

## Subir Sachdev Curriculum Vitae

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Citizen of U.S.A.; Overseas Citizen of India

### Employment

- Herchel Smith Professor of Physics at Harvard University, starting July 1, 2015
- Professor of Physics at Harvard University, July 1, 2005 to June 30, 2015.
- Dr. Homi Bhabha Chair Professorship, Tata Institute of Fundamental Research, July 1, 2016 to June 30, 2019.
- **Cenovus Energy James Clerk Maxwell Chair in Theoretical Physics (Visiting)** at the Perimeter Institute for Theoretical Physics, starting Feb 1, 2014.
- Professor of Physics and Applied Physics at Yale University, July 1, 1995 to June 30, 2005.
- Associate Professor (tenured) of Physics and Applied Physics at Yale University, July 1, 1992 to June 30, 1995.
- Associate Professor (term) of Physics and Applied Physics at Yale University, July 1, 1989 to June 30, 1992
- Assistant Professor of Physics and Applied Physics at Yale University, July 1, 1987 to June 30, 1989
- Postdoctoral Member of Technical Staff at AT&T Bell Laboratories, Murray Hill, NJ from September 1, 1985 to August 31, 1987.

### Degrees Received

- Freshman year at the Indian Institute of Technology, Delhi, 1978-79
- S.B. (Bachelor of Science) in Physics from the Massachusetts Institute of Technology, February 1982.
- A.M. (Master of Arts) in Physics from Harvard University, June 1984.
- Ph.D. in Theoretical Physics from Harvard University, November 1985. Thesis title: Frustration and Order in Rapidly Cooled Metals.
- M.A. (honorary) from Yale University, 1995.

## Significant Research Accomplishments

See the description on the Wikipedia page: [Subir Sachdev](#).

## Honors

- **Star Family Prize for Excellence in Advising**, Certificate of Distinction, Harvard University, 2016.
- **Dirac Medal** for the Advancement of Theoretical Physics, the Australian Institute of Physics, the University of New South Wales, and the Royal Society of New South Wales, 2015.  
*Citation:* The Dirac Medal was awarded to Professor Sachdev in recognition of his many seminal contributions to the theory of strongly interacting condensed matter systems: quantum phase transitions, including the idea of critical deconfinement and the breakdown of the conventional symmetry based Landau-Ginsburg-Wilson paradigm; the prediction of exotic ‘spin-liquid’ and fractionalized states; and applications to the theory of high-temperature superconductivity in the cuprate materials.
- Elected to the U.S. National Academy of Sciences, April 2014.  
*Citation:* Sachdev has made seminal advances in the theory of condensed matter systems near a quantum phase transition, which have elucidated the rich variety of static and dynamic behavior in such systems, both at finite temperatures and at  $T = 0$ . His book, *Quantum Phase Transitions*, is the basic text of the field.
- Salam Distinguished Lectures, The Abdus Salam International Center for Theoretical Physics, Trieste, Italy, January 27-30, 2014.
- Lorentz Chair, Instituut-Lorentz, 2012
- Distinguished Visiting Research Chair at the Perimeter Institute for Theoretical Physics, 2009 onwards
- Highly ranked in Diffusion of scientific credits and the ranking of scientists, F. Radicchi, S. Fortunato, B. Markines, and A. Vespignani, *Physical Review E* **80**, 056103 (2009).
- APS Outstanding Referee, 2009.
- John Simon Guggenheim Memorial Foundation fellow, 2003.
- Fellow of the American Physical Society, 2001.  
*Citation:* For his contributions to the theory of quantum phase transitions and its application to correlated electron materials.
- Creativity Award from the National Science Foundation, May 1998.
- Alfred P. Sloan Foundation Fellow, February 1989.
- Presidential Young Investigator Award, National Science Foundation, July 1988 - July 1993.

- LeRoy Apker Award, American Physical Society, January 1983.
- Honorable Mention in the William Lowell Putnam Mathematical competition, 1980.
- Second (all India) in the Joint Entrance Examination to the Indian Institutes of Technology, 1978.

### Named and plenary lectures

- Dirac Lecture, University of New South Wales, Australia, September 1, 2015.
- Salam Distinguished Lectures, The Abdus Salam International Center for Theoretical Physics, Trieste, Italy, January 27-30, 2014.
- Institute Lecture, Indian Institute of Technology, Kanpur, January 21, 2014.
- Arnold Sommerfeld Lectures, University of Munich, January 31 - February 3, 2012.
- HRI-Girdharilal Mehta Lecture, Harish-Chandra Research Institute, Allahabad, January 13, 2012.
- Rapporteur at the 25th Solvay Conference on Physics - The Theory of the Quantum World, Brussels, October 19-22, 2011.
- Plenary talk at the International Conference on Strong Correlated Electron Systems, August 30, 2011.
- Marc Kac Memorial Lectures, Los Alamos National Laboratory, May 3-5, 2011.
- Moshe Flato Lectures, Ben Gurion University, Israel, March 10, 2011.
- Subramanyan Chandrasekhar Lectures, International Center for Theoretical Sciences, Bangalore, Dec 6-8, 2010
- Plenary talk at the 24th International Conference on Statistical Physics, Cairns, Australia, July 2010.
- Niels Bohr Lecture, Niels Bohr Institute, May 5, 2010
- Colloquium Pierre et Marie Curie, University of Paris, May 3, 2010
- De Sitter Lecture Series in Theoretical Physics 2009, University of Groningen, November 2009
- Solvay colloquium, International Solvay Institutes, Brussels, October 2009
- Plenary talk at the 25th International Conference on Low Temperature Physics, Amsterdam, August 2008
- Rapporteur at the 24th Solvay Conference on Physics, Quantum Theory of Condensed Matter, Brussels, Oct 11-13, 2008
- Distinguished Lecture Series, Technion, Israel, March 2007.

- Plenary talk at the International Conference on Strongly Correlated Electronic Systems, Karlsruhe, Germany, July 2004
- Matsen Lecture at the University of Texas, Austin, October 2002.
- Ehrenfrest Lecturer at the Lorentz Institute in Leiden, Holland, May 1998.
- Plenary talk at the 19th International Conference on Statistical Physics, Xiamen, August 1995.

