

Curriculum Vitae

CONTACT Taylor L. Hughes

INFORMATION Department of Physics
University of Illinois at Urbana-Champaign
Institute for Condensed Matter Theory
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Urbana, IL 61801 USA
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EDUCATION 1999-2003 **The University of Florida**, Gainesville, FL USA

AND RESEARCH B.S., Physics and Math, May 2003

POSITIONS

- *Summa cum Laude*, With High Honors in Physics
- Advisor: Alan T. Dorsey

2004-2009 **Stanford University**, Stanford, CA USA

Ph. D., Physics, September 2009

- Advisor: Professor Shou-Cheng Zhang
- Area of Study: Theoretical Condensed Matter Physics

2009-2011 University of Illinois at Urbana Champaign

- Postdoctoral Researcher in the Physics Department and Institute of Condensed Matter Theory

2011-2016 University of Illinois at Urbana Champaign

- Assistant Professor in the Physics Department and Institute of Condensed Matter Theory

2016-2018 University of Illinois at Urbana Champaign

- Associate Professor in the Physics Department and Institute of Condensed Matter Theory

CURRENT POSITION 2018-Current University of Illinois at Urbana Champaign

- Professor of Physics

PUBLICATION STATISTICS

- Total Citations: > 11250
- H-Index: 32

HONORS AND AWARDS

Office of Naval Research

- 2015 Young Investigator Award

UIUC Center for Advanced Study Fellowship

- 2015-2016 Fellowship for Assistant Professors

Dean's Award For Excellence in Research

- 2014 College of Engineering Award for Assistant Professors

National Science Foundation

- 2014 CAREER Award
- 2004-2007 Graduate Research Fellowship

Alfred P. Sloan Foundation

- 2013 Sloan Research Fellow

American Physical Society

- 2003 Apker Award Finalist
- 2008 Physics Viewpoint for article: "Topological Field Theory of Time-Reversal Invariant Topological Insulators"
- 2011 Featured on cover of Physical Review Letters Volume 106, Issue 16.

- 2011 Invited Viewpoint in *Physics*: Majorana Fermions Inch Closer to Reality

Science Magazine

- Our work on the quantum spin Hall effect was recognized by Science magazine as one of the top 10 breakthroughs among all scientific fields in 2007.

Stanford University

- Stanford Graduate Fellowship: Robert N. Noyce Fellow 2007-2009

PUBLICATIONS:

JOURNAL
ARTICLES

1. Fingering of Electron Droplets in Nonuniform Magnetic Fields
Taylor L. Hughes, A.D. Klironomos, Alan T. Dorsey, Phys. Rev. Lett. **90**, 196802 (2003).

2. Orbitronics: The Intrinsic Orbital Current in p-Doped Silicon
B. Andrei Bernevig, Taylor L. Hughes, and Shou-Cheng Zhang, Phys. Rev. Lett. **95**, 066601 (2005).

3. Transport equations and spin-charge propagating mode in a strongly confined two-dimensional hole gas
Taylor L. Hughes, Yaroslav B. Bazaliy, and B. Andrei Bernevig, Phys. Rev. B **74**, 193316 (2006).

4. Band Collapse and the Quantum Hall Effect in Graphene
B. Andrei Bernevig, Taylor L. Hughes, Shou-Cheng Zhang, Han-Dong Chen, Congjun Wu, International Journal of Modern Physics B, **20**, 3257-3278 (2006).

5. Quantum Spin Hall Effect and Topological Phase Transition in HgTe Quantum Wells
B. Andrei Bernevig, Taylor L. Hughes, Shou-Cheng Zhang, Science, **314**, 1757 (2006).

6. The quantum Hall effect in graphene from a lattice perspective
B. Andrei Bernevig, Taylor L. Hughes, and Shou-Cheng Zhang, Solid State Communications, **143**, 20 (2007).

