

Subir Sachdev Curriculum Vitae

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Employment

- Herchel Smith Professor of Physics at Harvard University, starting July 1, 2015.
- Chair, Department of Physics, Harvard University, January 1, 2018 to June 30, 2020.
- Professor of Physics at Harvard University, July 1, 2005 to June 30, 2015.
- **Miguel Virasoro Visiting International Chair**, International Centre for Theoretical Physics, 2024-28.
- **Raman Chair**, Indian Academy of Sciences, 2023-24.
- **Jacques Solvay International Chair in Physics**, **International Solvay Institutes**, Brussels, 2023.
- Visiting Scholar, Flatiron Institute, Simons Foundation, July 2019 onwards.
- Visiting Professor, College de France, May-June 2022.
- Maureen and John Hendricks Distinguished Visiting Professor at the Institute for Advanced Study, Princeton, July 1, 2021 to June 30, 2022.
- Cenovus Energy James Clerk Maxwell Chair in Theoretical Physics (Visiting) at the Perimeter Institute for Theoretical Physics, Feb 1, 2014 to Jan 31, 2019; Feb 1, 2022 to Jan 31, 2025.
- Stanley S. Hanna Visiting Professor, Stanford University, Fall 2017.
- Dr. Homi Bhabha Chair Professorship, Tata Institute of Fundamental Research, July 1, 2016 to June 30, 2019.
- 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 ([picture](#)).
- A.M. (Master of Arts) in Physics from Harvard University, June 1984 ([picture](#)).
- Ph.D. in Theoretical Physics from Harvard University, November 1985. Thesis title: Frustration and Order in Rapidly Cooled Metals ([picture](#)).
- M.A. (honorary) from Yale University, 1995..

Introduction to Research

Sachdev's research describes the consequences of quantum entanglement on the macroscopic properties of natural systems. He has made extensive contributions to the description of the diverse varieties of states of quantum matter, and of their behavior near quantum phase transitions. Many of these contributions have been linked to experiments, especially to the rich phase diagrams of the copper-oxide high temperature superconductors. Sachdev's research has also exposed remarkable connections between the nature of multi-particle quantum entanglement in certain laboratory materials, and the quantum entanglement in astrophysical black holes, and these connections have led to new insights on the entropy and radiation of black holes proposed by Stephen Hawking.

Research Highlights

See [selected papers with commentaries](#).

Sachdev has studied the nature of quantum entanglement in two-dimensional antiferromagnets, introducing several key ideas in a series of papers in 1989-1992. He has developed the theory of quantum criticality, elucidating its implications for experimental observations on materials at non-zero temperature. In this context, he proposed a solvable model of complex quantum entanglement in a metal which does not have any particle-like excitations in [Physical Review Letters 70, 3339 \(1993\)](#): an extension of this is now called the Sachdev-Ye-Kitaev (SYK) model. These works have led to a theory of quantum phase transitions in metals in the presence of impurity-induced disorder, and a universal theory of strange metals in [Science 381, 790 \(2023\)](#); this theory applies to a wide variety of correlated electron materials, including the copper-oxide materials exhibiting high temperature superconductivity. Many puzzling features of the 'psuedogap' phase of these materials are addressed by his works on the interplay between antiferromagnetism and superconductivity. A connection between the structure of quantum entanglement in the SYK model and in black holes was first proposed by Sachdev in [Physical Review Letters 105, 151602 \(2010\)](#), and these connections have led to extensive developments in the quantum theory of black holes.

Sachdev has written 3 books describing this research: *Quantum Phase Transitions* (1999), *Holographic Quantum Matter* (with Andrew Lucas and Sean Hartnoll, 2018), and *Quantum Phases of Matter* (2023).