## Ph. D. Students

- **Jinwu Ye**, Associate Professor, Department of Physics and Astronomy, Mississippi State University  
Thesis: [Some Examples of Quantum Phase Transitions](#)
- **T. Senthil**, Professor, Department of Physics, Massachusetts Institute of Technology.  
Thesis: [Quantum Phase Transitions in Random Spin Systems](#)
- **Kedar Damle**, Department of Theoretical Physics, Tata Institute of Fundamental Research, Mumbai, India.  
Thesis: [Turning on the Heat: Non-zero Temperature Dynamical Properties of Quantum Many-body Systems](#)
- **Chiranjeeb Buragohain**, Microsoft.  
Thesis: [Dynamical Properties of Quantum Antiferromagnets in One and Two Dimensions](#)
- **Ying Zhang**, Finisterre Capital, London.  
Thesis: [Competing Orders in the Cuprate Superconductors](#)
- **Anatoli Polkovnikov**, Associate Professor, Boston University.  
Thesis: [Manifestation of Quantum Fluctuations in Strongly Correlated Systems](#)
- **Stephen Powell**, Assistant Professor, University of Nottingham  
Thesis: [Quantum phases and transitions of many-body systems realized using cold atomic gases](#)
- **Adrian Del Maestro**, Assistant Professor, University of Vermont  
Thesis: [The superconductor-metal quantum phase transition in ultra-narrow wires](#)
- **Emily Dunkel** (with **David Coker**, Boston University).  
Thesis: [Quantum Phenomena in Condensed Phase Systems](#)
- **Yang Qi**, Institute for Advanced Studies, Tsinghua University  
Thesis: [Spin and Charge Fluctuations in Strongly Correlated Systems.](#)
- **Rudro Rana Biswas**, Assistant Professor, Purdue University  
Thesis: [Explorations in Dirac Fermions and Spin Liquids.](#)

- **Eun Gook Moon**, Assistant Professor, Korea Advanced Institute of Science and Technology  
Thesis: **Superfluidity in Strongly Correlated Systems**
- **Max Metlitski**, Faculty, Perimeter Institute  
Thesis: **Aspects of Critical Behavior of Two Dimensional Electron Systems**
- **Yejin Huh**, University of Toronto  
Thesis: **Quantum Phase Transitions in d-wave Superconductors and Antiferromagnetic Kagome Lattices**
- **Susanne Pielawa**, Yowza Ltd., Israel  
Thesis: **Metastable Phases and Dynamics of Low-Dimensional Strongly-Correlated Atomic Quantum Gases**
- **Debanjan Chowdhury**, Harvard University
- **Junhyun Lee**, Harvard University
- **Andrew Lucas**, Harvard University
- **Shubhayu Chatterjee**, Harvard University

## Postdocs

- **Pierre Le Doussal**, Permanent Member, Laboratoire de Physique Théorique de l' Ecole Normale Supérieure, Paris, France.
- **Rodolfo Jalabert**, Professeur à l'Université Louis Pasteur, Institut de Physique et Chimie des Matériaux de Strasbourg, France.
- **Andrey Chubukov**, Professor of Physics, University of Minnesota, Minneapolis.
- **Satya Majumdar**, Permanent Member, Laboratoire de Physique Théorique et Modèles Statistiques, University of Paris XI, France.
- **Matthias Vojta**, Professor, Technische Universität, Dresden, Germany
- **Oleg Starykh**, Professor, Department of Physics, University of Utah.
- **Marcus Kollar**, Theoretische Physik III, Institut für Physik, Universität Augsburg, Germany.
- **Kwon Park**, Professor, Korea Institute for Advanced Study, Seoul.
- **Takao Morinari**, Kyoto University, Kyoto, Japan.
- **Adam Durst**, Associate Professor, Hofstra University.
- **Krishnendu Sengupta**, Professor, Indian Association for the Cultivation of Science, Kolkata, India.

- [Lorenz Bartosch](#), Assistant Professor, University of Frankfurt.
- [Predrag Nikolic](#), Assistant Professor, George Mason University
- [Ribhu Kaul](#), Associate Professor, University of Kentucky
- [Markus Müller](#), Permanent Staff Member, International Center of Theoretical Physics, Trieste, Italy.
- [Lars Fritz](#), Assistant Professor, University of Utrecht
- [Michael Levin](#), Assistant Professor, University of Chicago
- [Cenke Xu](#), Associate Professor, University of California, Santa Barbara
- [Sean Hartnoll](#), Assistant Professor, Stanford University
- [Erez Berg](#), Faculty of Physics, Weizmann Institute of Science, Israel
- [Liang Fu](#), Assistant Professor, Massachusetts Institute of Technology
- [Liza Huijse](#), Postdoctoral fellow, Stanford University
- [Chris Laumann](#), Assistant Professor, University of Washington
- [Matthias Punk](#), Faculty, LMU Munich
- [Philipp Strack](#), Group leader, University of Cologne
- [Brian Swingle](#), Postdoctoral fellow, Stanford University
- [Dmitry Abanin](#), Faculty, Perimeter Institute, Waterloo, Canada.
- [Ling-Yan \(Janet\) Hung](#), Professor of Physics, Fudan University, Shanghai
- [Sarang Gopalakrishnan](#), Sherman Fairchild Fellow, Caltech
- [Andrea Allais](#), Harvard University
- [Paul Chesler](#), Harvard University
- [Andreas Eberlein](#), Harvard University
- [William Witczak-Krempa](#), Harvard University
- [Richard Davison](#), Harvard University
- [Chong Wang](#), Harvard University

## Research appointments

- Research at Harvard and Yale has been continually supported by grants from the Division of Materials Research of the National Science Foundation since 1988.
- Visiting professor at Harvard University, January-June 2001.
- Visiting professor at the University of Fribourg, Switzerland, June 2000.
- Visiting professor at the Institut Henri Poincare, Paris, July 1999.
- Visiting professor at Université Joseph Fourier, Grenoble, France, Nov-Dec, 1997.
- Visiting professor at Université de Paris VII, May-July 1993.
- Visiting Scientist at AT&T Bell Laboratories, 1987, 1988, 1989.
- Visiting Scientist at IBM Thomas J. Watson Research Center, August 1988.
- Ph.D. dissertation research under Prof. D.R. Nelson at Harvard University involving the statistical mechanics of liquids and glasses.
- Undergraduate thesis research under Prof. D. Kleppner at M.I.T. involving theory on atom-field interactions.

## Professional

- Co-editor, Annual Reviews of Condensed Matter Physics
- Scientific Council, International Center for Theoretical Physics, Trieste.
- International Advisory Committee, Higgs Centre for Theoretical Physics, Edinburgh.
- International Advisory Board, International Center for Theoretical Sciences, TIFR, Bangalore.
- Divisional Associate Editor, Physical Review Letters.
- Advisory board, Dutch Research School of Theoretical Physics.
- Chair of steering committee and advisory board, Kavli Institute for Theoretical Physics, Santa Barbara.
- General member and admissions committee, Aspen Center for Physics.
- Review panel for Condensed Matter Science, Brookhaven National Laboratory.

## Teaching

I have taught the following courses to undergraduate and graduate students.

