REU student from RPI; "Projectile-shape dependence of impact craters in loose granular

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media", *Physical Review E* **68**, 060301(R) (2003).

Chris Santore, W04-S04

Adam Roth, S05-S07 (winner of 2005 Roy and Diana Vagelos Science Challenge Award)

Raul David Colon Moreno, 2006 NSF-REU student from UPRC-Humacao

Ben Polock, S06-S07

Matthew Berck, S07

Elliot Nelson, 2007 NSF-REU student from Wheaton College; "Projectile interactions in granular impact cratering" *Physical Review Letters* **101**, 068001 (2008).

Hannah Sheldon, S07-S08

Tim Huber, S08 summer intern on exchange from Konstanz University

Nicholas Fernandez, S09 summer intern on exchange from Ecole Polytechnique

Victor Sebag, S10 summer intern on exchange from Ecole Polytechnique, "Distribution of bubble length after coarsening of an aqueous foam in a horizontal cylinder" *Philosophical Magazine* **91**, 4357-4366 (2011).

Jean-Eudes le Douget, S11 summer intern on exchange from Ecole Polytechnique

Mentor to University of Pennsylvania team "Granular Impact Cratering in Microgravity and Hypergravity", selected to participate in NASA's 2011 Grant Us Space Reduced Gravity Education Flight Program [Meredith Perry (Penn), Parker Winchester (Penn), Guy Chriqui (Rose-Hulman), Olivia Lenz (PSU), Dane Bennington (Rose-Hulman)], University of Pennsylvania team

Taiyo Wilson, S11 NSF-REU student from Illinois Wesleyan University, "Granular discharge rate for submerged hoppers", *Papers in Physics* **6**, 060009 (2014).

Charlotte Pfeifer, S12 NSF-REU student from Carleton College (winner of E.W. Plummer Award for best paper)

Mathilde Laplagne, S13 summer intern on exchange from Ecole Polytechnique

Megan Hayes, S14-S15

Cody Schimming, S15-S17, "Border-Crossing Model for the Diffusive Coarsening of Two-Dimensional and Quasi-Two-Dimensional Wet Foams", *Physical Review E* **96**, 032805 (2017).

Justin Aird (URM), S15 NSF-REU student from Virginia Tech

Sergio Machaca (URM), S15 NSF-REU student from Drexel

Stanley Davis (URM), S16 NSF-REU student from Hampton University.

Bryan O. Torres Maldonado (URM), S16 NSF-REU student from University of Puerto Rico, Mayaguez. S. Farhadi, S. Machaca, J. Aird, B. O. Torres Maldonado, S. Davis, P. E. Arratia and D. J. Durian, "Dynamics and Thermodynamics of Air-Driven Active Spinners", *Soft Matter* **14**, 5588-5594 (2018).

Sébastien Rondard, S17 summer intern on exchange from Ecole Polytechnique

Alex Jensen, S18 from Oberlin College

Paulina Desterac, S18

Gabrielle Davis (URM), S19 NSF-REU student from University of Maryland – Baltimore County

Jackson Bentley, S19

Kathryn Xu, S20

Adrian Portales (URM), S21 NSF-REU student from University of Texas Rio Grande Valley

Kwame Markin (URM), S21 NSF-REU student from Mercer County Community College / Swarthmore College.

Alexander Gerra, S22 NSF-REU student from Moravian University

Courtney Jones, S22 NSF-REU student from University of Maryland – Baltimore College

Jacob Wycoff, S21-S23

Benjamin Beyer, F21-S24

Maggie Miller, F23-present

Juan Mendez, S24 NSF-REU student from Williams College

Evan Stocker, S24 NSF-REU student from Penn State

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Alex Roseman, S24 visiting summer student from Yale University

HIGH-SCHOOL STUDENTS

Jorin Schug, Summer 2010

Kelly Mao, Summer 2011

Nico Mesyngier, Summer 2012

Gianni Mangineli, Summer 2015

Sylvia Durian, Summer 2016 & Summer 2017

Kameron Brown, Summer 2018 (Penn LENS program)

VISITING RESEARCHERS

Prof. Paul K. Dixon, Cal State San Bernardino, 2001/2002

Prof. Kaya Kobayashi, Aoyama Gakuin University, 2009/2010

Mr. David Frankel, NSF-RET high school teacher, Summer 2012

Ms. Yuka Takehara, PhD student at Ochanomizu University, on scholarship for 2012/2013.

Mr. Alan Siegal, NSF-RET high school teacher, Summer 2013

Mr. Youjie Sheng, PhD student at University of Science and Technology of China, supported by China Scholarship Council for 2016/2017

Mr. Yunhua Zhao, PhD student at Zhejiang University of Technology, supported by China Scholarship Council for 2016/2017

Prof. Brian Utter, Bucknell University, 2018/2019

PRESS COVERAGE

- Ivars Peterson, “A light look at foam”, Science News **139**, 207 (1991).
- David A. Weitz, “Foams flow by stick and slip,” Nature **381**, 475 (1996).
- Sidney Perkowitz, *Universal Foam: From cappuccino to the cosmos* (Walker & Co., New York, 2000).
- Richard Gaughan, “Spectroscopy probes behavior of granular flows,” Photonics Spectra, (March 2001).
- Jennifer Ouellette, “The Physics of ... Foam Bubble, Bubble,” Discover Magazine (June 2002).
- Patrick Barry, “Strange Physics of Foam”, http://science.nasa.gov/headlines/y2003/09jun_foam.html (2003).
- Philip Ball, “Physicists find inspiration in sand pit,” Nature Science Update (21 May 2003).
- Jan Lublinski, “Report on impact craters”, German National Radio program "Forschung Aktuell" (7 July 2003).
- Kim Krieger, “Craters in a sandbox”, Physical Review Focus (12 Sept 2003).
- Philip Ball, “What is in a pebble shape? Scientists head to the beach to find out”, News at Nature.com doi:10.1038/news060710-15 (14 July 2006).
- Belle Dume, “Physicists solve pebble mystery” PhysicsWeb News (19 July 2006).
- Jean-luc Nothias, “Pourquoi les galets sont-ils ronds ?” Le Figaro (19 July 2006).
- Roger Highfield “Big theories from little pebbles grow” Telegraph (1 August 2006).
- Giulio Biroli, “Jamming: A new kind of phase transition?” Nature Physics **3**, 222 (2007).
- Tom Avril, “A sandy discovery has impact” Philadelphia Inquirer (14 May 2007).
- Debbie Elliot, “The nitty-gritty on the physics of sand”, interview on National Public Radio – Weekend All Things Considered (19 May 2007).