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

Quantum criticality, superconductors, and black holes

Extreme examples of complex quantum entanglement arise in metallic states of matter without quasiparticle excitations, often called *strange metals*. Such metals are invariably present in higher temperature superconductors, above the highest transition temperatures for superconductivity. The strange metallicity and superconductivity are manifestations of an underlying quantum critical state of matter without quasiparticle excitations. Remarkably, there is an intimate connection between the quantum physics of strange metals in modern materials (which can be studied in tabletop experiments), and quantum entanglement near black holes of astrophysics.

This connection is most clearly seen by thinking more carefully about the defining characteristic of a strange metal: the absence of quasiparticles. In practice, given a state of quantum matter, it is difficult to completely rule out the existence of quasiparticles: while one can confirm that certain perturbations do not create single quasiparticle excitations, it is almost impossible to rule out a non-local operator which could create an exotic quasiparticle in which the underlying electrons are non-locally entangled. Using theories of quantum phase transitions, Sachdev argued (*Quantum Phase Transitions*, *Physical Review B* **56**, 8714 (1997)) instead that it is better to examine how rapidly the system loses quantum phase coherence, or reaches local thermal equilibrium in response to general external perturbations. If quasiparticles existed, dephasing would take a long time during which the excited quasiparticles collide with each other. In contrast, states without quasiparticles reach local thermal equilibrium in the fastest possible time, bounded below by a value of order $(\text{Planck constant})/((\text{Boltzmann constant}) \times (\text{absolute temperature}))$. Sachdev proposed (*Physical Review Letters* **70**, 3339 (1993), *Physical Review X* **5**, 041025 (2015)) a solvable model of a strange metal (a variant of which is now called the Sachdev-Ye-Kitaev (SYK) model), which was shown to saturate such a bound on the time to reach quantum chaos (*Journal of High Energy Physics* **2016**, 106 (2016)).

We can now make the connection to the quantum theory of black holes: quite generally, black holes also thermalize and reach quantum chaos in a time of order $(\text{Planck constant})/((\text{Boltzmann constant}) \times (\text{absolute temperature}))$, where the absolute temperature is the black hole's Hawking temperature. And this similarity to quantum matter without quasiparticles is not a co-incidence: Sachdev argued (*Physical Review Letters* **105**, 151602 (2010)) that the SYK model maps holographically to the low energy physics of charged black holes in 4 spacetime dimension. Also key to this connection was the fact that charged black holes have a non-zero entropy in the limit of zero temperature, as does the SYK model when the zero temperature limit is taken after the large size limit (*Physical Review B* **63**, 134406 (2001)).

These and other related works on quantum criticality by Sachdev and collaborators have led to valuable insights on the properties of electronic quantum matter, and on the nature of Hawking radiation from black holes. Solvable models related to gravitational duals and the SYK model have led to the discovery of more realistic models of quantum phase transitions in the high temperature superconductors and other compounds. Advances in the theory of quantum transitions in metals in the presence of impurities have led to a universal theory of strange metals which applies across a wide range of correlated electron compounds.

Such predictions ([Physical Review B 78, 115419 \(2008\)](#), [Science 381, 790 \(2023\)](#)) have been connected to experiments on graphene ([Science 351, 1055 \(2016\)](#), [Science 351, 1058 \(2016\)](#)) and the cuprate superconductors ([Nature Communications 14, 3033 \(2023\)](#)). The SYK model plays a key role in the computation of the density of low energy quantum states of non-supersymmetric charged black holes in 4 spacetime dimensions ([arXiv:2209.13608](#), [arXiv:2304.13744](#)), and provides the underlying Hamiltonian system upon which advances on the Page curve of entanglement entropy of evaporating black holes have been based (see [arXiv:2201.03096](#) for a review).

Sachdev has also developed the theory of critical quantum spin liquids which feature fractionalization and emergent gauge fields, along with absence of quasiparticles. Such spin liquids play an important role in the theory of the cuprate superconductors.

