CURRICULUM VITAE of PAUL M. GOLDBART (May 2025)

Education

Ph.D. Physics: Condensed Matter Theory, August 1985
Imperial College, University of London, U.K.
Thesis Title: Statistical Mechanics of Disordered and Frustrated Systems
Thesis Advisor: Prof. David Sherrington (now at Oxford University, U.K.)

D.I.C. Diploma in Mathematical Physics, August 1985
Imperial College, University of London, U.K.

M.S. Physics, University of California – Los Angeles, U.S.A., June 1982.

B.A. Physics and Theoretical Physics, June 1981 (M.A., March 1985)
Gonville and Caius College, Cambridge University, U.K.

Current Positions

Professor, Department of Physics and Astronomy, Stony Brook University, U.S.A.	2021–present
Adjunct Professor, Department of Physics, The University of Texas at Austin, U.S.A.	2021–present
Adjunct Professor, School of Physics, Georgia Institute of Technology, U.S.A.	2018–present
Adjunct Professor, Department of Physics, University of Illinois at Urbana-Champaign, U.S.A.	2011–present

Previous Positions

Special Advisor to the Vice President for Research, Stony Brook University, U.S.A.	2022
Provost and Executive Vice President for Academic Affairs, Stony Brook University, U.S.A.	2021–2022
Dean, R. E. Boyer Chair in Natural Sciences, and Mary Ann Rankin Leadership Chair, College of Natural Sciences, and Professor, Department of Physics, The University of Texas at Austin, U.S.A.	2018–2021
Betsy Middleton and John Clark Sutherland Chair, Georgia Institute of Technology, U.S.A.	2016–2018
Dean, College of Sciences, Georgia Institute of Technology, U.S.A.	2013–2018
Chair, School of Physics, Georgia Institute of Technology, U.S.A.	2011–2013
Professor, School of Physics, Georgia Institute of Technology, U.S.A.	2011–2018
Research Professor, Frederick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign, U.S.A.	2009–2011
Director, Institute for Condensed Matter Theory, University of Illinois at Urbana-Champaign, U.S.A.	2007–2011
Professor, Department of Physics, University of Illinois at Urbana-Champaign, U.S.A.	1998–2011
Associate Professor of Physics, Department of Physics, University of Illinois at Urbana-Champaign, U.S.A.	1993–1998
Assistant Professor of Physics, Department of Physics, University of Illinois at Urbana-Champaign, U.S.A.	1987–1993
Postdoctoral Research Associate, Department of Physics, University of Illinois at Urbana-Champaign, U.S.A.	1985–1987

Synergistic Activities

Member, Strategy Committee, Aspen Center for Physics (January 2025–present)

Principal speaker, Society of Physics Students Induction Ceremony, Stony Brook University, NY (April 19, 2024)

External reviewer for the Department of Physics, Indiana University, Bloomington (April 14-16, 2024)

Invited contributor, roundtable conversation on *Transatlantic Quantum Innovation: Opportunities for U.K.-U.S. Collaboration*, British Consulate General, New York City, NY (December 6, 2023)

Oral history interviewer, with Wykeham Professor of Physics Emeritus David Sherrington, University of Oxford, U.K. (November 24, 2023)

Invited conversation leader, *Strategies for Advancing Faculty Diversity*, with the assembled chairs of NYU's engineering, science, mathematics, and computer science departments, New York University, New York (October 20, 2023)

Moderator, panel discussion on *The Future of Quantum Matter*, with R. Melko, A. Castro Neto, A. Vishwanath, and T. Grover; conference in honor of Matthew P. A. Fisher, Kavli Institute for Theoretical Physics, University of California–Santa Barbara, (May 19-21, 2023, coordinated remotely)

Speaker, panel on *Perspectives on Research and Careers*, Physics and Astronomy Undergraduate Research Day, Stony Brook University, New York (March 31, 2023)

Speaker, Inaugural Stony Brook Institute at Anhui University Global Seminar, *Think First, Then Calculate: The Art and Power of Estimation in Physics*, Stony Brook University, New York (November 11, 2022)

Member, Steering Committee, Initiative for the Theoretical Sciences, Graduate Center of the City University of New York (2022–present)