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- Neil Cantor, “The impact of force on granular matter”, Tribology and Lubrication Technology (pp.12-13 Nov. 2007)
- Cover photograph featured on book by Committee on CMMP 2010, “Condensed-Matter and Materials Physics: The Science of the World Around Us” (National Academies Press, Washington DC, 2007).
- Article by D. J. Durian and S. R. Raghavan, “Making a frothy shampoo or beer” Physics Today **63**, 62-63 (2010), was selected by editors for translation and inclusion in Japanese magazine: Parity **8**, 52-54 (2011).
- Figure 1 of A.E. Roth, C.D. Jones, and D. J. Durian, “Coarsening of two-dimensional foam on a dome”, Physical Review E **86**, 021402 (2012), was selected for the August 2012 edition of the on-line “Kaleidoscope of Images” (<http://pre.aps.org/kaleidoscope/pre/86/2/021402>).
- Katherine Kornei “Synopsis: Optimizing Crop Irrigation” October 15, 2014 highlight for APS Features in Physics (<http://physics.aps.org/synopsis-for/10.1103/PhysRevApplied.2.044004>).
- David Larousserie, “Les voies de l’eau sont pénétrables”, Le Monde November 4, 2014.
- Abigail Dove, “APS Membership Unit Profile: The Division of Soft Matter”, APS News **28** (2019); <https://www.aps.org/apsnews/2019/08/dsoft-unit-profile>
- Sophia Chen, “Programming Matter to do a Computer’s Job,” APS News **30-5** (2021); <https://www.aps.org/archives/publications/apsnews/202105/programming.cfm>
- Adrian Cho, “Simple electrical circuit learns on its own—with no help from a computer,” News from Science, 8 Mar 2022, <https://www.science.org/content/article/simple-electrical-circuit-learns-its-own-no-help-computer>
- Charlie Wood, “How to Make the Universe Think for Us,” Quanta Magazine, 31 May 2022; <https://www.quantamagazine.org/how-to-make-the-universe-think-for-us-20220531>
- Sophia Chen, “How a simple circuit could offer an alternative to energy-intensive GPUs,” MIT Tech Review, 5 June 2024; <https://www.technologyreview.com/2024/06/05/1093250/how-a-simple-circuit-could-offer-an-alternative-to-energy-intensive-gpus/>
- Erica Moser, “A first, physical system learns nonlinear tasks without a traditional computer processor,” Penn Today, 5 July 2024; <https://penntoday.upenn.edu/news/physics-engineering-contrastive-local-learning-network>
- T. Patrick Xiao, “Training neural networks using physical equations of motion,” Proc. Nat. Acad. Sci. **121** (30), e2411913121 (2024); <https://doi.org/10.1073/pnas.2411913121>
- Leslie Sattler, “Physicist uncovers critical flaw in modern GPUs, presents revolutionary new alternative,” Yahoo! Tech – The Cool Down (18 July 2024); <https://www.yahoo.com/tech/physicist-uncovers-critical-flaw-modern-100000587.html>

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PUBLICATIONS

1. D. J. Durian and C. Franck, "Wetting phenomena of binary liquid mixtures on chemically altered substrates", *Physical Review Letters* **59**, 555-8 (1987).
2. D. J. Durian and C. Franck, "Continued exploration of the wetting phase diagram", *Physical Review B* **36**, 7307-10 (1987).
3. D. J. Durian and C. Franck, "Temperature-driven motion of a wetting layer", *Physical Review A* **40**, 5220-3 (1989).
4. D. J. Durian, K. Abeysuriya, S. K. Watson, and C. Franck, "Capillary behavior of binary liquid mixtures near criticality: Rise and kinetics", *Physical Review A* **42** 4724-34 (1990).
5. A. J. Liu, D. J. Durian, E. Herbolzheimer, and S. A. Safran, "Wetting transitions in cylindrical pores", *Physical Review Letters* **65**, 1897-1900 (1990).
6. D. J. Durian, D. A. Weitz, and D. J. Pine, "Dynamics and coarsening in three-dimensional foams", *J. Phys. : Condens. Matter* **2**, SA433-6 (1990).
7. D. J. Durian, D. A. Weitz, and D. J. Pine, "Multiple light-scattering probes of foam structure and dynamics", *Science* **252**, 686-9 & *cover photograph* (1991). Press coverage: Ivars Peterson, "A light look at foam", *Science News* **139**, 207 (1991).
8. D. J. Durian, D. A. Weitz, and D. J. Pine, "Scaling behavior in shaving cream", *Physical Review A* **44**, R7902-5 (1991).
9. J. X. Zhu, D. J. Durian, J. Müller, D. A. Weitz, and D. J. Pine, "Scaling of transient hydrodynamic interactions in concentrated suspension", *Physical Review Letters* **68**, 2559-62 (1992).
10. D. A. Weitz, J. X. Zhu, D. J. Durian, and D. J. Pine, "Principles and applications of diffusing-wave spectroscopy", in *Structure and Dynamics of Strongly Interacting Colloids and Supramolecular Aggregates in Solution*, S.-H. Chen et al., eds., 731-48 (Kluwer, Amsterdam, 1992).
11. D. A. Weitz, J. X. Zhu, D. J. Durian, H. Gang, and D. J. Pine, "Diffusing-wave spectroscopy: The technique and some applications", *Physica Scripta* **49B**, 610-26 (1993).
12. S. S. Park and D. J. Durian, "Viscous and elastic fingering instabilities in foam", *Physical Review Letters* **72**, 3347-50 (1994).
13. D. J. Durian, "The influence of boundary reflection and refraction on diffusive photon transport", *Physical Review E* **50**, 857-66 (1994).
14. D. J. Durian and D. A. Weitz, "Foams", in *Kirk-Othmer Encyclopedia of Chemical Technology*, 4th edition, J.I. Kroschwitz, ed., Vol. **11**, 783-805 (1994).
15. D. J. Durian, "Relaxation in aqueous foams," *Bulletin of the Materials Research Society* **19**, 20-3 (1994).
16. D. J. Durian, "Accuracy of diffusing-wave spectroscopy theories", *Physical Review E* **51**, 3350-8 (1995).
17. D. J. Durian, "Penetration depth for diffusing-wave spectroscopy", *Applied Optics* **34**, 7100-5 (1995).
18. H. Z. Cummins, D. J. Durian, D. L. Johnson, H. E. Stanley, eds., *Disordered Materials and Interfaces*, *Mat. Res. Soc. Symp. Proc.* **407** (1995).
19. A. D. Gopal and D. J. Durian, "Nonlinear bubble dynamics in a slowly driven foam", *Physical Review Letters* **75**, 2610-3 (1995). Press coverage: D.A. Weitz, "Foams flow by stick and slip," *Nature* **381**, 475 (1996).
20. D. J. Durian, "Foam mechanics at the bubble scale", *Physical Review Letters* **75**, 4780-3 (1995).
21. D. J. Durian, "The importance of boundary reflections in the theory of diffusive light scattering", *Optical Engineering* **34**, 3344-5 (1995).
22. M. U. Vera and D. J. Durian, "The angular distribution of diffusely transmitted light", *Physical Review E* **53**, 3215-24 (1996).
23. D. J. Durian, "Two-stream theory of diffusing-light spectroscopies", *Physica A* **229**, 218-35 (1996).
24. A.D. Gopal and D. J. Durian, "Fast thermal dynamics in aqueous foams", *J. Opt. Soc. Am. A* **14**, 150-5 (1997).
25. D. J. Durian and J. Rudnick, "Photon migration at short times and distances and in cases of strong absorption", *J. Opt. Soc. Am. A* **14**, 235-45 (1997).
26. N. Menon and D. J. Durian, "Diffusing-Wave Spectroscopy of Dynamics in a Three-Dimensional Granular