7. Theory of the Three-Dimensional Quantum Hall Effect in Graphite

B. Andrei Bernevig, Taylor L. Hughes, Srinivas Raghu, and Daniel P. Arovas, Phys. Rev. Lett. **99**, 146804 (2007).

8. Helical edge and surface states in HgTe quantum wells and bulk insulators

Xi Dai, Taylor L. Hughes, Xiao-Liang Qi, Zhong Fang, Shou-Cheng Zhang, Phys. Rev. B, **77**, 125319 (2008).

9. Fractional Charge and Quantized Current in the Quantum Spin Hall State

Xiao-Liang Qi, Taylor L. Hughes, Shou-Cheng Zhang, Nature Physics, **4**, 273 (2008).

10. The Quantum Spin Hall Effect: Theory and Experiment

Markus Koenig, Hartmut Buhmann, Laurens W. Molenkamp, Taylor L. Hughes, Chao-Xing Liu, Xiao-Liang Qi, Shou-Cheng Zhang, J. Phys. Soc. Jpn. **77**, 031007 (2008).

11. Quantum Spin Hall Effect in Inverted Type II Semiconductors

Chaoming Liu, Taylor L. Hughes, Xiao-Liang Qi, Kang Wang, Shou-Cheng Zhang, Phys. Rev. Lett., **100**, 236601 (2008).

12. Topological Field Theory of Time-Reversal Invariant Insulators

Xiao-Liang Qi, Taylor L. Hughes, Shou-Cheng Zhang, Phys. Rev. B **78**, 195424 (2008).

13. Time-Reversal-Invariant Topological Superconductors and Superfluids in Two and Three Dimensions

Xiao-Liang Qi, Taylor L. Hughes, Srinivas Raghu, Shou-Cheng Zhang, Phys. Rev. Lett. **102**, 187001 (2009).

14. Topological Entanglement Rnyi Entropy and Reduced Density Matrix Structure

Steven T. Flammia, Alioscia Hamma, Taylor L. Hughes, and Xiao-Gang Wen, Phys. Rev. Lett. **103**, 261601 (2009).

15. Topological quantum phase transition in an exactly solvable model of a chiral spin liquid at finite temperature

Suk Bum Chung, Hong Yao, Taylor L. Hughes, and Eun-Ah Kim, Phys. Rev. B **81**, 060403 (2010).

16. Observation of a one-dimensional spinorbit gap in a quantum wire

C. H. L. Quay, Taylor L. Hughes, J. A. Sulpizio, L. N. Pfeiffer, K. W. Baldwin, K. W. West, D. Goldhaber-Gordon, and R. de Picciotto, Nat. Phys **6**, 336-339 (2010).

17. Topological invariants for the Fermi surface of a time-reversal-invariant superconductor

Xiao-Liang Qi, Taylor L. Hughes, and Shou-Cheng Zhang, Phys. Rev. B **81**, 134508 (2010).

18. Entanglement Spectrum of a Disordered Topological Chern Insulator

Emil Prodan, Taylor L. Hughes, and B. Andrei Bernevig, Phys. Rev. Lett. **105**, 115501 (2010).

19. The Quantum Spin Hall Effect

Joseph Maciejko, Taylor L. Hughes, and Shou-Cheng Zhang Annual Review of Condensed Matter Physics **2**, 31 (2011).

20. Chiral Topological Superconductor From the Quantum Hall State
Xiao-Liang Qi, Taylor L. Hughes, Shou-Cheng Zhang Phys. Rev. B **82**, 184516 (2010).

21. Andreev Bound State Spectroscopy in a Graphene Quantum Dot
Travis Dirks, Taylor L. Hughes, Siddhartha Lal, Bruno Uchoa, Yung-Fu Chen, Cesar Chialvo, Paul M. Goldbart, Nadya Mason, Nat. Phys. **7**, 386 (2011).

22. Torsional Monopoles and Torqued Geometries in Gravity and Condensed Matter
Andrew Randon and Taylor L. Hughes, Phys. Rev. Lett. **106**, 161102 (2011).

23. Inversion Symmetric Topological Insulators
Taylor L. Hughes, Emil Prodan, and B. Andrei Bernevig, Phys. Rev. B **83**, 245132 (2011).