Resonating valence bonds and \mathbb{Z}_2 quantum spin liquids

P.W. Anderson proposed in 1973 that Mott insulators realize antiferromagnets which could form resonating valence bond (RVB) or quantum spin liquid states with an energy gap to spin excitations without breaking time-reversal symmetry. It was conjectured that such RVB states have excitations with fractional quantum numbers, such as a fractional spin $1/2$. The existence of such RVB ground states, and of the deconfinement of fractionalized excitations was first established by Read and Sachdev ([Physical Review Letters 66, 1773 \(1991\)](#)) and Wen ([Physical Review B 44, 2664 \(1991\)](#)) by the connection to a \mathbb{Z}_2 gauge theory. Sachdev was also the first to show that the RVB state is an ‘odd’ \mathbb{Z}_2 gauge theory, ([Physical Review B 44, 686 \(1991\)](#), [Journal of the Physical Society of Japan 69, Suppl. B, 1 \(2000\)](#), [Reports on Progress in Physics 82, 014001 \(2019\)](#)). An odd \mathbb{Z}_2 spin liquid has a background \mathbb{Z}_2 electric charge on each lattice site (equivalently, translations in the x and y directions anti-commute with each other in the super-selection sector of states associated with a \mathbb{Z}_2 gauge flux (also known as the m sector)). Sachdev showed that antiferromagnets with half-integer spin form odd \mathbb{Z}_2 spin liquids, and those with integer spin form even \mathbb{Z}_2 spin liquids. Using this theory, various universal properties of the RVB state were understood, including constraints on the symmetry transformations of the anyon excitations. Sachdev also obtained many results on the confinement transitions of the RVB state, including restrictions on proximate quantum phases and the nature of quantum phase transitions to them.

The topological order (*i.e.* ground state degeneracies on 2-manifolds) and anyons of \mathbb{Z}_2 quantum spin liquids are identical to those which appeared later in the solvable toric code model, which plays a key role in quantum error correction in qubit devices.

\mathbb{Z}_2 spin liquids are ground states of spin models on the kagome lattice, and this has been connected to experiments on correlated electron materials and arrays of trapped Rydberg atoms.

Honors

- **PROSE (PROfessional and Scholarly Excellence) Award Winner** (2024) in the category of chemistry, physics, astronomy and cosmology. Awarded by the Association of American Publishers for [Quantum Phases of Matter](#).

- **Raman Chair**, Indian Academy of Sciences, 2023-24.

- **Foreign Member**, The Royal Society, 2023.

Citation: Subir Sachdev has made profound contributions to theoretical condensed matter physics research. His main interests have been in quantum magnetism, quantum criticality, and perhaps most innovative of all, links between the nature of quantum entanglement in black holes and strongly interacting electrons in materials.

- **Jacques Solvay International Chair in Physics** 2023, International Solvay Institutes, Brussels.

- **Member** of the American Academy of Arts and Sciences, 2019 ([picture](#)).

- **Honorary Fellow**, Indian Academy of Sciences, Bengaluru, 2019.

- **Foreign Fellow** of the Indian National Science Academy, 2019 ([picture](#)).

Citation: Professor Subir Sachdev is a world renowned condensed matter theorist, with many seminal contributions to the theory of strongly interacting condensed matter systems. He is a pioneer in the study of systems near quantum phase transitions. He has also pioneered the exploration of the connection between physical properties of modern quantum materials and the nature of quantum entanglement in their many-particle state, elucidating the diverse varieties of entangled states of quantum matter.

- **New England Choice Award**, Academics, 2018.

- **Dirac Medal** ([picture](#)), International Center for Theoretical Physics, Trieste, 2018; shared with Dam Thanh Son and Xiao-Gang Wen for “independent contributions towards understanding novel phases in strongly interacting many-body systems, introducing original transdisciplinary techniques”.

Citation: Subir Sachdev has made pioneering contributions to many areas of theoretical condensed matter physics. Of particular importance were the development of the theory of quantum critical phenomena in insulators, superconductors and metals; the theory of spin-liquid states of quantum antiferromagnets and the theory of fractionalized phases of matter; the study of novel deconfinement phase transitions; the theory of quantum matter without quasiparticles; and the application of many of these ideas to a priori unrelated problems in black hole physics, including a concrete model of non-Fermi liquids.