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- Flow", *Science* **275**, 1920-2 (1997).
27. D. J. Durian, "Bubble-scale model of foam mechanics: melting, nonlinear behavior, and avalanches" *Physical Review E* **55**, 1739-51 (1997).
 28. M.U. Vera, P.-A. Lemieux, D. J. Durian, "The angular dependence of diffusely backscattered light", *J. Opt. Soc. Am. A* **14**, 2800-8 (1997).
 29. N. Menon and D. J. Durian, "Particle motions in a gas-fluidized bed of sand", *Physical Review Letters* **79**, 3407-10 (1997)
 30. D. J. Durian, "Fast, non-evolutionary dynamics in foam dynamics," *Current Opinion in Colloid and Interface Science* **2**, 615-21 (1997).
 31. P.-A. Lemieux, M. U. Vera, and D. J. Durian, "Diffusing-light spectroscopies outside the diffusive limit: the role of ballistic transport and anisotropic scattering," *Physical Review E* **57**, 4498-15 (1998).
 32. D. J. Durian, "The diffusion coefficient depends on absorption", *Optics Letters* **23**, 1502-4 (1998).
 33. D. J. Durian and J. Rudnick, "Spatially-resolved backscattering: implementation of extrapolation boundary conditions and exponential source," *J. Opt. Soc. Am. A* **16**, 837-44 (1998).
 34. M. Tabor, J. J. Chae, G. D. Burnett, and D. J. Durian, "The structure and dynamics of foams", *Nonlinear Science Today*, PII: S09389008(97)00012-0 (March 1998). NB: This peer-reviewed electronic journal is available at <http://www.springer-ny.com/nst/>.
 35. A. D. Gopal and D. J. Durian, "Shear-induced 'melting' of an aqueous foam," *J. Coll. I. Sci.* **213**, 169-78 (1999).
 36. P.-A. Lemieux and D. J. Durian, "Investigating non-Gaussian scattering processes using n^{th} -order intensity correlation functions," *J. Opt. Soc. Am A* **16**, 1651-64 (1999).
 37. A. Saint-Jalmes, M. U. Vera, and D. J. Durian, "Uniform foam production by turbulent mixing: new results on free drainage," *European Physical Journal B*, **12**, 67-73 (1999).
 38. A. Saint-Jalmes and D. J. Durian, "Vanishing elasticity for wet foams: Equivalence with emulsions and role of polydispersity," *J. Rheology* **43**, 1411-22 (1999).
 39. S. Tewari, D. Schiemann, D. J. Durian, C. M. Knobler, S. A. Langer, and A. J. Liu, "Statistics of Shear-induced Rearrangements in a Model Foam", *Physical Review E* **60**, 4385-96 (1999).
 40. D. J. Durian, "Collisions and Intermittency in Granular Flow", *J. Phys.: Cond. Matt.* **12**, A507-12 (2000).
 41. A. Saint-Jalmes, M. U. Vera, and D. J. Durian, "Free-drainage of aqueous foams: container shape effects on capillarity and vertical gradients", *Europhysics Letters* **50**, 695-701 (2000).
 42. M. U. Vera, A. Saint-Jalmes, and D. J. Durian, "Instabilities in a liquid-fluidized bed of gas bubbles", *Physical Review Letters* **84**, 3001-4 (2000).
 43. A. Saint-Jalmes, A. D. Gopal, M. U. Vera, and D. J. Durian, "Unjamming and fluidization of gas-liquid foams", in *Foams, Emulsions, and their Applications*, P. Zitha, J. Banhart, G. Verbist, eds. 65-71 (Verlag MIT, Bremen, 2000).
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 163. J. M. Hanlan, G. E. Davis, D. J. Durian, “Twist and Measure: Characterizing the Effective Radius of Strings and Bundles under Twisting Contraction”, *Soft Matter* **19**, 4315-22 (2023); <https://doi.org/10.1039/D3SM00067B>
 164. N. Galvani, M. Pasquet, A. Mukherjee, A. Requier, S. Cohen-Addad, O. Pitois, R. Höhler, E. Rio, A. Salonen, D.J. Durian, D. Langevin “Hierarchical bubble size distributions in coarsening wet liquid foams,” *Proc. Nat. Acad. Sci.* **120** (38), e2306551120 (2023) <https://doi.org/10.1073/pnas.2306551120>
 165. A. T. Chieco, D. J. Durian, “Simply solvable model capturing the approach to statistical self-similarity for the diffusive coarsening of bubbles, droplets, and grains,” *Physical Review E* **108**, 034606 (2023). <https://doi.org/10.1103/PhysRevE.108.034606>
 166. H. Xiao, G. Zhang, E. Yang, R. J. S. Ivancic, S. A. Ridout, R. Riggleman, D. J. Durian, A. J. Liu, “Identifying microscopic factors that influence ductility in disordered solids,” *Proc. Nat. Acad. Sci.* **120** (42) e2307552120 (2023). <https://doi.org/10.1073/pnas.2307552120>
 167. M. Stern, S. Dillavou, D. Jayaraman, D. J. Durian, A. J. Liu, “Training physical learning systems for power-efficient solutions,” *APL Machine Learning* **2**, 016114 (2024). <https://doi.org/10.1063/5.0181382>
 168. S. Dillavou, J. M. Hanlan, A. T. Chieco, H. Xiao, S. Fulco, K. T. Turner, D. J. Durian, “Bellybutton: Accessible and Customizable Deep-Learning Image Segmentation,” *Scientific Reports* **14**, 14281 (2024) <https://doi.org/10.1038/s41598-024-63906-y>.
 169. S. Dillavou, B. D. Beyer, M. Stern, A. J. Liu, M. Z. Miskin, D. J. Durian, “Machine Learning Without a Processor: Emergent Learning in a Nonlinear Analog Network,” *Proc. Nat. Acad. Sci.* **121** (28), e2319718121 (2024). <https://doi.org/10.1073/pnas.2319718121>. Commentary “Training neural networks using physical equations of motion” by T. Patrick Xiao, *Proc. Nat. Acad. Sci.* **121** (30), e2411913121 (2024); <https://doi.org/10.1073/pnas.2411913121>
 170. A. J. Gerra, C. C. Jones, S. Dillavou, J. M. Hanlan, J. Radzio, P. E. Arratia, D. J. Durian, “The Equation of Motion for Taut-Line Buzzers,” *Physical Review Applied* **22**, 014011 (2024). <https://doi.org/10.1103/PhysRevApplied.22.014011>.
 171. J. M. Hanlan, D. J. Durian, “Taut-Line Buzzers with Periodic Forcing,” *Physical Review Applied* **22**, 014012 (2024). <https://doi.org/10.1103/PhysRevApplied.22.014012>.
 172. L. E. Altman, M. Stern, A. J. Liu, D. J. Durian, “Experimental Demonstration of Coupled Learning in Elastic Networks,” *Physical Review Applied* **22**, 024053 (2024) <https://doi.org/10.1103/PhysRevApplied.22.024053>.