- Spring 2015 - Physics 143a, Quantum Mechanics I
- Fall 2014 - Physics 295b, Quantum Theory of Solids
- Spring 2014 - leave
- Fall 2013 - Physics 143b, Quantum Mechanics II
- Spring 2013 - no teaching
- Fall 2012 - Physics 295b, Quantum Theory of Solids
- Fall 2012 - Physics 143b, Quantum Mechanics II
- Spring 2012 - leave
- Fall 2011 - Physics 143b, Quantum Mechanics II
- Spring 2011 - Physics 268r, Classical and Quantum Phase Transitions
- Fall 2010 - Physics 143b, Quantum Mechanics II
- Spring 2010 - Applied Physics 295b, Quantum Theory of Solids
- Fall 2009 - leave.
- Spring 2009 - Physics 268r, Classical and Quantum Phase Transitions
- Fall 2008 - Physics 262, Statistical Thermodynamics
- Spring 2008 - Physics 15b
- Fall 2007 - Applied Physics 284, Statistical Thermodynamics
- Spring 2007 - leave
- Fall 2006 - Physics 262, Statistical Thermodynamics
- Spring 2006 - Physics 268r, Classical and Quantum Phase Transitions
- Fall 2005 - Applied Physics 284, Statistical Thermodynamics
- Spring 2005 - Physics 440b, Quantum Mechanics I
- Fall 2004 - Physics 441a, Quantum Mechanics II
- Spring 2004 - Physics 440b, Quantum Mechanics I



- Fall 2003 - Physics 628, Statistical Physics II
- Spring 2003 - Physics 441b, Quantum Mechanics II
- Fall 2002 - Physics 440a, Quantum Mechanics I
- Spring 2002 - Physics 509a, Many Body Theory
- Spring 2001 - Physics 268r (Harvard University), Theory of Many Particle Systems
- Fall 2000 - Physics 509a, Many-Body theory
- Spring 2000 - Physics 628b, Statistical Physics II
- Spring 1999 - Physics 441b, Quantum Mechanics II
- Fall 1998 - Physics 440a, Quantum Mechanics I, and a section for Physics 200a, Fundamentals of Physics I
- Spring 1998 - Physics 628, Statistical Physics II
- Spring 1997 - Physics 602b, Classical Field Theory
- Fall 1996 - Physics 509a, Many Body Theory
- Fall 1995 - Physics 509a, Many Body Theory
- Spring 1995 - Physics 608b, Quantum Mechanics II
- Spring 1994 - Physics 608b, Quantum Mechanics II
- Fall 1993 - Physics 509a, Many-Body theory, and a section for Physics 200a, Fundamentals of Physics I
- Spring 1993 - Physics 608b, Quantum Mechanics II
- Fall 1992 - Two sections for Physics 180a, Advanced General Physics
- Fall 1991 - Two sections for Physics 180a, Advanced General Physics
- Spring 1991 - Physics 512b, Statistical Mechanics, and a section for Physics 201b, Fundamentals of Physics II
- Spring 1990 - Physics 512b, Statistical Mechanics
- Fall 1989 - Physics 460a/506a, Mathematical methods for physicists
- Spring 1989 - Physics 512b, Statistical Mechanics
- Fall 1988 - Physics 460a/506a, Mathematical methods for physicists

- Spring 1988 - Physics 628, Special topics in condensed matter physics

In addition, I have presented pedagogical lectures at numerous summer schools and conferences: these are listed under “Talks”.

## Publications

### Book

- *Quantum Phase Transitions*, by Subir Sachdev, published by Cambridge University Press, Cambridge (1999); paperback in 2001; expanded second edition in 2011. For reviews see
  - Physics Today, vol **54**, number 2, page 56 (February 2001).
  - Contemporary Physics, vol **42**, number 2, page 141, March 2001.
  - Physikalische Blätter, vol **57**, number 10, page 68 (2001).
  - Journal of Statistical Physics, vol **103**, 1139 (2001).

For a listing of the papers below under subject categories, along with overviews of their contents, see the web page <http://qpt.physics.harvard.edu/publications.html>

### Publications in refereed journals

1. Atom in a Damped Cavity by S. Sachdev, Physical Review A **29**, 2627 (1983).
2. Crystalline and Fluid Order on a Random Topography by S. Sachdev and D. R. Nelson, Journal of Physics: Solid State C **17**, 5473 (1984).
3. Theory of the Structure Factor of Metallic Glasses, S. Sachdev and D. R. Nelson, Physical Review Letters **53**, 1947 (1984).
4. Universal Amplitude Ratios for two-dimensional melting on smooth and periodic substrates, S. Sachdev, Physical Review B **31**, 4476 (1985).
5. Incommensurate Icosahedral Density Waves in Rapidly Cooled Metals, D. R. Nelson and S. Sachdev, Physical Review B **32**, 689, (1985).
6. Statistical Mechanics of Pentagonal and Icosahedral Order in Dense Liquids, S. Sachdev and D. R. Nelson, Physical Review B **32**, 1480 (1985).
7. Order in Metallic Glasses and Icosahedral Crystals, S. Sachdev and D. R. Nelson, Physical Review B **32**, 4592 (1985).
8. Viscous Relaxation in Metallic Glasses, S. Sachdev, Physical Review B **33**, 6395 (1986).
9. Excited States and the metal-insulator transition in monovalent systems by R. N. Bhatt and S. Sachdev, Physical Review B **34**, 3520, (1986).
10. Electron Spin Resonance in Insulating Doped Semiconductors by S. Sachdev and R. N. Bhatt, Physical Review B **34**, 4898 (1986).

11. Electron Spin Resonance in Disordered Metals by S. Sachdev, *Physical Review B* **34**, 6049 (1986).
12. Spin Dynamics of Nearly Localized Electrons by M. A. Paalanen, S. Sachdev, R. N. Bhatt and A. E. Ruckenstein, *Physical Review Letters* **57**, 2061 (1986).
13. Spin Dynamics Across the Metal-Insulator Transition, by S. Sachdev and R. N. Bhatt, *Journal of Applied Physics* **61**, 4366 (1987).
14. Spin Dephasing in Disordered Semiconductors and Metals, by S. Sachdev, *Physical Review B* **35**, 7558 (1987).
15. Valley Fluctuations in Degenerately-doped Semiconductors by S. Sachdev, *Physical Review Letters* **58**, 2590 (1987).
16. Inelastic Scattering and Pair Breaking in Anisotropic and Isotropic Superconductors, by A. J. Millis, S. Sachdev and C. M. Varma, *Physical Review B* **37**, 4975 (1988).
17. Magnetic Properties Across the Metal-Insulator Transition, by S. Sachdev, R. N. Bhatt and M. A. Paalanen, *Journal of Applied Physics* **63**, 4285 (1988).
18. Superconductivity of Itinerant Electrons coupled to Spin Chains by S. Sachdev and R. Shankar, *Physical Review B* **38**, 826 (1988).
19. Thermodynamic Behavior near a Metal-Insulator Transition by M. A. Paalanen, J. Graebner, S. Sachdev and R. N. Bhatt, *Physical Review Letters* **61**, 597, (1988).
20. Local Moments near the Metal-Insulator Transition, by S. Sachdev. *Physical Review B* **39**, 5297 (1989).
21. Hole motion in a Quantum Neel State, by S. Sachdev, *Physical Review B* **39**, 12232 (1989).
22. Some Features of the Phase Diagram of  $SU(N)$  Antiferromagnets on a Square Lattice, by N. Read and S. Sachdev, *Nucl Phys. B* **316**, 609 (1989).
23. Valence bond and spin-Peierls ground states of low dimensional quantum antiferromagnets, by N. Read and S. Sachdev, *Physical Review Letters* **62**, 1694 (1989).
24. Effective Field Theory of Local Moment Formation in Disordered Metals, by M. Milivanovic, S. Sachdev and R.N. Bhatt, *Physical Review Letters* **63**, 82 (1989).
25. Sine-Gordon theory of the non-Néel phase of two-dimensional quantum antiferromagnets, by W. Zheng and S. Sachdev, *Physical Review B* **40**, 2704 (1989).
26. Spin-Peierls ground states of the quantum dimer model: a finite size study, by S. Sachdev, *Physical Review B* **40**, 5204 (1989).