- **Lars Onsager Prize** ([picture](#)), American Physical Society, 2018.

Citation: for his seminal contributions to the theory of quantum phase transitions, quantum magnetism, and fractionalized spin liquids, and for his leadership in the physics community.

- **Star Family Prize for Excellence in Advising**, Certificate of Distinction, Harvard University, 2016.

- **Dirac Medal for the Advancement of Theoretical Physics** ([picture](#)), 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 ([picture](#)).

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.
- Lifetime Achievement Award, by the Old Boys’ Association ([picture](#)), St. Joseph’s Boys’ High School, Bangalore, September 8, 2013.
- 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 ([picture](#)).
 - LeRoy Apker Award ([picture](#)), American Physical Society, January 1983.
- Citation:* For his accomplishments as an undergraduate students at the Massachusetts Institute of Technology, including his research “Quantum Electrodynamics in a Damped Cavity”.
- Honorable Mention in the William Lowell Putnam Mathematical competition, 1980.
 - Ranked second (all India) in the [Joint Entrance Examination](#) to the [Indian Institutes of Technology](#), 1978.

Named and plenary lectures

- **Raman Chair Public Lecture** of the Indian Academy of Sciences, National College, Bengaluru, December 28, 2023.
- **2023 Jacques Solvay International Chair in Physics**, Inaugural Lecture, Brussels, June 20, 2023.
- **Llewellyn G. Hoxton Lecture**, University of Virginia, Charlottesville, April 6, 2023.
- **Peterson Public Lecture**, Kansas State University, Manhattan, Kansas, April 26, 2022.
- **Arline and Michael Magde Colloquium**, Boston College, March 2, 2022.
- **Boltzmann Lecture**, Scuola Internazionale Superiore di Studi Avanzati, Trieste, February 21, 2022.
- **The Racah Memorial Lecture**, The Racah Institute of Physics, The Hebrew University of Jerusalem, June 21, 2021.
- **H. L. Welsh Lectures in Physics**, University of Toronto, May 6,7, 2021.
- **New Horizons in Physics-IPA50**, Commemorating 50 years of Indian Physics Association, APS-IPA Joint Lecture, February 27, 2021.
- **Distinguished Colloquium and Lectureship**, Korea Advanced Institute of Science and Technology, Daejeon, South Korea, February 17-19, 2021.
- Helen and Morton Sternheim Lecture, University of Massachusetts, Amherst, March 10, 2020.
- Marker Lectures, Penn State University, State College, December 4-6, 2019.
- R.E. Bell Lecture, McGill University, Montreal, February 22, 2019.
- Physics Department Memorial Lectureship, University of California, San Diego, February 14, 2019.
- **Homi Bhabha Memorial Public Lecture**, IISER Pune, November 14, 2017.
- Distinguished lecture, Texas A&M University, November 9, 2017.
- Biard Lecture, California Institute of Technology, Pasadena, November 2, 2017.
- 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.
- Ehrenfest 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**, Associate Professor, University of Nottingham
Thesis: **Quantum phases and transitions of many-body systems realized using cold atomic gases**
- **Adrian Del Maestro**, Professor, University of Tennessee.
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**, Researcher, Fudan 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**, Associate Professor, Korea Advanced Institute of Science and Technology
Thesis: **Superfluidity in Strongly Correlated Systems**
- **Max Metlitski**, Assistant Professor, Department of Physics, Massachusetts Institute of Technology
Thesis: **Aspects of Critical Behavior of Two Dimensional Electron Systems**
- **Yejin Huh**, Applied Scientist at Apple
Thesis: **Quantum Phase Transitions in d-wave Superconductors and Antiferromagnetic Kagome Lattices**
- **Susanne Pielawa**, Lyft, Munich
Thesis: **Metastable Phases and Dynamics of Low-Dimensional Strongly-Correlated Atomic Quantum Gases**
- **Debanjan Chowdhury**, Assistant Professor, Cornell University
Thesis: **Interplay of Broken Symmetries and Quantum Criticality in Correlated Electronic Systems**