Speaker, *Worlds of Physics* public lecture, *Think First, Then Calculate: The Art and Power of Estimation in Physics*, Stony Brook University, New York (September 9, 2022)

Speaker, *What Physicists Do Behind Closed Doors*, Aspen Center for Physics *Heinz R. Pagels Physics Lecture*, Aspen, Colorado (July 13, 2022)

Author, *Roadmap for Quantum Information Science and Technology*, Stony Brook University, New York (June 2022)

Member of the Board of Directors, Brookhaven Science Associates (2021–present); member of the Institutional Strategy Committee (2023–present); Brookhaven National Laboratory is managed on behalf of the U.S. Department of Energy by Brookhaven Science Associates on behalf of Stony Brook University and Battelle.

Chair of the Board of Managers, SUNY Korea LLC (2021-2022)

National Academies Standing Committee on Advancing Science Communication (Holly Rhodes, Director), planning conversation participant for the May 2022 colloquium on *Reimagining Science Communication in the Covid-19 Era and Beyond*, Washington, D.C. (February 2022, virtual meeting)

Co-organizer, American Association of Universities Arts and Sciences Deans' National Covid Support Group (2020-2021, virtual meetings)

Co-organizer, American Association of Universities Arts and Sciences Deans' Conference, Austin, Texas (April 2020, virtual meeting)

Speaker, *What Binds Us*, presentation at the Provost's Biannual Academic Leadership Symposium, University of Texas at Austin (January 2020)

Speaker, *What Do Deans Do?*, Provost's Department Chairs' Lunch, University of Texas at Austin (November 2019)

Participant, *White House Roundtable on Innovation in Quantum Information Science*, Washington, D.C. (May 2019)

Laudatio presenter, *Celebrating Nigel Goldenfeld*, 121st Statistical Mechanics Conference, Rutgers University, New Brunswick, New Jersey (May 2019)

Speaker, *Guidance and Restoration: Some Timely Opportunities for Humanities Scholar-Educators at Technological Institutions*, Workshop on Humanistic Perspectives at Technological Universities, Atlanta, Georgia (April 2019)

Speaker, *What Are the Most Important Things to Consider for Promotion?*, Faculty Women's Organization and the Center for Women's and Gender Studies, University of Texas at Austin (April 2019)

Guest speaker, *What Physicists Do Behind Closed Doors: The Art of Estimation*, 12th Annual Polymathic Scholars Chautauqua Seminar, University of Texas at Austin (April 2019)

Review panelist, *Brandeis University Materials Research Science and Engineering Center*, Waltham, Massachusetts (May 2018)

Speaker, American Association of Universities Deans' Conference, New York City (April 2018)

Review panelist, Department of Physics, Emory University, Atlanta, Georgia (April 2018)

Panelist, American Association of Universities Deans' Conference, University of California–San Diego (April 2017)

Review panelist, Department of Physics, University of Massachusetts–Amherst (March 2017)

Panelist and mentor, *Cottrell Scholars Collaborative Academic Leadership Training Workshop*, Washington, D.C. (February 2017)

Review panelist, Department of Physics, University of Central Florida, Orlando, Florida (February 2017)

Panelist, *Liberal Arts in the 21st Century*, Ivan Allen College of Liberal Arts, Georgia Institute of Technology, Atlanta (December 2016)

Faculty exemplar and mentor, *Celebrating Tenure: Enabling Meaningful, Creative Challenges*, Georgia Institute of Technology retreat for recently tenured faculty, Serenbe, Georgia (November 2016)

Faculty exemplar and speaker, *Georgia Tech Emerging Leaders Program*, Georgia Institute of Technology retreat for faculty, Serenbe, Georgia (October 2016)

Welcome address, *Annual Meeting of the Clay Minerals Society*, Atlanta, Georgia (June 2016)

Organizer and discussion leader, American Association of Universities Deans' Conference, Atlanta, Georgia (March 2016)

Panelist and mentor, *Cottrell Scholars Collaborative Academic Leadership Training Workshop*, Washington, D.C. (January 2016)

Welcome address, *American Physical Society Conference for Undergraduate Women in Physics*, Atlanta, Georgia (January 2016)