27. Large  $N$  limit of the square lattice  $t - J$  model at  $1/4$  and other filling fractions, by S. Sachdev, Physical Review B **41**, 4502 (1990).
28. Bond-operator representation of quantum spins: Mean field theory of frustrated quantum Heisenberg antiferromagnets, by S. Sachdev and R. N. Bhatt, Physical Review B **41**, 9323 (1990).
29. Action of hedgehog-instantons in the disordered phase of the  $2 + 1$  dimensional  $CP^{N-1}$  model, by G. Murthy and S. Sachdev, Nuclear Physics B **344**, 557 (1990).
30. Conservation laws, anisotropy and “self-organized criticality” in noisy non-equilibrium systems, by G. Grinstein, D. H. Lee, and S. Sachdev, Physical Review Letters **64**, 1927 (1990).
31. Spin-Peierls, valence bond solid, and Néel ground states of low dimensional quantum antiferromagnets, N. Read and S. Sachdev, Physical Review B **42**, 4568 (1990).
32. Effective lattice models for two dimensional quantum antiferromagnets, by S. Sachdev and R. Jalabert, Modern Physics Letters B **4**, 1043 (1990).
33. Large  $N$  expansion for frustrated quantum antiferromagnets, by N. Read and S. Sachdev, Physical Review Letters, **66**, 1773 (1991).
34. Large  $N$  expansion for frustrated and doped quantum antiferromagnets, by S. Sachdev and N. Read, International Journal of Modern Physics B, **5**, 219 (1991), <http://arxiv.org/abs/cond-mat/0402109>.
35. Pairing in two dimensions: a systematic approach, by S. Sachdev and Z. Wang, Physical Review B **43**, 10229 (1991).
36. Spontaneous alignment of frustrated bonds in an anisotropic, three dimensional Ising model, by R. Jalabert and S. Sachdev, Physical Review B **44**, 686 (1991).
37. Stable  $hc/e$  vortices in a gauge theory of superconductivity in strongly correlated electronic systems. by S. Sachdev, Physical Review B **45**, 389 (1992).
38. Superconducting, metallic, and insulating phases in a model of  $\text{CuO}_2$  layers, by J. Ye and S. Sachdev, Physical Review B **44**, 10173 (1991).
39. The kagomé and triangular lattice Heisenberg antiferromagnets: ordering from quantum fluctuations and quantum-disordered ground states with unconfined bosonic spinons, by S. Sachdev, Physical Review B **45**, 12377 (1992).
40. Universal quantum critical dynamics of two-dimensional quantum antiferromagnets, by S. Sachdev and J. Ye, Physical Review Letters **69**, 2411 (1992).
41. Gapless spin-fluid ground state in a random quantum Heisenberg magnet, by S. Sachdev and J. Ye, Physical Review Letters **70**, 3339 (1993)

42. A solvable spin-glass of quantum rotors, by J. Ye, S. Sachdev, and N. Read, *Physical Review Letters* **70**, 4011 (1993).
43. Universal magnetic properties of  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  at intermediate temperatures, by A. V. Chubukov and S. Sachdev, *Physical Review Letters* **71**, 169 (1993); **71**, 2680 (1993) (E).
44. Chubukov and Sachdev reply to Comment on “Universal magnetic properties of  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  at intermediate temperatures”, *Physical Review Letters* **71**, 3615 (1993).
45. Theory of two-dimensional quantum Heisenberg antiferromagnets with a nearly-critical ground-state, by A. V. Chubukov, S. Sachdev, and J. Ye, *Physical Review B* **49**, 11919 (1994).
46. Polylogarithm identities in a conformal field theory in three dimensions by S. Sachdev, *Physics Letters B* **309**, 285 (1993).
47. Universal magnetic properties of frustrated quantum antiferromagnets in two dimensions, by A. V. Chubukov, T. Senthil, and S. Sachdev, *Physical Review Letters* **72**, 2089 (1994).
48. Universal behavior of the spin-echo decay rate in  $\text{La}_2\text{CuO}_4$  by A. V. Chubukov, S. Sachdev, and A. Sokol, *Physical Review B* **49**, 9052 (1994).
49. Quantum phases of the Shraiman-Siggia model by S. Sachdev *Physical Review B* **49**, 6770 (1994).
50. Quantum phase transitions and conserved charges by S. Sachdev, *Zeitschrift für Physik B* **94**, 469 (1994).
51. Quantum phase transitions in frustrated, two-dimensional, antiferromagnets by A. V. Chubukov, S. Sachdev, and T. Senthil, *Nuclear Physics B*, **426** [FS], 601 (1994).
52. Large- $S$  expansion for quantum antiferromagnets on a triangular lattice by A. V. Chubukov, S. Sachdev, and T. Senthil, *Journal of Physics: Condensed Matter* **6**, 8891 (1994).
53. Finite temperature properties of quantum antiferromagnets in a uniform magnetic field in one and two dimensions by S. Sachdev, T. Senthil and R. Shankar, *Physical Review B* **50**, 258, (1994).
54. NMR relaxation in half-integer antiferromagnetic spin chains by S. Sachdev, *Physical Review B* **50**, 13006 (1994).
55. Crossover and scaling in a nearly antiferromagnetic Fermi liquid in two dimensions by S. Sachdev, A. V. Chubukov, and A. Sokol, *Physical Review B*, **51**, 14874 (1995).
56. Landau theory of quantum spin glasses of rotors and Ising spins by N. Read, S. Sachdev, and J. Ye, *Physical Review B*, **52**, 384 (1995).
57. Quantum-critical behavior in a two layer antiferromagnet by A. W. Sandvik, A. V. Chubukov, and S. Sachdev, *Physical Review B*, **51**, 16483 (1995).

58. Charge and spin density wave ordering transitions in strongly correlated metals by S. Sachdev and A. Georges, *Physical Review B* **52**, 9520 (1995).
59. Quantum field theory of metallic spin glasses, by S. Sachdev, N. Read, and R. Oppermann, *Physical Review B*, **52**, 10286 (1995).
60. Continuum quantum ferromagnets at finite temperature and the quantum Hall effect by N. Read and S. Sachdev, *Physical Review Letters* **75**, 3509 (1995).
61. Universal, finite temperature, crossover functions of the quantum transition in the Ising chain in a transverse field by S. Sachdev, *Nuclear Physics B*. **464**, 576 (1996).
62. Phase ordering kinetics of the Bose gas by K. Damle, S. Majumdar, and S. Sachdev, *Physical Review A*, **54**, 5037 (1996).
63. Zero temperature phase transitions in quantum Heisenberg ferromagnets by S. Sachdev and T. Senthil, *Annals of Physics* **251**, 76 (1996).
64. Multicritical crossovers near the dilute Bose gas quantum critical point by K. Damle and S. Sachdev, *Physical Review Letters* **76**, 4412 (1996).
65. Universal low temperature properties of quantum and classical ferromagnetic chains by M. Takahashi, H. Nakamura, and S. Sachdev, *Physical Review B* **54**, R744 (1996).
66. Phase transition of a Bose gas in a harmonic potential by K. Damle, T. Senthil, S.N. Majumdar, and S. Sachdev, *Europhysics Letters* **36**, 7 (1996).
67. Spin-Peierls states of quantum antiferromagnets on the  $\text{CaV}_4\text{O}_9$  lattice by S. Sachdev and N. Read, *Physical Review Letters* **77**, 4800 (1996).
68. Theory of finite temperature crossovers near quantum critical points close to, or above, their upper-critical dimension by S. Sachdev, *Physical Review B* **55**, 142 (1997).
69. Finite temperature correlations in the one-dimensional quantum Ising model by A. Leclair, F. Lesage, S. Sachdev, and H. Saleur, *Nuclear Physics B* **482**, 579 (1996).
70. Higher dimensional realizations of activated dynamic scaling at random quantum transitions by T. Senthil and S. Sachdev, *Physical Review Letters* **77**, 5292 (1996).
71. Metallic spin glasses by S. Sachdev and N. Read, *Journal of Physics: Condensed Matter* **8**, 9723 (1996).
72. Low temperature relaxational dynamics of the Ising chain in a transverse field by S. Sachdev and A. P. Young, *Physical Review Letters* **78**, 2220 (1997).

