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Education & Training

- B.Sc. Physics, Nanjing University (2004 - 2008)
- Ph.D. Physics, Tsinghua University (2008 - 2013)
Supervisor: Prof. Zheng-Yu Weng
- Postdoc, University of California, Santa Barbara (2013 - 2016)
Supervisor: Prof. Cenke Xu, Prof. Leon Balents
- Postdoc, Harvard University (2016 - 2018)
Supervisor: Prof. Ashvin Vishwanath

Employment

- Assistant Professor, University of California, San Diego (2018 -)

Awards and Honors

- National Science Foundation, CAREER award (2022)
- University of California Hellman Fellow (2021)
- National Scholarship for Graduate Students – China (2012)
- Graduate Scholarship – Tsinghua University (2010)
- C.N. Yang Fellowship – Tsinghua University (2009)
- Honor Graduate – Nanjing University (2008)

Publications

Articles:

- [1] Ahmed A Akhtar, Hong-Ye Hu, Yi-Zhuang You. *Scalable and flexible classical shadow tomography with tensor networks*. *Quantum* **7**, 1026 (2023).
- [2] Da-Chuan Lu, Meng Zeng, Juven Wang, Yi-Zhuang You. *Fermi Surface Symmetric Mass Generation*. *Physical Review B* **107** (19), 195133 (2023).
- [3] Hong-Ye Hu, Soonwon Choi, Yi-Zhuang You. *Classical shadow tomography with locally scrambled quantum dynamics*. *Physical Review Research* **5** (2), 023027 (2023).
- [4] Artan Sheshmani, Yizhuang You, Wenbo Fu, Ahmadreza Azizi. *Categorical Representation Learning and RG flow operators for algorithmic classifiers*. *Machine Learning: Science and Technology* **4** (1), 015012 (2022).
- [5] Da-Chuan Lu, Taige Wang, Shubhayu Chatterjee, Yi-Zhuang You. *Correlated metals and unconventional superconductivity in rhombohedral trilayer graphene: a renormalization group analysis*. *Physical Review B* **106**, 155115 (2022).
- [6] Juven Wang, Zheyang Wan, Yi-Zhuang You. *Cobordism and Deformation Class of the Standard Model*. *Physical Review D* **106** (4), L041701 (2022).