24. Torsional Response and Dissipationless Viscosity in Topological Insulators
Taylor L. Hughes, Robert G. Leigh, and Eduardo Fradkin, Phys. Rev. Lett. **107**, 075502 (2011).

25. Majorana Fermions Inch Closer to Reality
Taylor L. Hughes, Physics **4**, 67 (2011).

26. Absence of Topological Insulator Phases in non-Hermitian PT-symmetric Hamiltonians
Yi Chen Hu and Taylor L. Hughes, Phys. Rev. B **84**, 153101 (2011).

27. Vortex Lines in Topological-Insulator Heterostructures
Ching-Kai Chiu, Taylor L. Hughes, and Matthew J. Gilbert Phys. Rev. B **84**, 144507 (2011).

28. Trace index and spectral flow in the entanglement spectrum of topological insulators
Aris Alexandradinata, Taylor L. Hughes, and B. Andrei Bernevig, Phys. Rev. B **84**, 195103 (2011).

29. Is Geometry Bosonic or Fermionic?
Taylor L. Hughes and Andrew Randon, arxiv: 1105.4184. (Submitted to Phys. Rev D)

30. Gate controlled Spin-Density Wave and Chiral FFLO Superconducting phases in interacting Quantum Spin Hall edge states
Qinglei Meng, Taylor L. Hughes, Matthew J. Gilbert and Smitha Vishveshwara, Phys. Rev. B, **86**, 155110 (2012).

31. Imaging topologically protected transport with quantum degenerate gases
Brian Dellabetta, Taylor L. Hughes, Matthew J. Gilbert and Benjamin L. Lev, Phys. Rev. B **85**, 205442 (2012).

32. Signature of Phase Transitions in the Disordered Quantum Spin Hall State From the Entanglement Spectrum
Matthew J. Gilbert, B. Andrei Bernevig, and Taylor L. Hughes, Phys. Rev. B, **86**, 041401(R) (2012).

33. Topological Insulator Magnetic Tunnel Junctions: Quantum Hall Effect and Fractional Charge via Folding

Qinglei Meng, Smitha Vishveshwara, and Taylor L. Hughes, Phys. Rev. Lett., **109**, 176803 (2012).

34. Fractional spin Josephson effect and electrically controlled magnetization in quantum spin Hall edges

Qinglei Meng, Vasudha Shivamoggi, Taylor L. Hughes, Matthew J. Gilbert, and Smitha Vishveshwara, Phys. Rev. B, **86**, 165110 (2012).

35. Stabilization of topological imprint of doped topological insulators by topologically trivial bands: An application to vortex Majorana modes in superconducting HgTe and ternary Heusler compounds

Ching-Kai Chiu, Pouyan Ghaemi, and Taylor L. Hughes, Phys. Rev. Lett., **109**, 237009 (2012).

36. Designer Quantum Spin Hall Phase Transition in Molecular Graphene
Pouyan Ghaemi, Sarang Gopalakrishnan, and Taylor L. Hughes, Phys. Rev. B, **86**, 201406(R) (2012).

37. The Renyi Entropy and the Multifractal Spectrum of Systems Near the Localization Transition

Xiao Chen, Benjamin Hsu, Taylor L. Hughes, and Eduardo Fradkin, Phys. Rev. B, **86**, 134201 (2012).

38. Characterizing disordered fermion systems using the momentum-space entanglement spectrum

Ian Mondragon-Shem, Mayukh Khan, and Taylor L. Hughes, Phys. Rev. Lett., **110**, 046806 (2013).

39. Vortex Lattices in the Superconducting Phases of Doped Topological Insulators and Heterostructures

Hsiang-Hsuan Hung, Pouyan Ghaemi, Taylor L. Hughes and Matthew J. Gilbert, Phys. Rev. B, **87**, 035401 (2013).

40. Majorana Fermions and Disclinations in Topological Crystalline Superconductors

Jeffrey C.Y. Teo and Taylor L. Hughes, Phys. Rev. Lett. **111**, 047006 (2013).

41. Effective Field Theories for Topological Insulators by Functional Bosonization

AtMa Chan, Taylor L. Hughes, Shinsei Ryu, and Eduardo Fradkin, Phys. Rev. B **87**, 085132 (2013).