Member of the Board of Directors, Atlanta Science Festival (2015–2016)

Speaker, *Albert Einstein and the Creation of the Modern World*, Einstein Monument Dedication, Georgia Institute of Technology, Atlanta (October 2015)

Faculty exemplar and mentor, *Celebrating Tenure: Enabling Meaningful, Creative Challenges*, Georgia Institute of Technology retreat for recently tenured faculty, Serenbe, Georgia (September 2015)

Review panelist, *University of Pennsylvania Laboratory for Research on the Structure of Matter*, Philadelphia, Pennsylvania (April 2015)

Guest speaker, Stamps Scholars National Convention, *What Physicists Do Behind Closed Doors: The Art of Estimation*, Georgia Institute of Technology, Atlanta (April 2015)

Panelist, *Career, Research, Innovation and Development Conference*, Georgia Institute of Technology, Atlanta (March 2015)

Awards ceremony speaker, *Atlanta Public Schools' Annual District Science and Engineering Fair*, Georgia (February 2015)

Trustee, Aspen Center for Physics, Aspen, Colorado (2014–2018)

Review panelist, Argonne National Laboratory, Illinois (May 2014)

Review panelist, Department of Physics, University of Oregon, Eugene (November 2013)

Faculty exemplar and mentor, *Celebrating Tenure: Enabling Meaningful, Creative Challenges*, Georgia Institute of Technology retreat for recently tenured faculty, Stone Mountain, Georgia (October 2013)

Advances in soft matter science enabled by modern techniques in theoretical physics, Five invited lectures at the Institute of Natural Sciences, Shanghai Jiao Tong University, China (July 2013)

Quantum Materials at the Nanoscale, University of Illinois Frederick Seitz Materials Research Laboratory, External advisory board review panelist, Chicago, Illinois (February 2013)

First Annual Society of Physics Students Induction Ceremony, Ceremony speaker, University of Florida, Gainesville (October 2012)

Faculty mentor and summary speaker, *Celebrating Tenure at Georgia Tech*, retreat for recently tenured faculty, Lake Lanier, Georgia (September 2012)

Getting Off to a Good Start: Words from the Wise(r), New Faculty Orientation, Georgia Institute of Technology, Atlanta (August 2012)

Recent Progresses on Coulomb Many-body Systems, Interdisciplinary international workshop, Scientific advisory committee, Shanghai Jiao Tong University, China (June 2012)

New Directions in Ultracold Atomic Systems, Conference session leader, Aspen Center for Physics, Aspen, Colorado (January 2012)

Faculty mentor, *Enabling Meaningful, Creative Challenges*, Georgia Institute of Technology retreat for recently tenured faculty, Glen Ella, Georgia (September 2011)

Physics of Polydomain Liquid Crystalline Elastomers, Workshop co-organizer, Shanghai Jiao Tong University, China

(June 2011)

Faculty Leadership Roundtable, Georgia Institute of Technology retreat workshop and dialogue on leadership, Young Harris, Georgia (April 2011)

Quantum Many-Body Physics in One Dimension, Workshop co-organizer, Aspen Center for Physics, Aspen, Colorado (July–August 2010)

Co-organizer, Universities of Illinois and Chicago Joint Annual Condensed Matter Theory Symposium (May 2010)

Review Panelist, Associateship Programs, National Research Council, Washington, D.C. (March 2010)

Chair, Fellowships Selection Committee, American Physical Society, Division of Condensed Matter Physics (March 2010)

Aspen Science Center *Physics is for Kids* lecturer, *Baseball Bat Shaped Molecules and How to Make a Fortune with Them*, Aspen, Colorado (July 2009)

Treasurer, Aspen Center for Physics, Aspen, Colorado (2009–2013)

Review panelist, Lawrence Berkeley National Laboratory (January 2009), California

Lecturer, Osher Lifelong Learning Institute on *Matter, Energy and the Universe*, Urbana, Illinois (October 2008)

Lecturer, First Annual Summer School on *Soft Solids and Complex Fluids*, University of Massachusetts–Amherst (June 2008)

