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APPOINTMENTS

Jul 2016 - Present Johns Hopkins University, Baltimore, Maryland.
Assistant Professor, Department of Physics and Astronomy.

Sep 2013 - Jun 2016 Princeton University, Princeton, New Jersey.
Postdoctoral Fellow, Princeton Center for Theoretical Science.

EDUCATION

Sep 2009 - Jun 2013 University of California, San Diego, La Jolla, California.
Ph.D. in Physics.

- Advisor: Congjun Wu; Co-advisor: Kenneth Intriligator.
- Thesis: “Topological States in Condensed Matter and Cold Atom Systems”.

(Aug 2012 - Dec 2012) Kavli Institute of Theoretical Physics, University of California, Santa Barbara, California.
Graduate Fellow.

Sep 2006 - Jul 2009 Fudan University, Shanghai, China.
M. Sci. in Theoretical Physics.

- Advisor: Ruibao Tao; Co-advised by Yue Yu.

Sep 2003 - Jul 2006 Fudan University, Shanghai, China.
B. Sci. in Physics

SELECTED AWARDS

- NSF CAREER Award (2019-2024).
- Alfred P. Sloan Research Fellowship (2018-2020).
- PCTS Postdoctoral Fellow (2013-2016, Princeton University).
- KITP Graduate Fellow (2012, University of California, Santa Barbara).
- Inamori Fellowship (2012, University of California, San Diego).
- Shanghai Outstanding Graduate Students Academic Achievements Award (2011, Shanghai).
- Excellent Thesis Award and other fellowships (2006-2009, Fudan University).
- Excellent Undergraduate Thesis Award and other fellowships (2003-2006, Fudan University).

GRANTS

- NSF CAREER Award, \$538K, 2019 - 2024.
- Co-PI: NSF QLCI-CG: “Conceptualizing a Quantum Information Bioscience Institute for Quantum Sensing and Simulations in Novel Hybrid Architectures”, \$103.7K in total, 2019 - 2020.
- Alfred P. Sloan Research Fellowship, \$65K, 2018-2020.
- Co-PI: DOE EFRC “Institute for Quantum Matter”, \$623K, 2018-2022. [\$10.25M in total.]

TEACHING AND ADVISING ACTIVITIES

• Graduate Students Mentored

Current Eric Bobrow, PhD Student (5th yr), Johns Hopkins, 2016 Jul. -.
Canon Sun, PhD Student (4th yr), Johns Hopkins, 2016 Sep. -.

• Postdoctors Mentored

Previous Shu-Ping Lee, Postdoctor, Johns Hopkins, 2017 Nov. - 2019 Mar. (Now at Intel, Portland, Oregon.)

• Undergraduates Mentored

Current Sydney Timmerman (Senior), Johns Hopkins, 2018 Oct. -.
Junjia Zhang (Sophomore), Johns Hopkins, 2018 Dec. -.

Previous Alice Yang (Summer UG Researcher), Johns Hopkins, 2018 Mar. - 2019 May.
Jungsoo Park, Johns Hopkins, 2017 Aug. - 2018 Jan. (Now a PhD student in mathematics at UIUC.)
Saavanth Velury, UC Berkeley, 2016 May - 2016 Aug. (Now a PhD student in physics at UIUC.)

• Teaching

Spring 2019	171.304 (UG)	Quantum Mechanics II
Fall 2018	171.762 (G)	Advanced Condensed Matter
Spring 2018	171.304 (UG)	Quantum Mechanics II
Fall 2017	171.639 (G) / 171.425 (UG)	Group Theory in Physics
Spring 2017	171.304 (UG)	Quantum Mechanics II

DEPARTMENT AND UNIVERSITY SERVICE

- Colloquium committee (2018-2019).
- Recruitment committee (2016-2019).
- Faculty search committee (Condensed Matter Theory) (2017-2018).
- Participating fund raising advisory council activities (2017 July).

MEETING ORGANIZING COMMITTEES

- 03/2016** PCTS/Moore program “**Dirac and Weyl Fermions in Topological Semi-metals**”, Princeton, NJ.
[Co-organizers: A. Bernevig, Z. Hasan, T. Neupert, N. P. Ong].
- 04/2015** PCTS program “**Topological and Strongly Correlated Phases in Cold Atoms**”, Princeton, NJ.
[Co-organizers: W. Bakr, D. Huse, T. Neupert, C. von Keyserlingk].
- 10/2014** PCTS/ONR program “**Majorana Zero Modes and Beyond**”, Princeton, NJ.
[Co-organizers: T. Neupert, N. P. Ong, S. Sondhi, C. von Keyserlingk, A. Yazdani].