42. Torsional Anomalies, Hall Viscosity, and Bulk-boundary Correspondence in Topological States

Taylor L. Hughes, Robert G. Leigh, and Onkar Parrikar, Phys. Rev. D **88**, 025040 (2013).

43. Disclination Classes, Fractional Excitations, and the Melting of Quantum Liquid Crystals

Sarang Gopalakrishnan, Jeffrey C.Y. Teo, and Taylor L. Hughes, Phys. Rev. Lett. **111**, 025304 (2013)

44: Swimming at Low Reynolds Number in Fluids with Odd (Hall) Viscosity

Matthew F. Lapa, Taylor L. Hughes, Phys. Rev. E **89**, 043019 (2014)
[Editor's Suggestion]

45: Classification of Two Dimensional Topological Crystalline Superconductors and Majorana Bound States at Disclinations

Wladimir A. Benalcazar, Jeffrey C. Y. Teo, and Taylor L. Hughes, Phys Rev. B **89**, 224503 (2014).

46: Topological Criticality in the Chiral-Symmetric AIII Class at Strong Disorder

Ian Mondragon-Shem, Juntao Song, Taylor L. Hughes, Emil Prodan, Phys. Rev. Lett. **113**, 046802 (2014).

47: Effects of surface-bulk hybridization in 3D topological 'metals'

Yi-Ting Hsu, Mark H. Fischer, Taylor L. Hughes, Kyunghwa Park, and Eun-Ah Kim, Phys. Rev. B **89**, 205438 (2014).

48: Signatures of metal-insulator and topological phase transitions in the entanglement of one-dimensional disordered fermions

Ian Mondragon-Shem and Taylor L. Hughes, Phys. Rev. B **90**, 104204 (2014).

49: Entanglement of a 3D Generalization of the Kitaev Model on the Diamond Lattice

Ian Mondragon-Shem and Taylor L. Hughes, JSTAT, **10**, P10022 (2014).

50. Majorana zero modes in dislocations of Sr_2RuO_4

Taylor L. Hughes, Hong Yao, and Xiao-Liang Qi, Phys. Rev. B **90**, 235123 (2014).

51: Spin Transfer Torque and Electric Current in Helical Edge States in Quantum Spin Hall Devices

Qinglei Meng, Smitha Vishveshwara, and Taylor L. Hughes, Phys. Rev. B **90**, 205403 (2014).

52: Anyonic Symmetries and Topological Defects in Abelian Topological Phases: an application to the ADE Classification

Mayukh Khan, Jeffrey C. Y. Teo, and Taylor L. Hughes, Phys. Rev. B **90**, 235149 (2014).

53: Torsion, Parity-Odd Response and Anomalies in Topological States

Onkar Parrikar, Taylor L. Hughes, and Robert G. Leigh, Phys. Rev. D **90**, 105004 (2014).

54: Condensation of Lattice Defects and Melting Transitions in Quantum Hall Phases

Gil Young Cho, Onkar Parrikar, Yizhi You, Robert G. Leigh, and Taylor L. Hughes, Phys. Rev. B. **91**, 035122 (2015).

55: Theory of Twist Liquids: Gauging an Anyonic Symmetry

Jeffrey C. Y. Teo, Taylor L. Hughes, Eduardo Fradkin, Annals of Physics **360**, 349 (2015).

56: Patterns of Electro-magnetic Response in Topological Semi-metals

Srinidhi Ramamurthy and Taylor L. Hughes, Phys. Rev. B **92**, 085105 (2015).

57: Interactions along an Entanglement Cut in 2+1D Abelian Topological Phases

Jennifer Cano, Taylor L. Hughes, and Michael Mulligan, Phys. Rev. B **92**, 075104 (2015).

58: Phase diagram of the Z_3 Parafermionic Chain with Chiral Interactions: An entanglement analysis

Ye Zhuang, Hitesh J. Changlani, Norm M. Tubman, and Taylor L. Hughes, Phys. Rev. B **92**, 035154 (2015).