- [7] Hong-Ye Hu, Dian Wu, Yi-Zhuang You, Bruno Olshausen, Yubei Chen. *RG-Flow: A hierarchical and explainable flow model based on renormalization group and sparse prior*. Machine Learning: Science and Technology **3** (3), 035009 (2022).
- [8] Juven Wang, Zheyang Wan, Yi-Zhuang You. *Proton Stability: From the Standard Model to Ultra Unification*. Physical Review D **106** (2), 025016 (2022).
- [9] Juven Wang, Yi-Zhuang You. *Symmetric Mass Generation*. Symmetry **14**(7), 1475 (2022).
- [10] Juven Wang, Yi-Zhuang You. *Gauge enhanced quantum criticality beyond the standard model*. Physical Review D **106**(2), 25013 (2022).
- [11] Meng Zeng, Zheng Zhu, Juven Wang, Yi-Zhuang You. *Symmetric Mass Generation in the 1+1 Dimensional Chiral Fermion 3-4-5-0 Model*. Physical Review Letters **128**(18), 185301 (2022).
- [12] Yi-Zhuang You, Ashvin Vishwanath. *Kohn-Luttinger superconductivity and intervalley coherence in rhombohedral trilayer graphene*. Physical Review B **105**(13), 134524 (2022).
- [13] Hong-Ye Hu, Yi-Zhuang You. *Hamiltonian-driven shadow tomography of quantum states*. Physical Review Research **4**(1), 13054 (2022).
- [14] Bo Xiang, Zimo Yang, Yi-Zhuang You, Wei Xiong. *Ultrafast Coherence Delocalization in Real Space Simulated by Polaritons*. Advanced Optical Materials **10**(5), 2102237 (2022).
- [15] Da-Chuan Lu, Cenke Xu, Yi-Zhuang You. *Self-duality protected multicriticality in deconfined quantum phase transitions*. Physical Review B **104**(20), 205142 (2021).
- [16] Jonathan Lam, Yi-Zhuang You. *Machine Learning Statistical Gravity from Multi-Region Entanglement Entropy*. Physical Review Research **3**, 043199 (2021).
- [17] Wei-Ting Kuo, Daniel Arovas, Smitha Vishveshwara, Yi-Zhuang You. *Decoherent quench dynamics across quantum phase transitions*. SciPost Physics **11**(4), 84 (2021).
- [18] Nathan J Mclaughlin, Hailong Wang, Mengqi Huang, Eric Lee-Wong, Lunhui Hu, Hanyi Lu, Gerald Q Yan, Genda Gu, Congjun Wu, Yi-Zhuang You. *Strong correlation between superconductivity and ferromagnetism in an Fe-chalcogenide superconductor*. Nano Letters **21**(17), 7277-7283 (2021).
- [19] Artan Sheshmani, Yizhuang You. *Categorical Representation Learning: Morphism is All You Need*. Machine Learning: Science and Technology **3**, 015016 (2021).
- [20] Ruihua Fan, Sagar Vijay, Ashvin Vishwanath, Yi-Zhuang You. *Self-organized error correction in random unitary circuits with measurement*. Physical Review B **103**(17), 174309 (2021).
- [21] Koji Hashimoto, Hong-Ye Hu, Yi-Zhuang You. *Neural ODE and Holographic QCD*. Machine Learning: Science and Technology (2021).
- [22] Carlos M Duque, Hong-Ye Hu, Yi-Zhuang You, Vedika Khemani, Ruben Verresen, Romain Vasseur. *Topological and symmetry-enriched random quantum critical points*. Physical Review B **103** (10), L100207 (2021).

- [23] Ce Wang, Haiwei Li, Zhenqi Hao, Xintong Li, Cangwei Zou, Peng Cai, Yayu Wang, Yi-Zhuang You, Hui Zhai. *Machine Learning Identification of Impurities in the STM Images*. Chinese Physics B **29** (11), 116805 (2020).
- [24] AA Akhtar, Yi-Zhuang You. *Multi-Region Entanglement in Locally Scrambled Quantum Dynamics*. Physical Review B **102** (13), 134203 (2020).
- [25] Wei-Qiang Chen, Chao-Ming Jian, Liang Kong, Yi-Zhuang You, Hao Zheng. *Topological phase transition on the edge of two-dimensional Z₂ topological order*. Physical Review B **102** (4), 045139 (2020).
- [26] Hong-Ye Hu, Shuo-Hui Li, Lei Wang, Yi-Zhuang You. *Machine Learning Holographic Mapping by Neural Network Renormalization Group*. Physical Review Research **2** (2), 023369 (2020).
- [27] Wei-Ting Kuo, AA Akhtar, Daniel P Arovas, Yi-Zhuang You. *Markovian Entanglement Dynamics under Locally Scrambled Quantum Evolution*. Physical Review B **101** (22), 224202 (2020).
- [28] Huitao Shen, Pengfei Zhang, Yi-Zhuang You, Hui Zhai. *Information Scrambling in Quantum Neural Networks*. Physical Review Letters **124** (20), 200504 (2020).
- [29] Chao-Ming Jian, Yi-Zhuang You, Romain Vasseur, Andreas WW Ludwig. *Measurement-induced criticality in random quantum circuits*. Physical Review B **101** (10), 104302 (2020).
- [30] Juven Wang, Yi-Zhuang You, Yunqin Zheng. *Gauge enhanced quantum criticality and time reversal deconfined domain wall: SU(2) Yang-Mills dynamics with topological terms*. Physical Review Research **2** (1), 013189 (2020).
- [31] Jong Yeon Lee, Yi-Zhuang You, Subir Sachdev, Ashvin Vishwanath. *Signatures of a Deconfined Phase Transition on the Shastry-Sutherland Lattice: Applications to Quantum Critical SrCu₂(BO₃)₂*. Physical Review X **9** (4), 041037 (2019).
- [32] Romain Vasseur, Andrew C Potter, Yi-Zhuang You, Andreas WW Ludwig. *Entanglement transitions from holographic random tensor networks*. Physical Review B **100** (13), 134203 (2019).
- [33] Rui-Zhen Huang, Da-Chuan Lu, Yi-Zhuang You, Zi Yang Meng, Tao Xiang. *Emergent Symmetry and Conserved Current at a One Dimensional Incarnation of Deconfined Quantum Critical Point*. Physical Review B **100**(12), 125137 (2019).
- [34] Ce Wang, Hui Zhai, Yi-Zhuang You. *Uncover the Black Box of Machine Learning Applied to Quantum Problem by an Introspective Learning Architecture*. Science Bulletin **64** (17), 1228-1233 (2019).
- [35] Wei Wang, Da-Chuan Lu, Xiao Yan Xu, Yi-Zhuang You, Zi Yang Meng. *Dynamics of compact quantum electrodynamics at large fermion flavor*. Physical Review B **100**(8), 085123 (2019).
- [36] Chao-Ming Jian, Zhen Bi, Yi-Zhuang You. *Lattice construction of duality with non-Abelian gauge fields in 2+1D*. Physical Review B **100**(7), 075109 (2019).