73. Low temperature spin diffusion in the one-dimensional quantum  $O(3)$  nonlinear  $\sigma$ -model by S. Sachdev and K. Damle, *Physical Review Letters* **78**, 943 (1997).
74. Scaling and Crossover Functions for the Conductance in the Directed Network Model of Edge States by I. Gruzberg, N. Read and S. Sachdev, *Physical Review B* **55**, 10593 (1997).
75. Double-layer quantum Hall antiferromagnetism at filling fraction  $\nu = 2/m$  where  $m$  is an odd integer, by S. Das Sarma, S. Sachdev and L. Zheng, *Physical Review Letters* **79**, 917 (1997).
76. Conductance and its universal fluctuations in the directed network model at the crossover to the quasi-one-dimensional regime by I.A. Gruzberg, N. Read and S. Sachdev, *Physical Review B* **56**, 13218 (1997).
77. Non-zero temperature transport near quantum critical points by K. Damle and S. Sachdev, *Physical Review B* **56**, 8714 (1997).
78. Non-zero temperature transport near fractional quantum Hall critical points by S. Sachdev, *Physical Review B* **57**, 7157 (1998).
79. Canted antiferromagnetic and spin singlet quantum Hall states in double-layer systems by L. Zheng, S. Sachdev and S. Das Sarma, *Physical Review B* **58**, 4672 (1998).
80. Spin dynamics and transport in gapped one-dimensional Heisenberg antiferromagnets at nonzero temperatures by K. Damle and S. Sachdev, *Physical Review B* **57**, 8307 (1998).
81. Coulomb interactions at quantum Hall critical points of systems in a periodic potential by J. Ye and S. Sachdev, *Physical Review Letters* **80**, 5409 (1998).
82. Universal critical temperature for Kosterlitz-Thouless transitions in bilayer quantum magnets by M. Troyer and S. Sachdev, *Physical Review Letters*, **81**, 5418 (1998).
83. Universal relaxational dynamics near two-dimensional quantum-critical points by S. Sachdev, *Physical Review B* **59**, 14054 (1999).
84. Intermediate temperature dynamics of one-dimensional Heisenberg antiferromagnets by C. Buragohain and S. Sachdev, *Physical Review B* **59**, 9285 (1999).
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53. Tensor networks - a new tool for old problems, S. Sachdev, a Viewpoint article on current research, *Physics* **2**, 90 (2009).
54. Graphene: Relativistic transport in a nearly perfect quantum liquid, M. Müller, L. Fritz, S. Sachdev, and J. Schmalian, [arXiv:0910.5680](#).
55. Quantum phase transitions of antiferromagnets and the cuprate superconductors, S. Sachdev, Lectures at the Les Houches School on Modern theories of correlated electron systems, France, May

- 11-29, 2009; published in *Modern Theories of Many-Particle Systems in Condensed Matter Physics*, D. C. Cabra, A. Honecker, and P. Pujol eds, Lecture Notes in Physics v. 843, Springer, Berlin (2012); [arXiv:1002.3823](#).
56. Condensed matter and AdS/CFT, S. Sachdev, Lectures at the 5th Aegean summer school, From gravity to thermal gauge theories: the AdS/CFT correspondence, September 21-26, 2009, [arXiv:1002.2947](#).
57. Instabilities near the onset of spin density wave order in metals, M. A. Metlitski and S. Sachdev, contribution to the special issue on “Fermiology of Cuprates”, edited by Mike Norman and Cyril Proust, *New J. Phys.* **12**, 105007 (2010); [arXiv:1007.1968](#).
58. Dilute Fermi and Bose Gases, S. Sachdev, contribution to Lecture Notes in Physics, “BCS-BEC crossover and the Unitary Fermi Gas”, edited by W. Zwerger; [arXiv:1105.1793](#)
59. Quantum Criticality, S. Sachdev and B. Keimer, *Physics Today* **64**, no. 2, 29 (2011); [arXiv:1102.4628](#).
60. Strange metals and the AdS/CFT correspondence, S. Sachdev, *Journal of Statistical Mechanics* (2010) P11022, Plenary talk at Statphys 24, Cairns, Australia, July 2010; [arXiv:1010.0682](#).
61. The landscape of the Hubbard model, S. Sachdev, TASI (Boulder, June 2010) and Chandrasekhar (Bangalore, December 2010) lectures, [arXiv:1012.0299](#).
62. What can gauge-gravity duality teach us about condensed matter physics?, S. Sachdev, *Annual Review of Condensed Matter Physics* **3**, 9 (2012); [arXiv:1108.1197](#).
63. Strange and Stringy, S. Sachdev, *Scientific American* **308**, 44 (January 2013), <http://qpt.physics.harvard.edu/c63.pdf>.
64. Antiferromagnetism in metals: from the cuprate superconductors to the heavy fermion materials, S. Sachdev, M. A. Metlitski, and M. Punk, *Proceedings of SCES 2011, Journal of Physics: Condensed Matter* **24**, 294205 (2012).
65. The quantum phases of matter, S. Sachdev, Rapporteur presentation at the 25th Solvay Conference on Physics, “The Theory of the Quantum World,” Brussels, Oct 19-22, 2011, [arXiv:1203.4565](#).
66. Entangling superconductivity and antiferromagnetism, S. Sachdev, *Science* **336**, 1510 (2012).
67. Comment on “Symmetry classification of bond order parameters in cuprates”, A. Allais, J. Bauer, and S. Sachdev, [arXiv:1407.3281](#).
68. The enigma of the pseudogap phase of the cuprate superconductors, D. Chowdhury and S. Sachdev, in *Quantum Criticality in Condensed Matter: Phenomena, Materials and Ideas in Theory and Experiment: 50th Karpacz Winter School of Theoretical Physics*, J. Jędrzejewski Editor, World Scientific (2015), [arXiv:1501.00002](#).