59: Many-body mobility edge due to symmetry-constrained dynamics and strong interactions

Ian Mondragon-Shem, Arijeet Pal, Taylor L. Hughes, and Chris R. Laumann, Phys. Rev. B **92**, 064203 (2015).

60: Hall Viscosity and Momentum Transport in Lattice and Continuum Models of the Integer Quantum Hall Effect in Strong Magnetic Fields

Thomas I. Tügel and Taylor L. Hughes, Phys. Rev. B **92**, 165127 (2015).

61: Surface collective modes in the topological insulators Bi_2Se_3 and $\text{Bi}_{0.5}\text{Sb}_{1.5}\text{Te}_{3-x}\text{Se}_x$

A. Kogar, S. Vig, A. Thaler, M.H. Wong, Y. Xiao, D. Reig-i-Plessis, G.Y. Cho, T. Valla, Z. Pan, J. Schneeloch, R. Zhong, G. Gu, T.L. Hughes, G.J. MacDougall, T.-C. Chiang, P. Abbamonte, Phys. Rev. Lett. **115**, 257402 (2015).

62: The viscoelastic response of topological tight-binding models in 2D and 3D

Hassan Shapourian, Taylor L. Hughes, Shinsei Ryu, Phys. Rev. B **92**, 165131 (2015).

63: Interaction Enabled Topological Crystalline Phases

Matthew F. Lapa, Jeffrey C. Y. Teo, and Taylor L. Hughes, Phys. Rev. B **93**, 115131 (2016).

64: Phase diagrams of disordered Weyl semimetals

Hassan Shapourian and Taylor L. Hughes, Phys. Rev. B **93**, 075108 (2016).

65: Entanglement Entropy and Anomaly Inflow

Taylor L. Hughes, Robert G. Leigh, Onkar Parrikar, Srinidhi T. Ramamurthy, Phys. Rev. D **93**, 065059 (2016).

66: Bulk Topological Proximity Effect

Timothy H. Hsieh, Hiroaki Ishizuka, Leon Balents, Taylor L. Hughes, Phys. Rev. Lett. **116**, 086802 (2016).

67: History-dependent dissipative vortex dynamics in superconducting arrays

Malcolm Durkin, Ian Mondragon-Shem, Serena Eley, Taylor L. Hughes, Nadya Mason Phys. Rev. B **94**, 024510 (2016).

68: Response Properties of Axion Insulators and Weyl Semimetals Driven by Screw Dislocations and Dynamical Axion Strings

Yizhi You, Gil Young Cho, Taylor L. Hughes, Phys. Rev. B **94**, 085102 (2016). [Editor's Suggestion]

69: Charge density waves in disordered media circumventing the Imry-Ma argument

Hitesh J. Changlani, Norm M. Tubman, Taylor L. Hughes, Nat. Sci. Rep. **6**, 31897 (2016).

70: Composite Particle Theory, Fractional Axion Angles, and Extrinsic Twist Defects in Three-Dimensional Gapped Fermionic Phases

Peng Ye, Taylor L. Hughes, Joseph Maciejko, Eduardo Fradkin, Phys. Rev. B **94**, 115104 (2016).

71: A Bosonic Analog of a Topological Dirac Semi-Metal: Effective Theory, Neighboring Phases, and Wire Construction

Matthew F. Lapa, Gil Young Cho, Taylor L. Hughes, Phys. Rev. B **94**, 245110 (2016).

72: Topological Defects in Symmetry Protected Topological Phases

Jeffrey C. Y. Teo and Taylor L. Hughes, Annual Reviews of Condensed Matter Physics, **8**, 211-237 (2017).

73: Quasi-Topological Electromagnetic Response of Line-node Semimetals

Srinidhi T. Ramamurthy, Taylor L. Hughes, Phys. Rev. B **95**, 075138 (2017).

74: Fermion Parity Flips and Majorana Bound States at twist defects in Superconducting Fractional Topological Phases

Mayukh Nilay Khan, Jeffrey C. Y. Teo, Taylor L. Hughes, Smitha Vishveshwara, Phys. Rev. B **95**, 205112 (2017).