- **Junhyun Lee**, Postdoctoral fellow, University of Maryland
Thesis: **Novel quantum phase transitions in low-dimensional systems**
- **Andrew Lucas**, Assistant Professor, University of Colorado
Thesis: **Transport and hydrodynamics in holography, strange metals and graphene**
- **Shubhayu Chatterjee**, Assistant Professor, Carnegie Mellon University
Thesis: **Transport and symmetry breaking in strongly correlated systems with topological order**
- **Wenbo Fu**, Data Scientist, Med Data Quest, Cambridge MA
Thesis: **The Sachdev-Ye-Kitaev model and matter without quasiparticles**
- **Seth Whitsitt**, Assistant Research Scientist, University of Maryland
Thesis: **Universal non-local observables at interacting quantum critical points**
- **Alex Thomson**, Assistant Professor, University of California, Davis
Thesis: **Emergent gapless fermions in strongly-correlated phases of matter and quantum critical points**
- **Aavishkar Patel**, Center for Computational Quantum Physics, Flatiron Institute
Thesis: **Transport, criticality, and chaos in fermionic quantum matter at nonzero density**
- **Julia Steinberg**, Princeton University
Thesis: **Universal Aspects of Quantum-Critical Dynamics In and Out of Equilibrium**
- **Rhine Samajdar**, Princeton University
Thesis: **Topological and symmetry-breaking phases of strongly correlated systems: From quantum materials to ultracold atoms**
- **Haoyu Guo**, Cornell University
Thesis: **Novel Transport Phenomena in Quantum Matter**
- **Chenyuan Li**, Harvard University
Thesis: **Quantum Criticality and Superconductivity in Systems Without Quasiparticles**
- **Henry Shackleton**, Harvard University Thesis: **Fractionalization and disorder in quantum many-body systems**
- **Yanting Teng**, Harvard University
- **Maine Christos**, Harvard University
- **Maria Tikhonovskaya**, Harvard University
- **Alexander Nikolaenko**, Harvard University
- **Serhii Kryhin**, 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](#), Associate Professor, George Mason University
- [Ribhu Kaul](#), Professor, Penn State University
- [Markus Müller](#), Senior Scientist, Paul Scherrer Institute, Switzerland.
- [Lars Fritz](#), Associate Professor, University of Utrecht
- [Michael Levin](#), Professor, University of Chicago
- [Cenke Xu](#), Professor, University of California, Santa Barbara
- [Sean Hartnoll](#), Professorship of Mathematical Physics (1967), University of Cambridge
- [Erez Berg](#), Faculty, Department of Condensed Matter Physics, Weizmann Institute of Science, Israel
- [Liang Fu](#), Professor of Physics, Massachusetts Institute of Technology
- [Liza Huijse](#), Co-founder and Head of Data Analytics at [Base5 Genomics](#)
- [Chris Laumann](#), Associate Professor, Boston University