Superconductivity and Superfluidity in Finite Systems, Workshop co-organizer, University of Wisconsin–Madison (May 2008)

Member and Chair, American Physical Society Lars Onsager Prize Selection Committee (2007–2009)

BCS at 50, Conference co-organizer, Urbana, Illinois (October 2007)

Elected Member-at-Large, Division of Condensed Matter Physics, American Physical Society (2007–2010)

Elected General Member, Aspen Center for Physics, Aspen, Colorado (2006–present)

College Member, Engineering and Physical Sciences Research Council, U.K. (2006–2014)

World Year in Physics, Colloquium series co-organizer, University of Illinois at Urbana-Champaign (2005–2006)

Dynamics, Structure and Correlations in Glasses, Workshop co-organizer, Aspen Center for Physics, Aspen, Colorado (June–July 2005)

Early Years of Condensed Matter Physics at Illinois, Conference organizer, University of Illinois at Urbana-Champaign (October 2004)

Professeur Invité, Laboratoire de Physique Théorique et Modèles Statistiques, Université Paris–Sud, Orsay, France (June 2004)

Glassy States of Matter and Nonequilibrium Quantum Dynamics, Program co-organizer, Kavli Institute for Theoretical Physics, University of California–Santa Barbara (April–July 2003)

Midwest Solid State Conference, Conference co-organizer, University of Illinois at Urbana-Champaign (October 2002)

National Science Foundation proposal review panelist, Arlington, Virginia (2002 and 2006)

Visiting Professor, Department of Physics, University of Colorado at Boulder (January–June 2002)

Cluster leader, *Quantum Materials at the Nanoscale*, Department of Energy Program, Frederick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign (2002–2010)

Visiting Professor, Rudolf Peierls Department of Theoretical Physics, University of Oxford, U.K. (July 2000)

Lecturer, Twelfth Chris Engelbrecht Summer School on Theoretical Physics, Stellenbosch, South Africa (Winter 1999)

Lecturer, Summer School on *The Biophysics of Cellular Machinery*, Simon Fraser University, Canada (June 1998)

Director, *Saturday Physics Honors Program*, a community outreach lecture series, Urbana, Illinois (1995–1997)

Visiting Professor, Institut für Theoretische Physik, Universität Göttingen, Germany (Spring 1994)

Research Interests: *Statistical and soft-matter physics*: random solid forming media; macromolecular networks and gels; crystalline liquids; active matter, biophysical and colloidal systems. *Quantum nanoscience*: superconducting nanostructures and nanodevices; graphene; mesoscopic systems and geometric phases; Andreev billiards and chaos. *Quantum fluids and solids*: superfluidity and unconventional superconductivity; collective phenomena in ultracold atomic gases; optimal design of quantum materials; and measurement, entanglement, and control in quantum systems. Law and economics.

Prizes, Awards and Honors

Infinity Award (2016)
presented by the Georgia Tech Graduate Student Government Association

Elected Fellow of the American Association for the Advancement of Science (2012)
for distinguished contributions to theoretical condensed-matter physics, especially in the areas of nanosuperconductivity and mesoscopic physics, liquid crystals, quantum entanglement, and vulcanization

Elected Fellow of the Institute of Physics (U.K., 2008)
for personal contributions to the advancement of physics as a discipline and a profession.

University of Illinois Arnold T. Nordsieck Award for Excellence in Teaching (2005)
for exemplary classroom teaching, superb graduate mentoring, and for leadership in advancing the graduate curriculum.

Elected Fellow of the American Physical Society (2001)
for fundamental contributions to the theory of disordered solids and to the elucidation of the role of geometric phases in mesoscopic systems.

University Scholar, University of Illinois at Urbana-Champaign (1996-98).

Arnold O. Beckman Associate, Center for Advanced Study,
University of Illinois at Urbana-Champaign (Spring 1996).

Junior Xerox Award for Faculty Research (1992).

National Science Foundation Presidential Young Investigator Award (1991-96).