PROFESSIONAL SERVICE

Referee for “Physical Review Letters”, “Physical Review B”, “Nature Communication”, “Scientific Reports”, “Europhysics Letters”, “International Journal of Modern Physics B”, “The European Physical Journal B” and “Cambridge University Press”.

PUBLICATIONS

PREPRINTS

- * [Emergent Weyl Nodes and Monopole Charge Density Wave State](#).
Eric Bobrow, Canon Sun, **Yi Li**
ArXiv: 1810.08715.
- * [Counterrotating incommensurate magnetic order and strong quantum fluctuations in the honeycomb layers of \$\text{NaNi}_2\text{BiO}_6\$](#) .
A. Scheie, K. Ross, E. Seibel, J. A. Rodriguez-Rivera, J. A. Tang, **Yi Li**, R. J. Cava, C. Broholm
ArXiv: 1807.02528.

REFEREED PAPERS

- **Citations: 468** at [Publons \(https://publons.com/researcher/2359575/yi-li/metrics/\)](https://publons.com/researcher/2359575/yi-li/metrics/) based on the Web of Science (formally ISI), **h-index=13**.
 - **Citations: 662** at [Google Scholar \(https://scholar.google.com/citations?hl=en&user=tBxA-ZoAAAAJ\)](https://scholar.google.com/citations?hl=en&user=tBxA-ZoAAAAJ), **h-index=15**.
25. [Exact Results on Itinerant Ferromagnetism and the 15-puzzle Problem](#).
Eric Bobrow, Keaton Stubis, **Yi Li**
Physical Review B **98**, 180501 (R) (2018). [*Rapid Communication*]
([Press release](#) from the Quanta Magazine.)
 24. [Magnetic Field Enhanced Superconductivity in Epitaxial Thin Film \$\text{WTe}_2\$](#) .
Tomoya Asaba, Yongjie Wang, Gang Li, Ziji Xiang, B.J. Lawson, Colin Tinsman, Lu Chen, Songrui Zhao, David Laleyan, **Yi Li**, Zetian Mi, Lu Li
Scientific Reports **8**, 6520 (2018).
 23. [Stability of the Nagaoka-type Ferromagnetic State in a \$t_{2g}\$ -orbital System on a Cubic Lattice](#)
Eric Bobrow, **Yi Li**
Physical Review B **97**, 155132 (2018).

22. [Topological Nodal Cooper Pairing in Doped Weyl Metals.](#)
Yi Li, F. D. M. Haldane
Physical Review Letters **120**, 067003 (2018).
21. [Topological Septet Pairing with Spin-3/2 Fermions: High Partial-wave Channel Counterparts of the \$^3\text{He-B}\$ Phase.](#)
Wang Yang, Yi Li, Congjun Wu
Physical Review Letters **117**, 075301 (2016).
20. [Majorana Positivity and the Fermion Sign Problem of Quantum Monte Carlo Simulations.](#)
Zhong Chao Wei, Congjun Wu, Yi Li, Shiwei Zhang, Tao Xiang
Physical Review Letters **116**, 250601 (2016).
19. [Three-dimensional Quaternionic Condensations, Hopf Invariants, and Skyrmion Lattices with Synthetic Spin-orbit Coupling.](#)
Yi Li, Xiangfa Zhou, Congjun Wu
Physical Review A **93**, 033628 (2016).
18. [Time-reversal Invariant \$SU\(2\)\$ Hofstadter Problem in Three Dimensional Lattices.](#)
Yi Li
Physical Review B **91**, 195133 (2015).
17. [Thermodynamic Properties of a 2D Itinerant Ferromagnet - a Sign-problem Free Quantum Monte Carlo Study.](#)
Shenglong Xu, Yi Li, Congjun Wu
Physical Review X **5**, 021032 (2015).
16. [Exact Results for Itinerant Ferromagnetism in \$t_{2g}\$ -orbital Systems on Cubic and Square Lattices.](#)
Yi Li
Physical Review B **91**, 115112 (2015).
15. [Exact Results for Itinerant Ferromagnetism in Multi-orbital Systems on Square and Cubic Lattices.](#)
Yi Li, Elliott H. Lieb, Congjun Wu
Physical Review Letters **112**, 217201 (2014).
14. [Honeycomb lattice with multiorbital structure: Topological and quantum anomalous Hall insulators with large gaps.](#)
Gufeng Zhang, Yi Li, Congjun Wu
Physical Review B **90**, 075114 (2014).
13. [Competing Orders in the 2D Half-filled \$SU\(2N\)\$ Hubbard Model Through the Pinning Field Quantum Monte-Carlo Simulations.](#)
Da Wang, Yi Li, Zi Cai, Zhichao Zhou, Yu Wang, Congjun Wu
Physical Review Letters **112**, 156403 (2014).
12. [Unconventional Symmetries of Fermi Liquid and Cooper Pairing Properties with Electric and Magnetic Dipolar Fermions.](#)
Yi Li, Congjun Wu
Review article. Journal of Physics: Condensed Matter **26**, 493203 (2014).
11. [Spontaneous Time-reversal Symmetry Breaking in the Boundary Majorana Flat Bands.](#)
Yi Li, Da Wang, Congjun Wu
New Journal of Physics **15**, 085002 (2013) [Focus Issue on Majorana Fermions].