- [Matthias Punk](#), Professor, Ludwig-Maximilians-University, Munich
- [Philipp Strack](#), Department Head Strategic Business Development at [ASML](#)
- [Brian Swingle](#), Associate Professor, Brandeis University
- [Dmitry Abanin](#), Professor of Physics, University of Geneva
- [Ling-Yan \(Janet\) Hung](#), Professor, Yau Mathematical Sciences Center, Tsinghua University, Beijing
- [Jay Sau](#), Associate Professor, University of Maryland
- [Sarang Gopalakrishnan](#), Assistant Professor, Princeton University
- [Andrea Allais](#), Cruise Automation, San Francisco
- [Johannes Bauer](#), Data Scientist, IHS Markit, London
- [Paul Chesler](#), Senior Data Analyst, MindMics, Cambridge MA
- [Andreas Eberlein](#), Harvard University
- [William Witczak-Krempla](#), Assistant Professor, University of Montreal
- [Richard Davison](#), Assistant Professor, Heriot-Watt University, Edinburgh
- [Chong Wang](#), Faculty, Perimeter Institute
- [Mathias Scheurer](#), Assistant Professor, Institute for Theoretical Physics at University of Innsbruck.
- [Yingfei Gu](#), Institute for Advanced Study at Tsinghua University
- [Grigory Tarnopolsky](#), Assistant Professor, Carnegie Mellon University
- [Harley Scammell](#), Senior Lecturer, University of Technology, Sydney
- [Darshan Joshi](#), Assistant Professor, Tata Institute for Fundamental Research, Hyderabad
- [Alex Kruchkov](#), University of Geneva
- [Ya-Hui Zhang](#), Assistant Professor, Johns Hopkins University
- [Daniel Parker](#), Harvard University.
- [Zhi-Xi Luo](#), Harvard University.
- [Pavel Volkov](#), Assistant Professor, University of Connecticut.
- [Pietro Bonetti](#), 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

- Editor-in-Chief, Reports on Progress in Physics
- Jury, Infosys Prize, 2018, 2019, 2020.
- 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.

- Quantum Theory of Solids (Physics 295b, Spring 2023)
- Introduction to Quantum Theory of Solids (Physics 295a/Applied Physics 295a, Fall 2022)
- Quantum Theory of Solids (Physics 295b, Spring 2021)
- Quantum Phases of Matter (Physics 268R, Fall 2020)
- Advanced Electromagnetism (Physics 232, Spring 2020)
- Introduction to Quantum Theory of Solids (Physics 295a/Applied Physics 295a, Fall 2019)
- Quantum Entanglement (FRSEMR 50L, Spring 2019)
- Quantum Mechanics I (Physics 143a, Fall 2018)
- Quantum Phases of Matter (Physics 268br, Spring 2018)
- Quantum Entanglement (FRSEMR 50L, Spring 2017)
- Quantum Theory of Solids (Physics 295b, Fall 2016)
- Quantum Phases of Matter (Physics 268br, Spring 2016)
- Spring 2015 - Physics 143a, Quantum Mechanics I
- Fall 2014 - Physics 295b, Quantum Theory of Solids
- 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
- 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
- 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
- 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

Publications

Books

- *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).
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- *Quantum Phases of Matter*, by Subir Sachdev, published by Cambridge University Press, Cambridge (2023).
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For a listing of the papers below under subject categories, along with overviews of their contents, see the web page <http://sachdev.physics.harvard.edu/publications.html>

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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

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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](#).
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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 in *String Theory and Its Applications, TASI 2010, From meV to the Planck Scale*, edited by Michael Dine, Thomas Banks, and Subir Sachdev, World Scientific, Singapore (2011); [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](#).
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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).
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72. Quantum statistical mechanics of the Sachdev-Ye-Kitaev model and charged black holes, S. Sachdev, *50 years of the renormalization group*, dedicated to the memory of Michael E. Fisher, edited by Amnon Aharony, Ora Entin-Wohlman, David Huse, and Leo Radzihovsky, World Scientific; [arXiv:2304.13744](#).
73. Strange Metals and Black Holes: Insights From the Sachdev-Ye-Kitaev Model, S. Sachdev, Oxford Research Encyclopedia in Physics, December 2023; [arXiv:2305.01001](#); [DOI](#).
74. Quantum spin glasses and Sachdev-Ye-Kitaev models, S. Sachdev, Rapporteur presentation at the 29th Solvay conference, *The Structure and Dynamics of Disordered Systems*, October 21, 2023, Brussels, [arXiv:2402.17824](#).
75. Lectures on the quantum phase transitions of metals, S. Sachdev, lectures at Prospects in Theoretical Physics 2024, Quantum Matter Summer School, Institute for Advanced Study, Princeton, July 8-11, 2024 [arXiv:2407.15919](#).

Talks

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