University of Illinois at Urbana-Champaign List of Teachers Rated Excellent by their Class
for Spring 1988, 1989, 1992, 1993, 1997, 2000, 2001, 2003, 2005, 2006, 2007, 2010 and Fall 1988, 1989, 1992, 1993, 1994, 1995, 1997, 1998, 1999, 2002, 2003, 2004, 2005, 2006, 2008, 2010

Arnold O. Beckman Award, The Research Board,
awarded to research projects of special distinction, promise or resource value,
University of Illinois at Urbana-Champaign (February 1988).

Scholar, Gonville and Caius College, Cambridge University (1979-81).

Research Advising (1987–present): 20 former and 2 current doctoral students; 16 former postdoctoral research associates.

University Lecture Courses Taught (1987–present): Graduate Quantum Mechanics I. Graduate Quantum Mechanics II. Graduate Solid State Physics I. Graduate Mathematical Methods of Physics I. Graduate Mathematical Methods of Physics II. Graduate Classical Mechanics. Graduate Classical Electrodynamics. Intermediate Classical Mechanics. Introductory Physics: Light, Electricity and Magnetism.

Affiliations

Member, American Physical Society

Member, Institute of Physics

Member, American Association for the Advancement of Science

PUBLICATIONS of PAUL M. GOLDBART (as of May 2025)

Journal articles etc.

Manuscripts in preparation and work in progress on: various aspects of measurement-induced phase transitions, transitionless quantum driving and the Schwinger pair creation mechanism, the renormalization-group theory of random solidification, and a continuum picture of allosteric regulation.

[164] Paul M. Goldbart.
Statistical field theory of equilibrium amorphous solids and the intrinsic heterogeneity distributions that characterize them. Invited chapter, accepted for publication in *Annual Reviews of Condensed Matter Physics* (2026); arxiv:2505.14954 [29 pages].

[163] Rafael Hipolito and Paul M. Goldbart.
Towards perfect quantum insulation.
Submitted to *Physical Review Letters* (2025); arXiv:2501.14977 [5 pages].

[162] Boli Zhou, Ziqi Zhou, Paul M. Goldbart.
Universal mesoscale heterogeneity and its spatial correlations in equilibrium amorphous solids.
Journal of Physics A: Mathematical and Theoretical **58**, 215002 (2025) [21 pages]

[161] Boli Zhou, Rafael Hipolito, Paul M. Goldbart.
Scale-dependent elasticity as a probe of universal heterogeneity in equilibrium amorphous solids.
Journal of Statistical Physics **192**, 70 (2025) [16 pages].

[160] Paul M. Goldbart.
To David Sherrington, Editor-in-Chief, Advances in Physics.
Advances in Physics (2022) https://doi.org/10.1080/00018732.2022.2026631 [2 pages].

[159] Michael S. Dimitriyev, Ya-Wen Chang, Paul M. Goldbart, Alberto Fernández-Nieves.
Swelling thermodynamics and phase transitions of polymer gels.
Nano Futures **3** (2019) 042001 [43 pages].

[158] Paul M. Goldbart, Randall G. Kamien.
Tying it all together.
Physics Today 72, 2, 46 (February 2019) [2 pages].

[157] Ya-Wen Chang, Michael S. Dimitriyev, Anton Souslov, Nikolov N. Svetoslav, Samantha M. Marquez, Alexander Alexeev, Paul M. Goldbart, Alberto Fernandez-Nieves.
Extreme thermodynamics with polymer gel tori: harnessing thermodynamic instabilities to induce large-scale deformations.
Physical Review E **98**, 020501(R) (2018) [5 pages].

[156] José M. Romero-Enrique, Alessio Squarcini, Andrew O. Parry, Paul M. Goldbart.
Curvature corrections to the nonlocal interfacial model for short-ranged forces.
Physical Review E **97**, 062804 (2018) [28 pages].

[155] Perry W. Ellis, Shengnan Huang, Susannah Klaneček, Jayalakshmi Vallamkondu, Edward Dannemiller, Mark Vernon, Ya-wen Chang, Paul M. Goldbart, Alberto Fernandez-Nieves.
Defect transitions in nematics liquid-crystal capillary bridges.
Physical Review E **97**, 040701(R) (2018) [5 pages].

[154] Benjamin Loewe, Anton Souslov, Paul M. Goldbart.
Flocking from a quantum analogy: spin-orbit coupling in an active fluid.
New Journal of Physics **20** 013020 (2018) [16 pages].