Preprints:

1. T. A. Brzinski, C. P. Ortiz, D. J. Durian, “Nonlocal lubrication forces and the sedimentary jamming front,” <https://arxiv.org/abs/1710.09314v2>
2. D. J. Durian, “Effective exponents for the diffusive coarsening of wet foams and analogous materials,” <https://arxiv.org/abs/2304.00415>
3. D. Hathcock, S. Dillavou, J. M. Hanlan, D. J. Durian, Y. Tu, “Stochastic dynamics of granular hopper flows: a slow hidden mode controls the stability of clogs,” <https://arxiv.org/abs/2312.01194>
4. J. M. Hanlan, S. Dillavou, A. J. Liu, D. J. Durian, “Cornerstones are the Key Stones: Using Interpretable Machine Learning to Probe the Clogging Process in 2D Granular Hoppers,” <https://arxiv.org/abs/2407.05491>
5. S. Fulco, M. K. Budzik, H. Xiao, D. J. Durian, K. T. Turner, “Disorder Enhances the Fracture Toughness of Mechanical Metamaterials,” (2024). <https://arxiv.org/abs/2407.07223>

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Conference Proceedings (Reviewed)

1. D.A. Weitz, J.X. Zhu, D. J. Durian, and D.J. Pine, "Principles and applications of diffusing-wave spectroscopy", in *Structure and Dynamics of Strongly Interacting Colloids and Supramolecular Aggregates in Solution*, S.-H. Chen et al., eds., 731-48 (Kluwer, Amsterdam, 1992).
2. D.J. Pine, D.A. Weitz, D. J. Durian, P.N. Pusey, and R.J.A. Tough, "Non-diffusive Brownian motion studied by diffusing-wave spectroscopy", *Mat. Res. Soc. Symp. Proc.* **177**, 222-227 (1990).
3. D. J. Durian, D.A. Weitz, and D.J. Pine "Scaling in three-dimensional foams", *Mat. Res. Soc. Symp. Proc.* **248**, 295-301 (1992).
4. D. J. Durian and A.D. Gopal, "Microgravity foam structure and rheology", NASA Conference Publication **3276**, 305-308 (1994).
5. D. J. Durian, A.D. Gopal, M.U. Vera, and S.A. Langer, "The melting of aqueous foams", NASA Conference Publication **3338**, 383-388 (1996).
6. N. Menon and D. J. Durian, "Dynamics of grains in driven granular media", in *Statistical Physics in Physics and Biology*, D. Wirtz and T.C. Halsey, eds., *Mat. Res. Soc. Symp. Proc.* **463**, 313-318 (1997).
7. D. J. Durian, "Collisions and intermittency in surface flows," for XIIIth International Congress on Rheology, Cambridge UK (August 2000).
8. D. J. Durian, "Detecting and characterizing intermittency using higher-order correlation functions," for Photon Correlation and Scattering 2000, Whistler CANADA (August 2000).
9. H. Kim, P.-A. Lemieux, D. J. Durian, and G.A. Williams, "Light scattering from superfluid fog", for LT23 proceedings (2002).
10. M. Stern, S. Dillavou, M. Z. Miskin, D. J. Durian and A. J. Liu, "Out of equilibrium learning dynamics in physical allosteric resistor networks", *NeurIPS*, Fourth Workshop on Machine Learning and the Physical Sciences (2021). https://ml4physicalsciences.github.io/2021/files/NeurIPS_ML4PS_2021_96.pdf
11. S. Dillavou, B. Beyer, M. Stern, M. Z. Miskin, A. J. Liu, D. J. Durian, "Circuits that train themselves: decentralized, physics-driven learning." *Proc. SPIE 12438, AI and Optical Data Sciences IV*, **124380G** (2023); <https://doi.org/10.1117/12.2648618>
12. M. Stern, S. Dillavou, D. Jayaraman, D. J. Durian, A. J. Liu, "Contrastive power-efficient physical learning in resistor networks" 37th First Workshop on Machine Learning with New Compute Paradigms at NeurIPS 2023; <https://openreview.net/pdf?id=ITYd1pa8bO>
13. S. Dillavou, B. Beyer, M. Stern, M. Miskin, A. Liu, D. Durian, "Nonlinear classification without a processor" 37th First Workshop on Machine Learning with New Compute Paradigms at NeurIPS 2023; <https://openreview.net/pdf?id=4P65OwisG9>

Invited Conference Presentations

1. 1st Liquid Matter Conference, Lyon FRANCE (1990).
2. 1991 March Meeting of the American Physical Society, *Bull. Am. Phys. Soc.* **36**, 698 (1991).
3. Gordon Research Conference - Dynamics of Macromolecular and Polyelectrolyte Solutions (1992).
4. UC Statistical Mechanics Conference (Los Angeles, 1992).
5. 1991 Fall Meeting of the Materials Research Society, *Mat. Res. Soc. Symp. Proc.* **248**, 295-301 (1992).
6. First USA-Mexico Symposium on the Physics of Complex Fluids, San Luis Potosi MEXICO (1993).
7. 2nd NASA Microgravity Fluid Physics Conference (1994).
8. UCSB-UCLA Complex Fluids Fall Workshop (1994).
9. Gordon Research Conference - Condensed Matter (1995).
10. Gordon Research Conference - Complex Fluids (1995).
1. 26th Annual Meeting of the Fine Particle Society (1995).
2. 1996 March Meeting of the American Physical Society, *Bull. Am. Phys. Soc.* **41**, 518 (1996).