75: Electromagnetic Response of Three-dimensional Topological Crystalline Insulators

Srinidhi T. Ramamurthy, Yuxuan Wang, Taylor L. Hughes, Phys. Rev. Lett. **118**, 146602 (2017).

76: Competing Adiabatic Thouless Pumps in Enlarged Parameter Spaces

Pedro L. S. Lopes, Pouyan Ghaemi, Shinsei Ryu, Taylor L. Hughes, Phys. Rev. B **94**, 235160 (2016).

77: Parafermionic wires at the interface of chiral topological states

Luiz H. Santos, Taylor L. Hughes, Phys. Rev. Lett. **118**, 136801 (2017).

78: Topological electromagnetic responses of bosonic quantum Hall, topological insulator, and chiral semimetal phases in all dimensions

Matthew F. Lapa, Chao-Ming Jian, Peng Ye, and Taylor L. Hughes, Phys. Rev. B **95**, 035149 (2017).

79: Quantized Electric Multipole Insulators

Wladimir A. Benalcazar, B. Andrei Bernevig, Taylor L. Hughes, Science, **357**, 61-66 (2017).

80: Canonical quantization of nonlinear sigma models with theta term, with applications to symmetry-protected topological phases

Matthew F. Lapa and Taylor L. Hughes, Phys. Rev. D **96**, 045010 (2017).

81: Perturbative and global anomalies in bosonic analogues of integer quantum Hall and topological insulator phases

Matthew F. Lapa and Taylor L. Hughes, Phys. Rev. B **96**, 115123 (2017).

82: Interface Contributions to Topological Entanglement in Abelian Chern-Simons Theory

Jackson R. Fliss, Xueda Wen, Onkar Parrikar, Chang-Tse Hsieh, Bo Han, Taylor L. Hughes, Robert G. Leigh, Journal of High Energy Physics **2017**, 56 (2017).

83: (*Featured in APS Physics Viewpoint) Electric Multipole Moments,

Topological Multipole Moment Pumping, and Chiral Hinge States in Crystalline Insulators

Wladimir A. Benalcazar, B. Andrei Bernevig, and Taylor L. Hughes, Phys. Rev. B **96**, 245115 (2017).

84: Hall Viscosity and the Acoustic Faraday Effect

Thomas I. Tügel and Taylor L. Hughes, Phys. Rev. B **96**, 174524 (2017).

85: A quantized microwave quadrupole insulator with topologically protected corner states

Christopher W. Peterson, Wladimir A. Benalcazar, Taylor L. Hughes, and Gaurav Bahl, Nature **555**, 346 (2018).

86: Topological protection of photonic mid-gap cavity modes

Jiho Noh, Wladimir A. Benalcazar, Sheng Huang, Matthew J. Collins, Kevin Chen, Taylor L. Hughes, Mikael C. Rechtsman, arxiv: 1611.02373 (accepted at Nature Photonics).

Submitted Articles

87: Observation of domain wall motion in a polycrystalline vortex lattice

Malcolm Durkin, Ian Mondragon-Shem, Taylor L. Hughes, and Nadya Mason, arXiv:1708.03082 (submitted to Phys. Rev. B).

88: Topological Quadrupolar Semimetals

Mao Lin and Taylor L. Hughes, arXiv:1708.08457 (submitted to Phys. Rev. Lett.).

89: Φ_0 -Magnetic Force Microscopy for Imaging and Control of Vortex Dynamics

Tyler Naibert, Hryhoriy Polshyn, Malcolm Durkin, Brian Wolin, Rita Garrido-Menacho, Victor Chua, Ian Mondragon-Shem, Taylor Hughes, Nadya Mason, Raffi Budakian arxiv: 1705.08956 (submitted to Science Advances).

90: Observation of the topological Anderson insulator in disordered atomic wires

Eric J. Meier, Fangzhao Alex An, Alexandre Dauphin, Maria Maffei, Pietro Massignan, Taylor L. Hughes, and Bryce Gadway arXiv:1802.02109 (under review in Science).