## Talks

For powerpoint/pdf files of all talks since 1999, see the web page <http://qpt.physics.harvard.edu/talks/talks.html>

In addition to numerous seminars at universities and institutes, departmental colloquia have been presented at Brandeis, University of British Columbia, Brown, UC Santa Cruz, Caltech, Chicago, CCNY, Columbia, University of Connecticut, Cornell, Duke, Harvard, University of Illinois at Chicago, Indiana, University of Iowa, Lawrence Berkeley Laboratory, University of Massachusetts, McMaster, University of North Carolina, Penn State, Rice, St. Andrews, Santa Barbara, Simon Fraser University, Stanford, Tennessee, Texas, Toronto, University of Virginia, Waterloo, Wesleyan, and Wisconsin.

Invited talks at conferences are listed below.

- Speaker at the Symposium on Quasi-Crystals and Metallic Glasses at the Meeting of the American Crystallographers Association, Hamilton, Ontario - June 1986.
- NATO Advanced Research Workshop on Incommensurate Materials, Boulder, Colorado - July 1986.
- Coauthor of a talk presented by M.A. Paalanen at the meeting of the American Physical Society, New York - March 1987.
- Participant of the Workshop on Glassy Dynamics and Relaxation Kinetics, July 1987 at the Institute for Theoretical Physics, Santa Barbara.
- Invited talk at the Magnetism and Magnetic Materials Conference, Chicago, Nov 1987.
- Coauthor with R.N. Bhatt of an invited talk at the International Conference on Magnetism, Paris, July 1988.
- Talk presented at the Aspen Summer Workshop on Correlated Electron Systems, July 1988
- Seven lectures on antiferromagnetism presented at a Workshop on Electronic Correlation and Disorder Effects in Metals, Puri, India, January 1989
- Invited talk presented at the APS Meeting in St. Louis, March 1989, on "Local Moment Formation in Disordered Metals".
- Invited talk presented at the Anniversary Adriatico Research Conference on the Interface between Quantum Field Theory and Condensed Matter Physics, June 20-23 1989, Trieste, Italy.
- Invited talk at the US-USSR Conference on the "Frontiers in Condensed Matter Theory", 4-8 Dec 1989, New York.
- Invited talk at the Workshop on Strongly Correlated Electron Systems, Trieste, June 1990
- Invited participant at the 'Frontiers of Science' symposium of the National Academy of Science, November 1990.

- Invited talk presented at the Aspen Winter Physics Conference on ‘Disorder, interactions, superconductivity and the metal-insulator transition’, January 1991.
- Invited talk at the ‘Workshop on Metal-Insulator Transitions in Doped Semiconductors’, Cornell University, June 1991.
- Invited talk at the Workshop on Strongly Correlated Electron Systems, Trieste, July 1991.
- Talk presented at the Aspen Summer Workshop on Quantum Magnetism, August 1991.
- Invited long-term participant at the Workshop on Quantum Phase Transitions, Institute for Theoretical Physics, Santa Barbara, February-June 1992.
- Invited talk on “Frustrated quantum Heisenberg antiferromagnets” at APS March meeting in Indianapolis, 1992.
- Invited speaker at the International Conference on Quantum Phase Transitions, July 1-6, 1992, Santa Barbara.
- Invited talk at the Gordon conference on “Localized magnetic excitations in metals”, Wolfeboro N.H., Aug 20, 1992.
- Lecturer at the summer school on “Low dimensional quantum field theories for condensed matter physicists”, Trieste, 24 Aug to 4 Sep 1992.
- Invited talk at the Gordon conference on “Condensed matter physics”, Wolfeboro N.H., June 26, 1993.
- Invited talk at the “Workshop on Electronic Properties of Disordered Systems”, Argonne, Aug 23, 1993.
- Co-author of invited talk presented by my postdoc A. Chubukov at the Aspen Winter Conference on “Superconductivity”, January 1994.
- Co-director and Lecturer at a Spring School on “Quantum Phases”, Trieste, 3 May - 10 June 1994.
- Invited talk at the 72nd Statistical Mechanics meeting at Rutgers University, December 15,16 1994.
- Invited talk on “Quantum spin glasses” at the APS March 1995 meeting in San Jose.
- Co-director of Workshop on “Quantum coherence and incoherence in strongly-correlated systems”, Trieste, July 1995.
- Invited plenary talk at the 19th IUPAP International Conference on Statistical Physics (Statphys 19), Xiamen, China, 31 July - 4 August 1995.
- Invited talk at the Symposium on “Exactly Soluble Models in Statistical Mechanics: Historical perspectives and current status”, March 30-31, 1996, Northeastern University, Boston.



- Invited talk at the International Conference on “Non-Fermi Liquid behavior in Metals”, June 17-21, 1996, Institute of Theoretical Physics, Santa Barbara, California.
- Co-director and Lecturer of Workshop on “Disorder and interactions in quantum systems and their classical analogs”, Trieste, Italy, July 1-19, 1996.
- Lecturer at the El Escorial Summer School on “Strongly Correlated Magnetic and Superconducting Systems”, July 15-19, 1996, Madrid, Spain.
- Invited talk at the International Conference on “Quantum Coherence in Strongly Correlated Fermion Systems”, July 22-26, 1996, Pisa, Italy.
- Invited talk at the workshop on the “Physics and Chemistry of Spin Gap Systems”, Hakone Japan, Nov 28 - Dec 1, 1996.
- Invited talk at the Royal Society Discussion Meeting on the “Metal-Non Metal transition in macroscopic and microscopic systems”, London, March 5-6, 1997.
- Invited participant at the Royal Society/Ciba Foundation Discussion Meeting on the “Metal-Non Metal transition in reduced dimensions”, London, March 7, 1997.
- Invited talk at on “Random quantum Heisenberg magnets” at the APS March meeting in Kansas City, 1997.
- Lecturer at the NATO Advanced Study Institute on “Dynamical Properties of unconventional magnetic systems”, Geilo, Norway, April 2-12, 1997.
- Invited speaker at the International conference on “Quantum field theory in low dimensions”, Institute for Theoretical Physics, Santa Barbara, June 2-7, 1997.
- Co-organizer of workshop on “Quantum phase transitions in random systems”, Aspen, July 7 - August 8, 1997.
- Speaker at the US-Japan workshop on “Systems with Strong Quantum Fluctuations”, Santa Cruz, December 11-13, 1997.
- Speaker at the Symposium on “Recent Trends in Modern Physics and Chemistry”, Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, March 17, 1998.
- Invited speaker at the “National Seminar on Condensed Matter Physics”, Leiden, Holland, May 15, 1998.
- Invited lectures presented at the Asia-Pacific Center for Theoretical Physics international conference on “Highlights of Condensed Matter Physics”, Seoul, Korea, June 12-16, 1998.