- [37] Zhihuang Luo, Yi-Zhuang You, Jun Li, Chao-Ming Jian, Dawei Lu, Cenke Xu, Bei Zeng, Raymond Laflamme. *Observing Fermion pair-instability of Sachdev-Ye-Kitaev model on a quantum spin simulator*. npj Quantum Information (2019).
- [38] Nvsen Ma, Yi-Zhuang You, Zi Yang Meng. *Emmy Noether looks at the deconfined quantum critical point*. Physical Review Letters **122**(17), 175701 (2018).
- [39] Yi-Zhuang You, Ashvin Vishwanath. *Superconductivity from valley fluctuations and approximate $SO(4)$ symmetry in a weak coupling theory of twisted bilayer graphene*. npj Quantum Materials **4**(1), 16 (2019).
- [40] Nvsen Ma, Guang-Yu Sun, Yi-Zhuang You, Cenke Xu, Ashvin Vishwanath, Anders W Sandvik, Zi Yang Meng. *Dynamical signature of fractionalization at the deconfined quantum critical point*. Physical Review B **98**(17), 174421 (2018).
- [41] Xiaochuan Wu, Xiao Chen, Chao-Ming Jian, Yi-Zhuang You, Cenke Xu. *Candidate theory for the strange metal phase at finite energy window*. Physical Review B **98**(16), 165117 (2018).
- [42] Yi-Zhuang You, Yingfei Gu. *Entanglement features of random Hamiltonian dynamics*. Physical Review B **98** (1), 014309 (2018).
- [43] Meng Cheng, Zhen Bi, Yi-Zhuang You, Zheng-Cheng Gu. *Classification of symmetry-protected phases for interacting fermions in two dimensions*. Physical Review B **97** (20), 205109 (2018).
- [44] Yi-Zhuang You, Yin-Chen He, Ashvin Vishwanath, Cenke Xu. *From bosonic topological transition to symmetric fermion mass generation*. Physical Review B **97**(12), 125112 (2018).
- [45] Yi-Zhuang You, Yin-Chen He, Cenke Xu, Ashvin Vishwanath. *Symmetric fermion mass generation as deconfined quantum criticality*. Physical Review X **8**(1), 011026 (2018).
- [46] Yi-Zhuang You, Zhao Yang, Xiao-Liang Qi. *Machine learning spatial geometry from entanglement features*. Physical Review B **97**(4), 045153 (2018).
- [47] Xiao-Liang Qi, Zhao Yang, Yi-Zhuang You. *Holographic coherent states for random tensor networks*. Journal of High Energy Physics 2017(8), 60 (2017).
- [48] Zhen Bi, Chao-Ming Jian, Yi-Zhuang You, Kelly Ann Pawlak, Cenke Xu. *Instability of the non-Fermi-liquid state of the Sachdev-Ye-Kitaev model*. Physical Review B **95**(20), 205105 (2017).
- [49] Zheng Bi, Ruixing Zhang, Yi-Zhuang You, Andrea Young, Leon Balents, Chao-Xing Liu, Cenke Xu. *Bilayer graphene as a platform for bosonic symmetry protected topological states*. Physical Review Letters **118**, 126801 (2017).
- [50] Kevin Slagle, Zhen Bi, Yi-Zhuang You, Cenke Xu. *Out-of-time-order correlation in marginal many-body localized systems*. Physical Review B **95**(16), 165136 (2017).
- [51] Yi-Zhuang You, Andreas W. Ludwig, Cenke Xu. *Sachdev-Ye-Kitaev model and thermalization on the boundary of many-body localized fermionic symmetry protected topological states*. Physical Review B **95** (16) 165136 (2017).