3. 3rd NASA Microgravity Fluid Physics Conference (1996).
4. Dynamics Days Arizona (1997).

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15. 77th Rutgers Statistical Mechanics Meeting (1997).
16. N. Menon and D. J. Durian, Gordon Research Conference - Condensed Matter (1997).
17. The Earth Institute Of Columbia University and Lamont-Doherty Earth Observatory symposium on Localization Phenomena and Dynamics of Brittle and Granular Systems (1997).
18. ITP Conference on Jamming and Rheology (1997).
19. N. Menon and D. J. Durian, ITP Conference on Jamming and Rheology (1997).
20. UC-Los Alamos Conference on Nonlinear Dynamics (February 1998).
21. 1998 March Meeting of the American Physical Society, Bull. Am. Phys. Soc. **43**, 126 (1998).
22. Conference on the Dynamics of Granular Materials at Argonne National Laboratory.
23. The International Centre for Theoretical Physics, Trieste ITALY, Spring College on 'The Statistical Mechanics and Dynamics of Soft Condensed Matter (May 1998).
24. Adriatico Conference on Complex Fluids far from Equilibrium, The International Centre for Theoretical Physics, Trieste ITALY (June 1998).
25. Granular Materials: Statics, Excitations, and Dynamics, hosted by the Center for Advanced Studies at University of New Mexico, Sandia National Laboratories and Los Alamos National Laboratory (June 1998).
26. 4th NASA Microgravity Fluid Physics Conference (July 1998).
27. APS Division of Fluid Dynamics Meeting (Nov. 1998)
28. Gordon Research Conference – Condensed Matter Physics (June 1999).
29. Gordon Research Conference – Gravity Effects on Physico-chemical Systems (June 1999)
30. 4th Liquid Matter Conference, Granada SPAIN (June 1999)
31. Complex Materials Conference in Honor of Fyl Pincus (August 1999)
32. 3rd EuroConference on Foams, Emulsions, and Applications, Delft NETHERLANDS (June 2000).
33. Gordon Research Conference: Physics Research and Education – Statistical Mechanics (June 2000).
34. 5th NASA Microgravity Fluid Physics Conference (August 2000).
35. XIIIth International Congress on Rheology, Cambridge UK (August 2000).
36. Photon Correlation and Scattering 2000, Whistler CANADA (August 2000).
37. 20th International Congress of the International Union of Theoretical and Applied Mechanics (August 2000).
38. AIChE Annual Meeting (November 2000) – invited talk on foam drainage
39. AIChE Annual Meeting (November 2000) – invited talk on gas-fluidized beds
40. Los Alamos National Laboratory Center for Nonlinear Science, 21st Annual International Conference, Principles of Soft Matter, Santa Fe (May 2001).
41. Workshop on the Definition of an American / European FSL Experiment Container for Aqueous Foam Research, Paris (June 2001).
42. American Geophysical Union – Fall Meeting (December 2001).
43. Gordon Research Conference: Complex Fluids (Oxford UK, July 2002).
44. Boulder School for Condensed Matter Physics, 2002 School: Physics of Soft Matter (July 2002).
45. Isaac Newton Institute for Mathematical Sciences, Foams and Minimal Surfaces (Cambridge UK, Aug 2002).
46. Lorentz Center, program on Formation of Structures in Granular Matter (Leiden, Netherlands, August 2002).
47. 2003 March Meeting of the American Physical Society (Austin, Texas).
48. International Applied Statistical Physics II: Molecular Engineering Conference "ASTATPHYS-MEX-2003" (Puerto Vallarta, Mexico, August 2003).
49. 5th European Conference on Foams, Emulsions, and Applications (Paris, France, July 2004).
50. EuroMech Conference on Impact (Marseille, France, October 2004).
51. Dynamics Days 2005 (Irvine, CA)
52. 2005 March Meeting of the American Physical Society (Los Angeles, CA).
53. New England Granular Materials Workshop (Wesleyan, 2005)
54. KITP Program on Granular Physics (UCSB, 2005).
55. P. Arratia, J.P. Gollub, and D. J. Durian, First Penn-NYU Soft Matter Workshop (2006).
56. A.R. Abate and D. J. Durian, 2006 March Meeting of the American Physical Society (Baltimore, MD)
57. Southern Workshop on Granular Materials (Vina del Mar, Chile, 2006)
58. A.R. Abate and D. J. Durian, Second Penn-NYU Soft Matter Workshop (2006)
59. FOAM Delta Phase B Meeting (Noordwijk, Netherlands, 2006)
60. US Air Force Workshop on Particulate Mechanics (Shalimar, FL, 2007) (withdrew due to illness)
61. Les Houches Workshop on Flow in Glassy Systems (France, 2007).
62. Annual Colloid and Interface Society Meeting of the American Chemical Society (Wilmington, DE 2007)
63. NSLS-II Workshop on X-ray Photon Correlation Spectroscopy (Brookhaven, 2008)