10. [Unconventional States of Bosons with the Synthetic Spin-orbit Coupling.](#)
Xiangfa Zhou, **Yi Li**, Zi Cai, Congjun Wu
Review article. *J. Phys. B: At. Mol. Opt. Phys.* **46**, 134001 (2013).
9. [Topological Insulators with \$SU\(2\)\$ Landau Levels.](#)
Yi Li, Shou-Cheng Zhang, Congjun Wu
Physical Review Letters **111**, 186803 (2013).
8. [High-Dimensional Topological Insulators with Quaternionic Analytic Landau Levels.](#)
Yi Li, Congjun Wu
Physical Review Letters **110**, 216802 (2013).
7. [Spin-orbit Coupled Fermi Liquid Theory with Magnetic Dipolar Interaction.](#)
Yi Li, Congjun Wu
Physical Review B **85**, 205126 (2012).
6. [2D and 3D Topological Insulators with Isotropic and Parity-breaking Landau Levels.](#)
Yi Li, Xiangfa Zhou, Congjun Wu
Physical Review B **85**, 125122 (2012).
5. [Isotropic Landau Levels of Dirac Fermions in High Dimensions.](#)
Yi Li, Kenneth Intriligator, Yue Yu, Congjun Wu
Physical Review Letters B **85**, 085132 (2012).
4. [The J-triplet Cooper Pairing with Magnetic Dipolar Interactions.](#)
Yi Li, Congjun Wu
Scientific Report **2**, 392 (2012).
3. [Anyons Emerging from Fermions with Conventional Two-body Interactions.](#)
Yue Yu, **Yi Li**
Journal of Physics A: Mathematical and Theoretical **43**, 105306 (2010). [IOP Select]
2. [Extra Current and Integer Quantum Hall Conductance in the Spin-orbit Coupling System.](#)
Yi Li, Tianxing Ma, Ruibao Tao
Europhysics Letters **83**, 27002 (2008).
1. [Current in a Spin-orbit-coupling System: a Generalization of the Noether's Theorem.](#)
Yi Li, Ruibao Tao
Physical Review B **75**, 075319 (2007).

INVITED TALKS

48. (Scheduled)
Colloquium. Department of Physics, Emory University. (2020.1)
47. (Scheduled)
Colloquium. Department of Physics, Temple University. (2019.12)
46. (Scheduled)
KITP Conference: Topological Quantum Matter: From Fantasy to Reality, Santa Barbara. (2019.9)
45. *Plenary Talk. Quantum Theory and Symmetry XI, Montréal, Canada, "Monopole Harmonic Ordering."* (2019.7)

44. **University of Illinois at Urbana–Champaign, Institute for Condensed Matter Theory Seminar, Champaign, Illinois**, “Monopole Harmonic Ordering.” (2019.2)
43. **International Conference: Perspectives in Topological phases: From Condensed Matter to High-Energy Physics, ICISE Quy Nhon, Vietnam**, “Monopole Harmonic Superconductivity.” (2018.7)
42. **Boston University, Condensed Matter Physics Seminar, Boston**, “Monopole Harmonic Superconductivity.” (2018.4)
41. **Workshop: Novel States of Matter with Ultra-cold Atoms, Wuhan, China**, “Monopole harmonic superconductivity in doped Weyl semimetals and ultra-cold atoms with magnetic dipolar interactions.” (2017.12)
40. **APS MAS Meeting, Newark, New Jersey**, “Monopole harmonic superconductivity in doped Weyl semimetals.” (2017.11)
39. **University of Maryland, Nuclear Physics Seminar**, “Majorana reflection positivity and Majorana Kramers positivity for the absence of Fermion sign problems in quantum Monte Carlo.” (2017.10)
38. **National High Magnetic Field Laboratory, Tallahassee**, “Monopole harmonic superconductivity in doped Weyl semimetals.” (2017.9)
37. **Kavli Institute of Theoretical Physics, Santa Barbara**, “Monopole harmonic superconductivity in doped Weyl semimetals.” (2017.8)
36. **3rd Conference on Condensed Matter Physics, Shanghai, China**, “Monopole harmonic superconductivity in doped Weyl semimetals.” (2017.6)
35. **Nordita Conference: “Frontiers of topological quantum matter”, Stockholm, Sweden**, “Monopole harmonic superconductivity in doped Weyl semimetals.” (2017.5)
34. **George Mason University, Department of Physics, Colloquium**: “Monopoles in Condensed Matter Physics - from quantum Hall effects to monopole harmonic superconductivity.” (2017.4)
33. **Johns Hopkins University, Department of Physics, Colloquium**: “Monopoles in Condensed Matter Physics - from quantum Hall effects to monopole harmonic superconductivity.” (2017.3)
32. **International Workshop: ”Topological Phases and Critical Phenomena”, Chinese University of Hong Kong**, “Characterization of topological superconductivity in doped Weyl semi-metal systems.” (2017.1)
31. **Fudan University, Department of Physics, Shanghai**, “Characterization of topological superconductivity in doped Weyl semi-metal systems.” (2016.12)
30. **University of Delaware, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.11)
29. **Johns Hopkins University, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.2)
28. **Boston University, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.2)