- Co-chair of the Gordon Research conference on “Correlated Electron Systems”, Plymouth State College, New Hampshire, July 19-24, 1998.
- Invited talk at the Institute for Theoretical Physics conference on “Disorder and Interactions in Quantum Hall and Mesoscopic Systems”, Santa Barbara, August 9-13, 1998.
- Invited speaker at the “Symposium on Correlated Electron Systems and Quantum Magnetism”, Indian Institute of Science and the Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore, India, September 14-16, 1998.
- Invited talk presented at the Euroconference “Magnetism Today”, Evora, Portugal, October 4-9, 1998.
- Invited talk presented at the Tenth Annual Frontiers of Science Symposium of the National Academy of Sciences, Irvine, CA, November 19-21, 1998.
- Invited talk presented at the Aspen Winter Conference on “Quantum Criticality”, January 3-10, 1999.
- Invited speaker at the “Workshop on Exotic Oxides”, Brookhaven National Laboratory, March 18-20, 1999.
- Invited lecturer at the workshop on “Theoretical Methods for Strongly Correlated Fermions”, University of Montreal, May 26-30, 1999.
- Invited speaker at the conference on the “Physics and Chemistry of Novel Materials: Strongly Correlated Electron Systems” Monte Verita, Switzerland, June 6-11, 1999.
- Invited lecturer at the Institut Henri Poincare (Paris) during the workshop on “Fermions Fortement Correles”, June 15-July 8, 1999.
- Invited speaker at the “Workshop on quantum effects in magnetic systems” at the Lorentz center of Leiden University, The Netherlands, June 21-23, 1999.
- Half-plenary speaker at the 22nd International Conference on Low Temperature Physics, Helsinki, August 4-11, 1999.
- Invited speaker at the Conference on “Magnetic Phenomena in Novel Materials and Geometries”, Institute for Theoretical Physics, Santa Barbara, August 16 - 20, 1999.
- Invited speaker at the “Workshop on Magnetic Excitations in Strongly Correlated Electrons”, Hamamatsu, Japan, Aug 19-22, 1999.
- Invited speaker at the international conference on “Spin ladders and low-dimensional strongly correlated systems”, Brasilia, Brazil, September 20-24, 1999.
- Invited speaker at the “Workshop on the Physics of Ultra-Thin Films near the Metal-Insulator Transition”, December 3-4, 1999, Brown University, Providence.

- Invited speaker at the International Workshop on “Microscopic Theories of Phase Transitions: Quantum Versus Thermal Fluctuations” at the Physikzentrum Bad Honnef, Germany, 13-15 December 1999.
- Invited talk presented at the March Meeting of the American Physical Society, March 20-24, 2000.
- Invited Lecturer at the NATO Advanced Study Institute/EC Summer School on New Theoretical Approaches to Strongly Correlated Systems, Newton Institute, Cambridge, UK, April 10-20, 2000.
- Lecture series at the Department of Physics, University of Indiana, Bloomington, May 3-5, 2000.
- Lecturer at the “Troisième Cycle de la Physique en Suisse Romande”, EPFL Laussane, May 31, June 8, and June 15, 2000.
- Invited speaker at the Workshop on “Interacting Electrons in Disordered Metals”, Lorentz Center, Leiden University, June 1-7, 2000.
- Invited speaker at the Gordon Research Conference on Correlated Electron Systems, June 26-30, 2000.
- Invited speaker at the Workshop on Strongly Correlated Electron Systems, ICTP, Trieste, Italy, July 17-23, 2000.
- Invited speaker at the International Congress on Mathematical Physics, 17-22 July 2000, Imperial College, London, UK.
- Invited speaker at the Conference on High Temperature Superconductivity, Institute for Theoretical Physics, Santa Barbara CA, August 14-18, 2000.
- Invited speaker at the Workshop on Opportunities in Materials Theory, National Science Foundation, Washington, October 4-6, 2000.
- Invited speaker at the 13th International Symposium on Superconductivity, Tokyo, October 14-16, 2000.
- Invited speaker at the meeting of the Canadian Institute for Advanced Research, Harrison, Canada, December 8-10, 2000.
- Invited speaker at the conference on Research Perspectives in Condensed Matter Physics, S.N. Bose Center for Basic Sciences, Calcutta, India, 2-4 January, 2001.
- Lectures at the Workshop on Quantum Fluctuations and Phase Transitions, National Center for Theoretical Sciences, Taiwan, January 11-13, 2001.
- Invited speaker at the Workshop on Magnetically Mediated Superconductivity, April 19-21, 2001, Boston College, Boston.

- Invited speaker at 6th International Conference on the Spectroscopy of Novel Superconductors, May 13-17, 2001, Chicago.
- Invited speaker at the Minerva-ISF Workshop on “Advances in High Temperature Superconductivity”, May 21-24, 2001, Ramat-Gan, Israel.
- Plenary speaker and member of program committee of the 11th International Conferences on Recent Progress in Many-Body Theories, UMIST, Manchester, UK from Mon 9 to Friday 13 July, 2001.
- Invited speaker at the International Conference on “Magnetic Correlations, Metal-Insulator Transitions and Superconductivity in Novel Materials”, Dresden, Germany, July 16-20, 2001.
- Co-director of the Satellite Workshop on “Defects in Correlated Electron Systems”, Dresden, Germany, July 22-25, 2001.
- Lecturer at the International Summer School on Fundamental Problems in Statistical Physics X, August-September 2001, Altenberg, Germany.
- Plenary speaker at the Mexican Meeting on Experimental and Mathematical Physics, Colegio Nacional, Mexico City, September 2001.
- Invited talk at Physical Phenomena in High Magnetic Fields IV, Santa Fe, October 19-25, 2001, cond-mat/0110329.
- Invited talk at the Workshop on Correlated Electron Systems, Lorentz Center, Leiden, October 29-Nov 9, 2001.
- Invited talk at “Beyond BEC: Ultracold Atoms beyond Mean-field Physics”, ITAMP Harvard, November 2-3, 2001.
- Invited talk at the Meeting of the Canadian Institute for Advanced Research, Victoria, BC, November 29-December 2, 2001.
- Invited lectures at the Winter School on Theoretical Physics, Jerusalem, 30 December 2001-8 January 2002.
- Summary talk at the Aspen Winter conference on “Quantum Coherence and Dissipation”, February 8-15, 2002.
- Invited talk the APS March Meeting, Indianapolis, 20 March 2002.
- Invited talk at “Spins and Interactions in Mesoscopic Systems”, conference at the Theoretical Physics Institute, University of Minnesota, May 10-12, 2002.
- Invited speaker at the International Conference on “Field Theory and Statistical Systems”, Rome, 10-15 June, 2002.

- Key note speaker at the American Conference on Neutron Scattering, Knoxville, June 23-27, 2002.
- Perspective and overview talk at the Gordon Research Conference on Correlated Electron Systems, Waterville, Maine, June 29- July 3 2002.
- Invited talk at “Quantum Phases at the Nanoscale”, Erice, Sicily, July 15-20, 2002.
- Invited talk at the International Conference on Theoretical Physics Paris, UNESCO, 22-27 July 2002.
- Invited lectures at the “Workshop on Emergent Materials and Highly Correlated Electrons”, Trieste, Italy, 5-16 August 2002.
- Invited talk at the “23rd International Conference on Low Temperature Physics”, August 20 - 27, 2002 Hiroshima, Japan.
- Plenary talk at the APCTP-ICTP Conference on Condensed Matter Physics, September 25-28, 2002 POSTECH, Pohang, Korea.
- F. A. Matsen Endowed Regents Lecture on the Structure of Matter at the University of Texas at Austin, October 9, 2002.
- Invited talk at the “9th International Workshop on Oxide Electronics”, St. Pete’s Beach, Florida, October 20-23, 2002.
- Invited talk at the “Conference on Realistic Theories of Correlated Electron Materials”, Kavli Institute for Theoretical Physics, Santa Barbara, November 18-22, 2002.
- Invited talk at the Aspen winter workshop on “Complex Quantum Order”, February 9-15, 2003.
- Organizer and speaker at a symposium on “Phases and phase transitions of quantum materials” at the annual meeting of the American Association for the Advancement of Science, Denver, February 15, 2003.
- Invited talks at the Workshop on Quantum Criticality, Institute for Complex Adaptive Matter, New York, March 20-23, 2003.
- Invited external speaker at the Mid Term Review Meeting of the Cold Quantum Gases European Network, Camogli, Italy, March 29- April 1, 2003.
- Invited speaker at the Conference on Correlation Effects in Bose Condensates and Optical Lattices, University of Minnesota, Minneapolis, May 2-4, 2003.
- Invited speaker at the Quantum Materials Program Meeting of the Canadian Institute for Advanced Research, Vancouver, May 16-19, 2003.
- Invited speaker at Workshop on Non-Fermi Liquid Behavior and Quantum Phase Transitions, Lorentz Center, Leiden, May 21, 2003.