- [52] Yan Qi Qin, Yuan-Yao He, Yi-Zhuang You, Zhong-Yi Lu, Arnab Sen, Anders W Sandvik, Cenke Xu, Zi Yang Meng. *Duality between the deconfined quantum-critical point and the bosonic topological transition*. Physical Review X **7**(3), 031052 (2017).
- [53] Yuan-Yao He, Han-Qing Wu, Yi-Zhuang You, Cenke Xu, Zi Yang Meng, Zhong-Yi Lu. *Quantum critical point of Dirac fermion mass generation without spontaneous symmetry breaking*. Physical Review B **94**(24), 241111 (2016).
- [54] Han-Qing Wu, Yuan-Yao He, Yi-Zhuang You, Tsuneya Yoshida, Norio Kawakami, Cenke Xu, Zi Yang Meng, Zhong-Yi Lu. *Visualizing a bosonic symmetry protected topological phase in an interacting fermion model*. Physical Review B **94**, 165121 (2016).
- [55] Xue-Yang Song, Yi-Zhuang You, Leon Balents. *Low-energy spin dynamics of the honeycomb spin liquid beyond the Kitaev limit*. Physical Review Letters **117**, 037209 (2016).
- [56] Kevin Slagle, Yi-Zhuang You, Cenke Xu. *Disordered XYZ spin chain simulated using the spectral bifurcation renormalization group*. Physical Review B **94**, 014205 (2016).
- [57] Zhen Bi, Yi-Zhuang You, Cenke Xu. *Exotic quantum critical point on the surface of three-dimensional topological insulator*. Physical Review B **94**(2), 024433 (2016).
- [58] Yizhi You, Yi-Zhuang You. *Geometric defects in bosonic symmetry protected topological phases*. Physical Review B **93**, 245135 (2016).
- [59] Yizhi You, Yi-Zhuang You. *Stripe melting and a transition between weak and strong symmetry protected topological phases*. Physical Review B **93**, 195141 (2016).
- [60] Yuan-Yao He, Han-Qing Wu, Yi-Zhuang You, Cenke Xu, Zi Yang Meng, Zhong-Yi Lu. *Bona fide interaction-driven topological phase transition in correlated SPT states*. Physical Review B **93**, 115150 (2016).
- [61] Yi-Zhuang You, Zhen Bi, Dan Mao, Cenke Xu. *Quantum phase transitions between bosonic symmetry-protected topological states without sign problem: Nonlinear sigma model with a topological term*. Physical Review B **93**, 125101 (2016).
- [62] Yi-Zhuang You, Xiao-Liang Qi, Cenke Xu. *Entanglement holographic mapping of many-body localized system by spectrum bifurcation renormalization group*. Physical Review B **93**, 104205 (2016).
- [63] Cenke Xu, Yi-Zhuang You. *Self-dual quantum electrodynamics as boundary state of the three dimensional bosonic topological insulator*. Physical Review B **92**, 220416 (2015).
- [64] Han-Qing Wu, Yuan-Yao He, Yi-Zhuang You, Cenke Xu, Zi Yang Meng, Zhong-Yi Lu. *Quantum Monte Carlo study of strange correlator in interacting topological insulators*. Physical Review B **92**, 165123 (2015).
- [65] Yi-Zhuang You, Cenke Xu. *Topological orders with global gauge anomalies*. Physical Review B **92**, 054410 (2015).
- [66] Yi-Zhuang You, Cenke Xu. *Interacting topological insulator and emergent grand unification theory*. Physical Review B **91**, 125147 (2015).
- [67] Kevin Slagle, Yi-Zhuang You, Cenke Xu. *Exotic quantum phase transitions of strongly interacting topological insulators*. Physical Review B **91**, 115121 (2015).