27. **Yale University, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.2)
26. **University of Houston, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.2)
25. **Iowa State University, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.2)
24. **University of Alabama, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.1)
23. **Rutgers University, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.1)
22. **Penn State University, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.1)
21. **Northeastern University, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.1)
20. **University of Oregon, Department of Physics**, “Colloquium: Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2016.1)
19. **Hong Kong University of Science and Technology, Department of Physics**, “Monopole Harmonic Cooper Pairing.” (2015.12)
18. **UMass at Amherst, Department of Physics**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems.” (2015.11)
17. **Tsinghua University, Institute for Advanced Study**, “Monopole Harmonic Cooper Pairing.” (2015.8)
16. **Tsinghua University, Institute for Advanced Study**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems on Square and Cubic Lattices.” (2015.8)
15. **INT Program on Frontiers in Quantum Simulation with Cold Atoms, University of Washington**, “Three-dimensional Quantum Hall Effects.” (2015.4)
14. **MIT, Informal Condensed Matter Seminar**, “Non-perturbative Results for Itinerant Ferromagnetism in Multi-orbital Systems on Square and Cubic Lattices.” (2015.3)
13. **Cornell University, Department of Physics**, “Exact Results for Itinerant Ferromagnetism in Multi-orbital Systems on Square and Cubic Lattices.” (2014.11)
12. **University of Michigan, Department of Physics**, “Exact Results for Itinerant Ferromagnetism in Multi-orbital Systems on Square and Cubic Lattices.” (2014.10)
11. **Ohio State University, Department of Physics**, “Exact Results for Itinerant Ferromagnetism in Multi-orbital Systems on Square and Cubic Lattices.” (2014.10)
10. **Aspen Center for Physics, Winter Conference: Unconventional Order in Strongly Correlated Electron Systems**, “Exact Results on Ferromagnetism in 2D and 3D.” (2014.1.)
9. **Princeton University**, Symposium on Quantum Hall and Topological Physics, “Three- and Four-dimensional Topological Insulators from SU(2) Landau Levels.” (2013.9.)

8. **California Institute of Technology, Institute for Quantum Information and Matter**, “Quaternion analytic Landau levels in 3D and 4D.” (2013.1.)
7. **University of California, Los Angeles, Department of Physics**, “3D and 4D Topological Insulators from SU(2) Landau Levels.” (2012.11.)
6. **Stanford University, Department of Physics**, “3D and 4D Topological Insulators from SU(2) Landau Levels.” (2012.10.)
5. **Workshop on “Topological states in quantum matter”, Qingdao, China**, “Topological Insulators, Coming Back to Landau Levels.” (2012.7.)
4. **Fudan University, Department of Physics, Shanghai**, “3D and 4D Topological Insulators, Coming Back to Landau Levels.” (2012.7.)
3. **Tsinghua University, Department of Physics, Beijing**, “Isotropic Landau Levels of Relativistic and Non-Relativistic Fermions in 3D Flat Space.” (2011.8.)
2. **Tsinghua University, Institute for Interdisciplinary Information Sciences, Beijing**, “Isotropic Landau Levels of Relativistic and Non-Relativistic Fermions in 3D Flat Space.” (2011.8.)
1. **KITPC, Chinese Academy of Sciences, Beijing**, “Isotropic Landau Levels of Relativistic and Non-Relativistic Fermions in 3D Flat Space.” (2011.8.)