[153] Rafael Hipolito, Paul M. Goldbart.
Control of noisy quantum systems: Field-theory approach to error mitigation.
Physical Review A **93**, 042319 (2016) [24 pages].

[152] Anton Souslov, Benjamin Loewe, Paul M. Goldbart.
Emergent tilt order in Dirac polymer liquids.
Physical Review E **92**, 030601(R) (2015) [5 pages].

[151] Anton Souslov, Jennifer E. Curtis, Paul M. Goldbart.
Beads on a string: structure of bound aggregates of globular particles and long polymer chains.
Soft Matter A **11**, 8092-8099 (2015) [8 pages].

[150] M. Pelaez-Fernandez, Anton Souslov, L.A. Lyon, P.M. Goldbart, A. Fernandez-Nieves.
Impact of single-particle compressibility on the fluid-solid phase transition for ionic microgel suspensions.
Physical Review Letters **114**, 098303 (2015) [5 pages].

[149] Xiangjun Xing, Bing-Sui Lu, Fangfu Ye, Paul M. Goldbart.
Generalized Deam-Edwards approach to the statistical mechanics of randomly crosslinked systems.
New Journal of Physics – Focus Issue on Frontiers of Disorder Physics **15**, 085017 (2013) [25 pages].

[148] Bing-Sui Lu, Fangfu Ye, Xiangjun Xing, Paul M. Goldbart.
Statistical physics of isotropic-genesis nematic elastomers I: Structure and correlations at high temperatures.
International Journal of Modern Physics B **27**, 1330012 (2013) [51 pages].

[147] D. Zeb Rocklin, Paul M. Goldbart.
Directed-polymer systems explored via their quantum analogs: General polymer interactions and their consequences.
Physical Review B **88**, 165417 (2013) [9 pages].

[146] Anton Souslov, D. Zeb Rocklin and Paul M. Goldbart.
Organization of strongly interacting directed polymer liquids in the presence of stringent constraints.
Physical Review Letters **111**, 096401 (2013) [5 pages].

[145] Serena Eley, Sarang Gopalakrishnan, Paul M. Goldbart, Nadya Mason.
Dependence of global superconductivity on inter-island coupling in arrays of long SNS junctions.
Journal of Physics: Condensed Matter **25**, 445701 (2013) [5 pages].

[144] F. Bariani, Paul M. Goldbart, T. A. B. Kennedy.
Dephasing dynamics of Rydberg atoms.
Physical Review A **86**, 041802(R) (2012) [4 pages].

[143] D. Z. Rocklin, Shina Tan, Paul M. Goldbart.
Directed polymer systems explored via their quantum analogs: Topological constraints and their consequences.
Physical Review B **86**, 165421 (2012) [16 pages].

[142] Chang-Yu Hou, Kirill Shtengel, Gil Refael, Paul M. Goldbart.
Ettingshausen effect due to Majorana modes.
New Journal of Physics – Focus Issue on Topological Quantum Computation **14**, 105005 (2012) [17 pages].

[141] Bing-Sui Lu, Fangfu Ye, Xiangjun Xing, Paul M. Goldbart.
Phenomenological theory of isotropic-genesis nematic elastomers.
Physical Review Letters **108**, 257803 (2012) [5 pages].

[140] Sarang Gopalakrishnan, Benjamin L. Lev, Paul M. Goldbart.
Exploring models of associative memory via cavity quantum electrodynamics.
Philosophical Magazine **92**, 353-361 (2012), published in a special issue of *Philosophical Magazine* celebrating the 70th birthday of David Sherrington.

[139] Serena Eley, Sarang Gopalakrishnan, Paul M. Goldbart, Nadya Mason.
Approaching zero-temperature metallic states in mesoscopic superconductor-normal-superconductor arrays.
Nature Physics **8**, 59-62 (2012); published online 4 December 2011; see also *Nature Physics*—News and Views (vol. 8, pp. 8-9) by James F. Annett entitled *Metals in flatland*.