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64. Lorentz Center Workshop on Jamming in Soft Matter (Leiden, Feb.2008)
65. Gordon Conference on Granular Physics (2008)
66. Lorentz Center Workshop on Dynamical Heterogeneities (Leiden, Aug.2008)
67. Dynamics Days Europe (Delft, Aug.2008)
68. Symposium on Granular Matter, Fluids, Jamming, and Glassiness in Honor of Sidney Nagel's 60th Birthday (Chicago, Sept.2008)
69. Chandler Mini Statistical Mechanics Meeting (Berkeley, Jan.2009)
70. APS March Meeting (Pittsburgh, Mar.2009)
71. Princeton summer school (Aug.2009)
72. Mid-Atlantic Soft Matter conference (Baltimore, Nov.2009)
73. Southern Granular Workshop (Vina del Mar – Chile, Nov.2009)
74. DARPA Granular Dynamics Meeting (Arlington VA, Feb.2010)
75. 1st COMPASS Symposium on Soft Materials (Philadelphia PA, Apr.2010)
76. Summer School on Soft Matter (Cargese - France, Sept.2010)
77. FOAM-C Utilization Meeting (Paris - France, Jan.2011)
78. APS March Meeting (Dallas, Mar.2011)
79. Workshop on "Large Fluctuations and Collective Phenomena in Disordered Materials" (Champaign-Urbana IL, May 2011)
80. Workshop on "Nonlinear Dynamics and Fluid Instabilities in the 21st Century" (Haverford PA, May 2011)
81. SIAM Conference on Applications of Dynamical Systems (Snowbird UT, May 2011).
82. Dissipative Rheology of Foams Conference, (Trinity College, Dublin, January 2012)(withdrew due to illness)
83. MarchCOMeeting: Complex Matter Physics (Havana, Cuba, March 2012)
84. Dust and Grains in Low Gravity and Space Environment (Noordwijk, Netherlands, April 2012)
85. Partnership for Research and Education in Materials, University of Puerto Rico (Humacao PR, May 2012)
86. ICAM Conference on "Active Jammed Systems" (New York NY, May 2012)
87. T.A. Brzinski and D. J. Durian, Gordon Research Conference on granular physics (Davidson NC, July 2012).
88. ACS National Meeting, Symposium on "Dynamics and Jamming in Complex Environments" (Philadelphia PA, August 2012)
89. Fluidity | Rigidity | Adaptability: Frontiers in Pure & Applied Jamming (Chicago IL, Oct. 2012)
90. MIT Conference on Computational and Solid Mechanics (Cambridge MA, June 2013)
91. Evolution of Colloidal Matter (New York NY, June 2013)
92. 7th International Discussion Meeting on Relaxations in Complex Systems (Barcelona, Spain, July 2013)
93. 29th Annual American Society for Gravitational and Space Research Meeting (Orlando FL, Dec. 2013)
94. Isaac Newton Institute, program on Foams and Minimal Surfaces (Cambridge UK, Feb. 2014)
95. J. Rieser and D. J. Durian, Gordon Research Conference on granular physics (Easton MA, July 2014)
96. CECAM Workshop on Clogging in Bottlenecks (Zaragoza, Spain, September 2014)
97. Aspen Winter Conference on Unifying Concepts in Glass Physics (Aspen Co, February 2015)
98. New England Granular Workshop (Worcester MA, June 2015)
99. Soft Matter Dynamics Workshop on Foam Coarsening (Paris, January 2016)
100. APS March Meeting (Baltimore MD, March 2016)
101. 254th ACS National Meeting (Washington DC, August 2017)
102. 9th Northeastern Complex Fluids & Soft Matter Workshop (Philadelphia PA, May 2018)
103. KITP Conference on Dense Suspensions (Santa Barbara CA, January 2018)
104. BulbulFest 2019 Research Symposium in Honor of Bulbul Chakraborty (Waltham MA, March 2019)
105. Dow Chemical (Collegeville PA, June 2019)
106. Traffic and Granular Flow 2019 (Pamplona, Spain, July 2019)
107. Short-talk session at APS-DFD Meeting in honor of Jerry Gollub (Seattle WA, November 2019)
108. 122nd Rutgers Statistical Mechanics Conference (New Brunswick NJ, December 2019)
109. APS March Meeting (Denver CO, March 2020; cancelled)
110. German Physical Society (DPG) Spring Conference (Dresden, Germany, March 2020; changed to zoom)
111. APS DPOLY Symposium on the Physics of Foams (online, October 2020)
112. SUNY Buffalo Statistical and Nonlinear Physics Seminar – "Statistical Mechanics of Clogging" (online, March 2021)
113. AAAS Annual Meeting (Philadelphia / online, February 2022)
114. APS March Meeting (Chicago, IL, March 2022) – invited talk by my postdoc Sam Dillavou
115. APS March Meeting (Chicago, IL, March 2022) – invited talk on wet foam coarsening