- [68] Yi-Zhuang You, Zhen Bi, Alex Rasmussen, Meng Cheng, Cenke Xu. *Bridging fermionic and bosonic short range entangled states*. New Journal of Physics **17**, 075010 (2015).
- [69] Cenke Xu, Yi-Zhuang You. *Bosonic short-range entangled states beyond group cohomology classification*. Physical Review B **91**, 054406 (2015).
- [70] Yi-Zhuang You, Cenke Xu. *Symmetry-protected topological states of interacting fermions and bosons*. Physical Review B **90**, 245120 (2014).
- [71] Zhen Bi, Yi-Zhuang You, Cenke Xu. *Anyon and loop braiding statistics in field theories with topological Θ term*. Physical Review B **90**, 081110(R) (2014).
- [72] Yi-Zhuang You, Zhong Wang, Jeremy Oon, Cenke Xu. *Topological number and fermion Green's function of strongly interacting topological superconductors*. Physical Review B **90**, 060502(R) (2014).
- [73] P. Zhang, P. Richard, T. Qian, X. Shi, J. Ma, L.-K. Zeng, X.-P. Wang, E. Rienks, C.-L. Zhang, P. Dai, Y.-Z. You, Z.-Y. Weng, X.-X. Wu, J. P. Hu, H. Ding. *Observation of momentum-confined in-gap impurity state in $Ba_{0.6}K_{0.4}Fe_2As_2$: evidence for antiphase s_{\pm} pairing*. Physical Review X **4**, 301001 (2014).
- [74] Yi-Zhuang You, Zhen Bi, Alex Rasmussen, Kevin Slagle, Cenke Xu. *Wave function and strange correlator of short range entangled states*. Physical Review Letters **112**, 247202 (2014).
- [75] Yi-Zhuang You, Zheng-Yu Weng. *Two-fluid description for iron-based superconductors*. New Journal of Physics **16**, 023001 (2014).
- [76] Yi-Zhuang You, Chao-Ming Jian, Xiao-Gang Wen. *Synthetic topological degeneracy by anyon condensation*. Physical Review B **87**, 045106 (2013).
- [77] Yi-Zhuang You, Zhu Chen, Xiao-Qi Sun, Hui Zhai. *Superfluidity of bosons in Kagome lattice with frustration*. Physical Review Letters **109**, 265302 (2012).
- [78] Xiaodong Zhou, Peng Cai, Aifeng Wang, Wei Ruan, Cun Ye, Xianhui Chen, Yizhuang You, Zheng-Yu Weng, Yayu Wang. *Evolution from unconventional spin density wave to superconductivity and a novel gap-like phase in $NaFe_{1-x}Co_xAs$* . Physical Review Letters **109**, 037002 (2012).
- [79] Yi-Zhuang You, Xiao-Gang Wen. *Projective non-Abelian statistics of dislocation defects in a Z_N rotor model*. Physical Review B **86**, 161107(R) (2012).
- [80] Yi-Zhuang You, Itamar Kimchi, Ashvin Vishwanath. *Doping a spin-orbit Mott insulator: topological superconductivity from the Kitaev-Heisenberg model and possible applications to $(Na_2/Li_2)IrO_3$* . Physical Review B **86**, 085145 (2012).
- [81] Yi-Zhuang You, Fan Yang, Su-Peng Kou, Zheng-Yu Weng. *Phase diagram and a possible unified description of intercalated iron selenide superconductors*. Physical Review Letters **107**, 167001 (2011).
- [82] Itamar Kimchi, Yi-Zhuang You. *Kitaev-Heisenberg- J_2 - J_3 model for the iridates A_2IrO_3* . Physical Review B **84**, 180407(R) (2011).