[138] James C. T. Lee, Shi Yuan, Siddhartha Lal, Young Il Joe, Yu Gan, Serban Smadici, Ken Finkelstein, Yejun Feng,

Andrivo Rusydi, Paul M. Goldbart, S. Lance Cooper, Peter Abbamonte.
Two-step stabilization of orbital order and the dynamical frustration of spin in the model charge-transfer insulator $KCuF_3$.
Nature Physics **8**, 63-66 (2012); published online 16 October 2011.

[137] Sarang Gopalakrishnan, Austen Lamacraft, Paul M. Goldbart.
Universal phase structure of dilute Bose gases with Rashba spin-orbit coupling.
Physical Review A **84**, 061604(R) (2011) [5 pages].

[136] Sarang Gopalakrishnan, Benjamin L. Lev, Paul M. Goldbart.
Frustration and glassiness in spin models with cavity-mediated interactions.
Physical Review Letters **107**, 277201 (2011) [5 pages].

[135] Matthew W. Brenner, Sarang Gopalakrishnan, Jaseung Ku, Timothy J. McArdle, James N. Eckstein, Nayana Shah, Paul M. Goldbart, Alexey Bezryadin.
Cratered Lorentzian response of driven microwave superconducting nanowire-bridged resonators: oscillatory and magnetic-field induced stochastic states.
Physical Review B **83**, 184503 (2011) [18 pages].

[134] David G. Ferguson, Paul M. Goldbart.
Penetration of nonintegral magnetic flux through domain-wall bends in time-reversal symmetry broken superconductors.
Physical Review B **84**, 014523 (2011) [18 pages].

[133] David Pekker, Gil Refael, Paul M. Goldbart.
Weber blockade theory of magnetoresistance oscillations in superconducting strips.
Physics Review Letters **107**, 017002 (2011) [4 pages].

[132] Tzu-Chieh Wei, Smitha Vishveshwara, and Paul M. Goldbart.
Global geometric entanglement in transverse-field XY spin chains: finite and infinite systems.
Quantum Information and Computation **11**, 03260-354 (2011).

[131] Scott Scharfenberg, D. Zeb Rocklin, Cesar Chialvo, Richard Weaver, Paul M. Goldbart, Nadya Mason.
Probing the mechanical properties of graphene using a corrugated elastic substrate.
Applied Physics Letters **98**, 091908 (2011) [3 pages].

[130] Travis Dirks, Taylor L. Hughes, Siddhartha Lal, Bruno Uchoa, Yung-Fu Chen, Cesar Chialvo, Paul M. Goldbart, Nadya Mason.
Transport through Andreev bound states in a graphene quantum dot.
Nature Physics **7**, 386-390 (2011).

[129] J. Jang, D.G. Ferguson, V. Vakaryuk, R. Budakian, S. B. Chung, P.M. Goldbart, Y. Maeno.
Observation of half-height magnetization steps in Sr_2RuO_4.
Science **331**, 186-188 (2011).

[128] Sarang Gopalakrishnan, Benjamin L. Lev, Paul M. Goldbart.
Atom-light crystallization of BECs in multimode cavities: Nonequilibrium classical and quantum phase transitions, emergent lattices, supersolidity and frustration.
Physical Review A **82** 043612 (2010) [29 pages]; see also *Physics* **3**, 88 (2010) [3 pages] by Jonathan Keeling, Joe Bhaseen, Ben Simons, entitled *Viewpoint: Liquid-crystalline phases of ultracold atoms*.

[127] Priyanka Mohan, Paul M. Goldbart, Rajesh Narayanan, John Toner, Thomas Vojta.
An anomalously elastic, intermediate phase in randomly layered superfluids, superconductors, and planar magnets.
Physical Review Letters **105**, 085301 (2010) [4 pages].

[126] Siddhartha Lal, Sarang Gopalakrishnan, Paul M. Goldbart.
Approaching multichannel Kondo physics using correlated bosons: Quantum phases and how to realize them.
Physical Review B **81**, 245314 (2010) [8 pages]; reprinted in Virtual Journal of Nanoscale Science and Technology (June 28, 2010), and in Virtual Journal of Atomic Quantum Fluids (July 2010).