- Invited speaker and advisory board member, Symposium of the Dutch Research School of Theoretical Physics, Dalfsen, May 22-23, 2003.
- Invited speaker and program committee member, 7th International Conference on Materials and Mechanisms of Superconductivity and High Temperature Superconductors, Rio de Janeiro, May 25-29, 2003.
- Invited speaker at the ESF workshop on Fermi Liquid Instabilities in Correlated Metals, Dresden, June 11-13, 2003.
- Plenary speaker at the Annual Meeting of the Danish Physical Society, Nyborg, Denmark, June 13, 2003.
- Invited speaker at NORDITA meeting on Strongly Correlated Systems, Copenhagen, June 14, 2003.
- 4 lectures at the Boulder School for Condensed Matter and Materials Physics: Frontiers of Magnetism, July 8-15, 2003.
- Invited speaker at NIST meeting on Theory, Modeling, and Neutron Scattering, Gaithersburg, August 12-14, 2003.
- Invited speaker at International Workshop on Field Theory Methods in Correlated Nanoscale Systems, Brookhaven, August 26-30, 2003.
- Invited speaker at Workshop on Topological Phases in Condensed Matter Physics, American Institute of Mathematics, Palo Alto, September 7-11, 2003.
- Plenary speaker at the Swiss Workshop on Materials with Novel Electronic Properties, Les Diablerets, September 29 - October 1, 2003.
- Lecture series at the Workshop on High- $T_c$  Superconductivity & Quantum Critical Phenomena, The Interdisciplinary Center of Theoretical Studies, Chinese Academy of Sciences, Beijing, October 20-26, 2003
- Invited speaker at the Institute for Complex Adaptive Matter “Electronic Mayonnaise” Conference, La Jolla, December 11-13, 2003.
- Invited talk at the American Physical Society meeting, Montreal, March 2004.
- Coordinator of the workshop on “Exotic order and criticality in quantum matter”, Kavli Institute of Theoretical Physics, Santa Barbara, March 29 - July 2, 2004.
- Invited talk at the 91st Statistical Mechanics Conference, Rutgers University, May 16-18, 2004.
- Invited talk at the Gordon Research Conference on Correlated Electrons, Mount Holyoke College, June 20-25, 2004.

- Three lectures at The Boulder School in Condensed Matter and Materials Physics: Quantum Coherence in Atomic and Condensed Matter Systems, July 5-9, 2004.
- Invited talk at International Conference on Spectroscopies in Novel Superconductors, Sitges, Spain, July 11-16, 2004.
- Invited speaker at the International Conference on Statistical Physics of Quantum Systems - novel orders and dynamics, Sendai, Japan, July 17-20, 2004
- Plenary speaker at the International Conference on Strongly Correlated Electronic Systems, Karlsruhe, Germany, July 26-30, 2004.
- Co-organizer and speaker at the International Workshop on Frustrated Magnetism, Montauk, September 13-17, 2004.
- Presentation at the Conference on The Future of Physics, Kavli Institute for Theoretical Physics, October 7-9, 2004.
- Invited talk at “Valence Bonds in Condensed Matter”, Princeton Center for Complex Materials Symposium, December 3, 2004.
- Invited talk at the conference on “Quantum Phase Transitions”, Kavli Institute for Theoretical Physics, January 18-21, 2005.
- Invited talk at the Mottness and Quantum Criticality Workshop, Tobago, West Indies, June 8-19, 2005.
- Invited lecturer at the ICAM Advanced Workshop on “Strongly Correlated Electrons: Diverse Examples and Unifying Themes”, August 8-20, 2005, Institut Scientifique de Cargese, Corsica (France)
- Invited speaker at the XVIIth Indian-Summer School on Effective Field Theories, Rez/Prague, September 9-13, 2005.
- Invited speaker at the Canadian Institute for Advanced Research meeting on Quantum Materials, Perimeter Institute, Waterloo, November 17-19, 2005.
- Lecturer at the MIT Theoretical Physics Retreat, Plymouth, New Hampshire, January 25-27, 2006.
- Invited speaker, Quantum Computing and Many-Body Systems, Key West, Florida, January 21-February 3 2006.
- Invited talk at the APS March meeting, Baltimore, March 13-17, 2006.
- Invited speaker, Itzykson meeting on Strongly Correlated Electrons, Saclay, France, June 21-23, 2006.
- Invited speaker, 8th International Conference on Materials and Mechanisms of Superconductivity and High Temperature Superconductors, Dresden, Germany, July 9-14, 2006.

- Invited speaker, International Conference on Physics near the Mott transition, Indian Institute of Science, Bangalore, July 24-28, 2006.
- Invited speaker, International Workshop on Strongly Correlated Transition Metal Compounds II, Cologne, Germany, September 11-14, 2006.
- Invited speaker, Greater Boston Area Statistical Mechanics Meeting, Brandeis University, October 21, 2006.
- Director's colloquium, Los Alamos National Laboratory, January 23, 2007.
- Invited speaker at the conference on Strongly Correlated Phases in Condensed Matter and Degenerate Atomic Systems, Kavli Institute for Theoretical Physics, February 2007.
- Distinguished Lecture Series, Technion, Israel, March 2007.
- Invited speaker, A.I. Larkin Memorial conference, Chernogolovka, Russia, June 27, 2007.
- Invited speaker, ICAM Workshop: Superfluid Universe, Aspen, August 18, 2007
- Invited speaker, Conference on Topological Quantum Computing, Hamilton Institute, Dublin, September 11, 2007.
- 3 Lectures at Conference on Correlated Electrons & Frustrated Magnetism, International Centre for Theoretical Sciences, Goa, India, November 25 - December 5, 2007.
- Lectures at the Winter School in Theoretical Physics, Condensed Matter Physics and Quantum Information with Cold Atoms, Institute for Advanced Studies, Hebrew University, December 26, 2007 - January 4, 2008.
- Invited speaker, Winter conference on New Horizons in Condensed Matter Physics, Aspen, February 8, 2008.
- Western Ontario conference on condensed matter physics, Perimeter Institute, Waterloo, April 24, 2008.
- For talks since April 2008, please see <http://qpt.physics.harvard.edu/talks/talks.html>