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116. APS March Meeting (Chicago, IL, March 2022) – short course on foam structure and stability
117. CECAM Workshop “Understanding plastic deformation via Artificial Intelligence” (online, March 2022)
118. Lorentz Center Workshop “Biological Metamaterials” (Leiden, Netherlands May 2022)
119. Centro de Ciencias de Benasque Pedro Pascual workshop on “Dispersions: Drops, Particles and Bugs, Science, Startups and Success” (Benasque, Spain May 2022)
120. 6th Conference on Fluctuation in Small Complex Systems (Venice, Italy September 2022)
121. 10th International Conference on Multiscale Materials Modeling (Baltimore, MD October 2022)
122. StatPhys 28 Conference (Tokyo Japan, August 2023)
123. 9th International Discussion Meeting on Relaxation in Complex Systems (Chiba, Japan, Aug 2023)
124. International Centre for Theoretical Sciences (ICTS) school on soft and living matter – three lectures (Bengaluru, India, Aug 2023)
125. Isaac Newton Institute for Mathematical Sciences, program on “New statistical physics in living matter” (Cambridge UK Sept 2023)
126. InterPore Norway 2023 Workshop (Oslo Norway, Nov 2023)
127. Aspen Center for Physics – Winter Program on “Computing with Physical Systems” (Aspen CO, January 2024)
128. APS March Meeting (Minneapolis MN, March 2024)
129. Gordon Research Conference on Granular Matter (East MA, June 2024)
130. University of Colorado - Boulder Summer School on Condensed Matter Physics (Boulder CO, July 2024)
131. DOE Workshop on Analog Computing for Science (Bethesda MD, Sept. 2024)
132. Upcoming: Mid-Atlantic Soft Matter Workshop (Newark DE, Nov. 2024)
133. Upcoming: NITMB Workshop on Biological Systems that Learn (Chicago IL, Jan. 2025)
134. Upcoming: 33rd Annual International Laser Physics Conference (Szeged Hungary, July 2026)

Seminars & Colloquia

1. National Bureau of Standards, Thermophysics Division, Gaithersburg (1987).
2. Western Michigan University, Dept. of Physics (1987).
3. Oak Ridge National Laboratory, Solid State Division (1988).
4. Exxon Research and Engineering Company (1988).
5. University of Illinois at Champaign-Urbana, Dept. of Materials (1989).
6. University of Pittsburgh, Dept. of Physics (1989).
7. AT&T Bell Laboratories (1989).
8. IBM Zurich Research Laboratory (1990).
9. Universität Konstanz, Dept. of Physics (1990).
10. University of Maine at Bangor, Dept. of Physics (1990).
11. University of Pittsburgh, Dept. of Physics (1990).
12. The University of Chicago, Dept. of Physics and James Franck Institute (1990).
13. Princeton University, Dept. of Physics (1990).
14. UCLA Dept. of Physics (1991).
15. Clark University, Dept. of Physics (1991).
16. University of Toronto, Dept. of Physics (1991).
17. Boston University, Dept. of Physics (1991).
18. University of Wisconsin at Madison, Dept. of Physics (1991).
19. Princeton University, Dept. of Chemical Engineering (1991).
20. Indiana University, Dept. of Physics (1991).
21. General Electric Corporate Research and Development, Schenectady NY, (1991).
22. Emory University, Dept. of Physics (1991).
23. The Ohio State University, Dept. of Physics (1991).
24. Rensselaer Polytechnic Institute, Dept. of Physics (1991).
25. Union College, Dept. of Physics (1991).
26. AT&T Bell Laboratories (1991).
27. University of Pennsylvania, Johnson Foundation for Molecular Biophysics (1991).
28. UC Santa Barbara, Dept. of Physics (1992).
29. University of Nevada at Las Vegas, Dept. of Physics (1992).
30. Simon Fraser University, Dept. of Physics (1993).