[125] Alexey Bezryadin, Paul M. Goldbart.
Superconducting nanowires fabricated using DNA and nanotubes as molecular templates.
Advanced Materials **22**, 1111-1121 (2010).

[124] Tzu-Chieh Wei, Paul M. Goldbart.
Critical velocity of a clean one-dimensional superconductor.
Physical Review **80**, 134507 (2009) [10 pages].

[123] Paul M. Goldbart.
Heterogeneous solids and the micro/macro connection: Structure and elasticity in architecturally complex media as emergent collective phenomena.
Conference paper prepared in connection with a keynote address at the International Congress on Thermal Stresses (Urbana, Illinois, June 2009).
Journal of Thermal Stresses **33**, 1-8 (2010).

[122] Sarang Gopalakrishnan, Benjamin L. Lev, Paul M. Goldbart.
Emergent crystallinity and frustration with Bose-Einstein condensates in multimode cavities.
Nature Physics **5**, 845-850 (2009); see also *Nature Physics*—News and Views (vol. 5, pp. 781-782) by Helmut Ritsch entitled *Crystals of atoms and light*.

[121] David Pekker, Nayana Shah, Mitrabhanu Sahu, Alexey Bezryadin, Paul M. Goldbart. *Stochastic dynamics of phase-slip trains and superconductive-resistive switching in current-biased nanowires*.
Physical Review B **80**, 214525 (2009) [17 pages]; reprinted in Virtual Journal of Applications of Superconductivity (January 1, 2010).

[120] Xiaoming Mao, Paul M. Goldbart, Xiangjun Xin, Annette Zippelius.
Soft random solids and their heterogeneous elasticity.
Physical Review E **80**, 031140 (2009) [39 pages].

[119] Michael Stone, Paul M. Goldbart.
Mathematical Methods for Physics – A Guided Tour for Graduate Students
Cambridge University Press (2009) [806 pages].

[118] Mitrabhanu Sahu, Myung-Ho Bae, Andrey Rogachev, David Pekker, Nayana Shah, Tzu-Chieh Wei, Paul M. Goldbart, Alexey Bezryadin.
Individual topological tunnelling events of a quantum field probed via their macroscopic consequences.
Nature Physics **5**, 503-508 (2009).

[117] Paul M. Goldbart and Florin Bora.
Quantized vortices and superflow in arbitrary dimensions: Structure, energetics and dynamics.
Journal of Physics A: Mathematical and Theoretical **422** (2009), 185001 [30 pages].

[116] Paul M. Goldbart.
David Sherrington as a mentor of young scientists.
Talk delivered at *Viewing the World Through Spin Glasses*, a conference in honour of David Sherrington (Oxford, August 31-September 1, 2007).
Journal of Physics A: Mathematical and Theoretical (special issue) **41** (2008) 1-3, Ton Coolen, Hidetoshi Nishimori, Nicolas Sourlas, Michael Wong (guest editors).

[115] Tzu-Chieh Wei, Paul M. Goldbart.
Emergence of h/e-period oscillations in the critical temperature of small superconducting rings threaded by magnetic flux.
Physical Review B **77**, 224512 (2008) [16 pages].

[114] Nayana Shah, David Pekker, Paul M. Goldbart
Inherent stochasticity of superconductive-resistive switching in nanowires.
Physical Review Letters **101**, 207001 (2008) [4 pages]; reprinted in Virtual Journal of Applications of Superconductivity (November 15, 2008), and in Virtual Journal of Nanoscale Science and Technology (November 24, 2008).

[113] Xiangjun Xing, Stephan Pfahl, Swagatam Mukhopadhyay, Paul M. Goldbart, Annette Zippelius.
Nematic elastomers: From a microscopic model to macroscopic elasticity theory.
Physical Review E **77**, 051802 (2008) [10 pages].

[112] David Pekker, Roman Barankov, Paul M. Goldbart.
Phase-slip avalanches in the superflow of helium-four through arrays of nanosize apertures.
Physical Review Letters **98**, 175301 (2007) [4 pages]; reprinted in Virtual Journal of Nanoscale Science and Technology (May 7, 2007).

[111] Stephan Ulrich, Xiaoming Mao, Paul M. Goldbart, Annette Zippelius.
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