91: Embedded Topological Insulators

Thomas I. Teugal, Victor Chua, and Taylor L. Hughes, arXiv:1802.06790 (submitting to Phys. Rev. Lett.).

92: Hall viscosity and geometric response in the Chern-Simons matrix model of the Laughlin states

Matthew F. Lapa and Taylor L. Hughes, arXiv:1802.10100 (submitting to Phys. Rev. B).

93: Symmetry-Protected Topological Interfaces and Entanglement Sequences

Luiz H. Santos, Jennifer Cano, Michael Mulligan and Taylor L. Hughes, arXiv:1803.04418 (submitting to Phys. Rev. B).

PUBLICATIONS:

BOOKS

1. Topological Insulators and Superconductors

B. Andrei Bernevig and Taylor L. Hughes, Princeton University Press (April, 2013).

INVITED
SEMINARS,
ORGANIZED
WORKSHOPS,
AND
CONFERENCES

Invited Seminars and Colloquia

- ICMT Seminar at UIUC January 2009
- University of Waterloo/Perimeter Institute Condensed Matter Seminar May 2009
- Princeton Condensed Matter Seminar February 2010
- Yeshiva University Physics Colloquium February 2010
- Joint UIUC/University of Chicago Symposium May 2010
- Emergence and Entanglement Conference at the Perimeter Institute, Invited Talk May 2010
- Chinese Academy of Sciences, Condensed Matter Seminar August 2010
- GGI Institute of Florence Italy: Condensed Matter Focus-Week Invited seminar November 2010
- Perimeter Institute, Condensed Matter Seminar November 2010
- Northwestern University, Condensed Matter Seminar, December 2010
- University of Washington, High-energy Seminar, January 2011
- Microsoft Station Q, Condensed Matter Seminar, January 2011
- University of Florida, Condensed Matter Seminar, February 2011
- Princeton University, Condensed Matter Seminar, February 2011
- Cornell University, Condensed Matter Seminar, April 2011
- Argonne National Laboratory, Condensed Matter Seminar, May 2011
- University of Wurzburg, Condensed Matter Seminar, July 2011
- University of Illinois at Urbana-Champaign, Condensed Matter Seminar, August 2011
- Perimeter Institute, Condensed Matter Seminar, September 2011
- University of Texas at Austin, Condensed Matter Seminar, November 2011
- ISANN Conference Invited Talk, December 2011
- Missouri University of Science and Technology Colloquium, April 2012
- Brandeis University Colloquium, April 2012
- Brandeis University IGERT Seminar, April 2012

- University of Virginia, Condensed Matter Seminar, April 2012
- Chinese Academy of Sciences: Institute of Physics Seminar, May 2012
- IIP of Natal, Brazil, Summer School Lectures at Advances in Quantum Technology: From Quantum Information to Quantum Devices Conference, August 2012
- IIP of Natal, Brazil, Invited Seminar, August 2012
- ICMT Conference on Topology, Entanglement and Strong Correlations in Condensed Matter (Joint with Perimeter Institute), Invited Seminar, November 2012
- WINDS conference, Contributed Seminar, December 2012
- BIRS/Banff Conference on Topological Phenomena in Quantum Dynamics and Disordered Systems, Invited Seminar, February 2013.
- Condensed Matter Frontier Workshop in Honor of Shou-Cheng Zhang, Invited Talk, March 2013.
- Midwest Strings Conference (University of Kentucky) Invited Talk, May 2013
- California Institute of Technology, Condensed Matter Seminar, May 2013
- ISANN Conference, Contributed Seminar, December 2013
- National High Magnetic Field Lab, Tallahassee, Florida Invited Lectures, January 2014
- University of Utah, Condensed Matter Seminar, January 2014
- University of Missouri at Columbia, Physics Department Colloquium, February 2014
- Johns-Hopkins University, Condensed Matter Seminar, March 2014
- Nobel Symposium in Sweden, Invited Seminar, June 2014
- Erwin Schrodinger Institute in Vienna, Invited Condensed Matter Seminar, August 2014
- University of Illinois at Urbana-Champaign, Physics Department Colloquium, September 2014
- University of Toronto, Condensed Matter Seminar, November 2014