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31. UC Santa Cruz, Dept. of Physics (1993).
32. Cal. State University at Long Beach, Dept. of Physics (1993).
33. Cal. State University at LA, Dept. of Physics (1994).
34. Emory University, Dept. of Physics (1995).
35. Loyola-Marymount, Dept. of Physics (1995).
36. UC Irvine, Dept. of Physics (1995).
37. National Institute of Standards and Technology, Gaithersburg (1995).
38. USC, Dept. of Chem Eng. (1995).
39. UC Santa Barbara, Dept. of Physics (1995).
40. University of Illinois at Champagne-Urbana, Dept. of Theoretical & Applied Mechanics (1996).
41. University of Michigan, Dept. of Physics (1996).
42. University of Pennsylvania, Dept. of Physics (1996).
43. University of Pittsburgh, Dept. of Physics (1996).
44. College de France (1996).
45. Université de Strasbourg, LUDFC and Institut de Physique, (1996).
46. Institut Curie (1996).
47. California Institute of Technology, Dept. of Physics (1996)
48. California State University at San Bernardino, Dept. of Physics (1997).
49. University of Houston, Dept. of Physics (1997).
50. The University of Chicago, Dept. of Physics and James Franck Institute (1997).
51. University of Illinois at Urbana-Champaign, Dept. of Physics (1997).
52. UCLA Physics and Astronomy Alumni League Spring Dinner Lecture (1997).
53. Princeton University, Dept. of Chemical Engineering (1997).
54. Lucent Technologies, formerly AT&T, Bell Laboratories, Physical and Materials Science Colloquium (1997).
55. Elf-Atochem, Paris (1997).
56. Univerite de Rennes, Dept. of Physics (1997).
57. UCSB, Institute for Theoretical Physics (Sept. 1997).
58. UCLA Dept. of Physics (Oct. 1997).
59. University of Pennsylvania, Dept. of Physics (Oct. 1997).
60. California State University at Dominguez Hills, Dept. of Physics (1997).
61. University of Oregon, Dept. of Physics (Jan. 1998).
62. UC San Diego Dept. of Physics (Feb. 1998).
63. USC Dept. of Materials (Feb. 1998).
64. UC Riverside, Dept. of Geology (April 1998).
65. California State University, Los Angeles, Dept. of Physics (April 1998).
66. Ohio State University, Dept. of Physics (Nov. 1998).
67. UC Irvine, Beckman Institute (March 1999).
68. UC San Diego, Dept. of Physics (Oct. 1999).
69. Sandia National Laboratory (Nov. 1999).
70. Dow Chemical, Corporate R&D Lab (April 2000) – research seminar.
71. Dow Chemical, Corporate R&D Lab (April 2000) – after dinner talk.
72. California State Polytechnic University, Pomona, Dept. of Physics (Feb. 2001).
73. California State University, Long Beach, Dept. of Physics (March 2001).
74. Ecole Normale Supérieure de Lyon, Laboratoire de Physique, Lyon FRANCE (April 2001).
75. Université De Paris-Sud, Laboratoire De Physique Des Solides, Orsay FRANCE (June 2001).
76. Ecole Supérieure de Physique et de Chimie Industrielles, Laboratoire de Physico-Chimie Théorique, Paris FRANCE (June 2001).
77. Université Louis Pasteur, Institut de Physique, Strasbourg FRANCE (June 2001).
78. C.E.A. Saclay, Service de Physique de l'Etat Condensé, Gif sur Yvette FRANCE (June 2001).
79. Université de Pierre et Marie Curie, Lab. d'Acoustique et d'Optique, Paris FRANCE (July 2001).
80. University Of Fribourg, Dept. of Physics, SWITZERLAND (July 2001).
81. University of Alberta, Dept. of Physics, Edmonton CANADA (Nov. 2001).
82. University of California – Santa Barbara, Dept. of Chemical Engineering (Jan. 2002).
83. University of Indiana - Dept. of Physics (Jan. 2002).
84. California State University – Northridge, Dept. of Physics (April 2002).
85. University of California – Los Angeles, Institute of Geophysics and Planetary Physics (April 2002).

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86. University of California - Santa Barbara, Dept. of Physics (Oct. 2002).
87. University of California - Berkeley, Dept. of Physics (Oct. 2002).
88. University of Pennsylvania, Dept. of Physics (Jan. 2003).
89. University of California - Santa Cruz, Dept. of Physics (Feb. 2003).
90. University of California - Santa Barbara, Materials Research Laboratory (May 2003).
91. Corning Research Corporation - Corning NY (April 2004).
92. University of Massachusetts – Amherst (April 2005)
93. University of Maryland, Dept. of Physics (May 2005)
94. CCNY, Levich Institute (Nov. 2005)
95. Pennsylvania State University, Dept. of Physics (April 2006)
96. Boston University, Dept. of Physics (March 2007)
97. Rhodia (April 2007)
98. Colgate University (April 2007)
99. Bryn Mawr College (Oct.2007)
100. Syracuse University, colloquium (Oct.2007)
101. Syracuse University, seminar (Oct.2007)
102. Queen's College CCNY (Oct.2008)
103. University of Rochester (Feb.2009)
104. Cornell University (Apr.2009)
105. Los Alamos National Laboratory (Aug.2009)
106. Temple University (Oct.2009)
107. Johns Hopkins (Mar.2010)
108. Institute for Advanced Studies, Princeton NJ (Apr.2010)
109. KITP, Santa Barbara (June 2010)
110. University of Buffalo – physics colloquium (March 2012)
111. CCNY – seminar in mechanical engineering (April 2012)
112. University of Pennsylvania, MEAM seminar (Sept. 2012)
113. Rowan University, physics colloquium (Oct. 2012)
114. Duke University, physics seminar (Nov. 2012)
115. Twente University (Netherlands), physics seminar (Dec. 2012)
116. Georgia Tech, physics seminar (Feb. 2013)
117. UC Merced, physics colloquium (March 2013)
118. Science Café public talk on granular physics (Stoney's Pub, May 2013)
119. General talk to High School science teachers on granular physics (Sept. 2013)
120. University of Rennes, physics seminar (Rennes, France, June 2014)
121. ESPCI, PMMH physics seminar (Paris, July 2014)
122. Science Café on Granular Physics (Saint Declan's Well, January 2015)
123. Kent State University, Physics colloquium (April 2015)
124. University of Maryland, Applied Dynamics Seminar (April 2017)
125. Harvard University, Applied Mechanics Colloquium (May 2017)
126. Georgetown University, Physics Colloquium (November 2017)
127. Duke University, Physics Colloquium (October 2018)
128. MIT, Mechanical Engineering Colloquium (October 2019)
129. Science Café public talk on foam physics (Stoney's Pub, February 2020)
130. University of Pennsylvania, MEAM seminar (April 2022)
131. Norwegian University of Science and Technology – Porelab seminar (online)(Norway October 2022)
132. New York University, physics seminar (March 2023)
133. University of California – Merced, physics seminar (April 2023)
134. University of California – Berkeley, physics colloquium (April 2023)
135. Kent State University, physics seminar (April 2023)
136. Jawaharlal Nehru Centre for Advanced Scientific Research (Bengaluru India, Aug. 2023)
137. IST-Austria Soft and Living Matter Seminar (Vienna Austria, Nov. 2023).
138. Ludwig Maximilian University – Statistical and Biological Physics Seminar (Munich Germany, Nov. 2023)
139. Cardiff University – Applied Mathematics Seminar (Cardiff UK, Dec. 2023)
140. Squishy Science Sunday outreach talk at APS March Meeting (Minneapolis, Mar. 2024)
141. Upcoming: Tufts University – physics seminar (Boston MA, Dec. 2024)