- [83] Yi-Zhuang You, Fan Yang, Su-Peng Kou, Zheng-Yu Weng. *Magnetic and superconducting instabilities in a hybrid model of itinerant/localized electrons for iron pnictides*. Physical Review B **84**, 054527 (2011).
- [84] Yi-Zhuang You, Hong Yao, Dung-Hai Lee. *The spin excitations of the block-antiferromagnetic state in $K_{0.8}Fe_{1.6}Se_2$* . Physical Review B **84**, 020406(R) (2011).
- [85] Chen-Ning Yang, Yi-Zhuang You. *One-dimensional w -component fermions and bosons with repulsive delta function interaction*. Chinese Physics Letters **28**(2), 020503 (2010).
- [86] Yi-Zhuang You. *Ground state energy of one dimensional δ -function interacting bose and Fermi gas*. Chinese Phys. Lett. **27**(8), 080305 (2010).
- [87] Yizhuang You, Xiaohan Wang, Sihui Wang, Yonghua Pan, Jin Zhou. *A new method to demonstrate frustrated total internal reflection in the visible band*. American Journal of Physics **76**(3), 224-228 (2008).

Book Chapters:

- [88] Yi-Zhuang You, Juven Wang. *Deconfined Quantum Criticality among Grand Unified Theories*. A Festschrift in Honor of the CN Yang Centenary: Scientific Papers, 367-383 (2022).
- [89] Yi-Zhuang You, Zheng-Yu Weng. *Coexisting Itinerant and Localized Electrons*. In: *Iron-Based Superconductivity*, P. D. Johnson ed., Springer International Publishing, Springer Series in Material Science **211**, Chap. 10, p. 377-408 (2015).

Preprints:

- [90] Yuxuan Guo, Yi-Zhuang You. *Symmetric Mass Generation of Kähler-Dirac Fermions from the Perspective of Symmetry-Protected Topological Phases*. arXiv:2306.17420 (2023).
- [91] Zhelun Zhang, Yi-Zhuang You. *Observing Schrodinger's Cat with Artificial Intelligence: Emergent Classicality from Information Bottleneck*. arXiv:2306.14838 (2023).
- [92] Wanda Hou, Yi-Zhuang You. *Machine Learning Renormalization Group for Statistical Physics*. arXiv:2306.11054 (2023).
- [93] Da-Chuan Lu, Juven Wang, Yi-Zhuang You. *Definition and Classification of Fermi Surface Anomalies*. arXiv:2302.12731 (2023).
- [94] Weitang Liu, Ying-Wai Li, Yi-Zhuang You, Jingbo Shang. *Gradient-based Wang--Landau Algorithm: A Novel Sampler for Output Distribution of Neural Networks over the Input Space*. arXiv:2302.09484 (2023).
- [95] Wanda Hou, Yi-Zhuang You. *Variational Monte Carlo Study of Symmetric Mass Generation in a Bilayer Honeycomb Lattice Model*. arXiv:2212.13364 (2022).
- [96] Jong Yeon Lee, Yi-Zhuang You, Cenke Xu. *Symmetry protected topological phases under decoherence*. arXiv:2210.16323 (2022).
- [97] Hung-Hwa Lin, Wei-Ting Kuo, Daniel P Arovas, Yi-Zhuang You. *Fluctuation of Chern Numbers in a Parametric Random Matrix Model*. arXiv:2207.12562 (2022).