- WINDS Conference, Contributed Seminar, December 2014
- Stanford University, Condensed Matter Seminar, March 2015
- edX.org, Invited Lecture for Open Course on Topological Phases of Matter, April 2015
- University of Minnesota, Invited Workshop Seminar, May 2015
- 14th Annual Marcel Grossmann Conference, Contributed Talk July 2015
- Banff Workshop on Strongly Interacting Topological Phases, Invited Talk September 2015
- Washington University, St Louis, Physics Department Colloquium September 2015
- PI-UIUC Joint Workshop on Strongly Correlated Quantum Many-Body Systems, Invited Talk, November 2015
- ISANN Conference, Conference Talk, December 2015
- University of Indiana Bloomington, Condensed Matter Seminar March 2016
- Kavli Institute for Theoretical Physics (UCSB) Seminar October 2016
- University of Illinois, ICMT Seminar April 2017
- Moore Foundation EPIQS Meeting, invited talk, August 2017
- Penn State University, Colloquium October 2017
- Penn State University, Condensed Matter Seminar October 2017
- Banff workshop on Relativistic Dirac Fermions, Invited Seminar February 2018

Organized Workshops

- November 2012 Joint-Workshops between the Institute of Condensed Matter Theory at UIUC and the Perimeter Institute (Co-organizer)
- November 2013 Joint-Workshops between the Institute of Condensed Matter Theory at UIUC and the Perimeter Institute (Co-organizer)
- January 2014 National High Magnetic Field Lab Winter Theory School (Co-organizer and Lecturer)

- March 2014 Joint-Workshop between the Institute of Condensed Matter Theory at UIUC and the University of Chicago (Co-organizer)
- November 2014 Joint-Workshops between the Institute of Condensed Matter Theory at UIUC and the Perimeter Institute (Co-organizer)
- November 2015 Joint-Workshops between the Institute of Condensed Matter Theory at UIUC and the Perimeter Institute (Co-organizer)
- November 2017 Workshop on Chaos, Duality, and Topology in Condensed Matter Physics at UIUC (Co-organizer)

Conferences and Programs

American Physical Society

- 2003 March Meeting: Contributed Talk
- 2006 March Meeting: Contributed Talk
- 2007 March Meeting: Contributed Talk
- 2008 March Meeting: Contributed Talk
- 2009 March Meeting: Contributed Talk
- 2010 March Meeting: Invited and Contributed Talks
- 2011 March Meeting: Contributed Talk
- 2012 March Meeting: Contributed Talk
- 2014 Invited Tutorial Lecture
- 2015 March Meeting: Invited Talk

Boulder Summer School

- 2008 Boulder School on Strongly Correlated Materials
- 2010 Boulder School on Computational and Conceptual Approaches to Quantum Many-Body Systems

Center on Functionally Engineered Nano-architecture (FENA)

- 2007 Meeting in Los Angeles: Presented poster
- 2008 Meeting in Los Angeles: Presented poster and won award for best poster

Les Houches Summer School

- 2006 Les Houches School on Quantum Magnetism

SpinAPS

- 2006 Workshop on Spin Currents (IBM Almaden)
- 2007 Conference on Quantum Nanoscience with Spins (Asilomar)

Kavli Institute of Theoretical Physics

- 2008 Rapid Response Workshop on Topological Insulators
- 2011 Workshop on AdS/CMT
- 2015 Workshop on Entanglement, Conference: Bridging the Entanglement Gap
- 2016 Workshop on Topological Quantum Matter

Blackboard Lectures in Condensed Matter Physics, Yeshiva University

- June 2012 Invited Lecture Series

“Advances in Quantum Technology: From Quantum Information to Quantum Devices”, IIP Natal, Brazil

- August 2012 Invited Lecture Series

Aspen Center for Physics Summer Program: Disorder, Dynamics, Frustration and Topology in Quantum Condensed Matter

- June 2013 Blackboard Talk

Aspen Center for Physics Summer Program: Entanglement

- June 2016