- [98] Hong-Ye Hu, Ryan Larose, Yi-Zhuang You, Eleanor Rieffel, Zhihui Wang. *Logical shadow tomography: Efficient estimation of error-mitigated observables*. arXiv:2203.07263 (2022).
- [99] Meng Zeng, Lun-Hui Hu, Hong-Ye Hu, Yi-Zhuang You, Congjun Wu. *Phase-fluctuation Induced Time-Reversal Symmetry Breaking Normal State*. arXiv:2102.06158 (2021).
- [100] Xiao-Yang Huang, Taige Wang, Shang Liu, Hong-Ye Hu, Yi-Zhuang You. *Quantum Magnetism in Wannier-Obstructed Mott Insulators*. arXiv:2005.01439 (2020).
- [101] Chao-Ming Jian, Alex Rasmussen, Yi-Zhuang You, Cenke Xu. *Emergent symmetry and tricritical points near the deconfined quantum critical point*. arXiv:1708.03050 (2017).
- [102] Alex Rasmussen, Yi-Zhuang You, Cenke Xu. *Stable gapless Bose liquid phases without any symmetry*. arXiv: 1601.08235 (2016).
- [103] Kevin Slagle, Zhen Bi, Yi-Zhuang You, Cenke Xu. *Many-body localization of symmetry protected topological states*. arXiv:1505.05147 (2015).
- [104] Yi-Zhuang You, Meng Cheng. *Measuring modular matrices by shearing lattices*. arXiv:1502.03192 (2015).
- [105] Yi-Zhuang You, Yoni BenTov, Cenke Xu. *Interacting topological superconductors and possible origin of $16n$ chiral fermions in the Standard Model*. arXiv: 1402.4151 (2014).
- [106] Fangzhou Liu, Zhenghan Wang, Yi-Zhuang You, Xiao-Gang Wen. *Modular transformations and topological orders in two dimensions*. arXiv: 1303.0829 (2013).

Services

- Editorial Board Member for IOP Science journal “Machine Learning: Science and Technology” (MLST), (2019 - now).
- Referee for Nature Physics, APS Journals (Physical Review Letters, Physical Review X, Physical Review B), American Journal of Physics, and Chinese Physics Letters.
- Co-organizer of “The First International Conference on Machine Learning and Physics”, Tsinghua University, Beijing, July 4-6 (2018).
- Co-organizer of “Artificial Intelligence and Quantum Physics workshop”, Nanjing University, Nanjing, December 20-22 (2017).
- Co-organizer of “Topological States and Phase Transitions in Strongly Correlated Systems”, Kavli Institute for Theoretical Science, Beijing, July 3-14 (2017).

Talks

Invited Talks:

- *Emergent classicality of information bottleneck*. Perimeter Institute: the conference on Machine Learning for Quantum Many-Body Systems, June 15 (2023).
- *Scalable classical shadow tomography with shallow circuits and quantum dynamics*. KITP Program: Quantum Many-Body Dynamics and Noisy Intermediate-Scale Quantum Systems, Santa Barbara, September 7 (2022).
- *Symmetric mass generation*. Paths to Quantum Field Theory 2022, Durham UK, August 19 (2022).
- *Renormalization group and generative modeling*. Institute for Artificial Intelligence and Fundamental Interactions (IAIFI) workshop, Boston, August 9 (2022).

- *Deconfined quantum criticality beyond the Standard Model*. Simons Collaboration on Ultra-Quantum Matter Annual Meeting, January 21 (2022).
- *Renormalization group and machine learning*. Conference on Causality Emergence. Swarmer Club, Beijing, August 20 (2021).
- *Entanglement feature and locally scrambled quantum dynamics*. Recent Advances on Theories of Quantum Matters, Institute for Advanced Study, Tsinghua University, January 5 (2021).
- *Entanglement feature and locally scrambled quantum dynamics*. Dynamics, Criticality, and Universality in Random Quantum Circuits, Princeton University, October 2 (2020).
- *Machine learning physics: from quantum mechanics to holographic geometry*. Machine Learning for Quantum Design, Perimeter Institute, July 11 (2019).
- *Emergent symmetry and conserved currents at deconfined quantum critical points*. KIAS Workshop on Topology and Correlation in Quantum Materials. Korean Institute for Advanced Study, May 29 (2019).
- *Machine learning holography*. Machine Learning Meets Physics, Microsoft Research in Redmond, April 26 (2019).
- *Emergent symmetry and conserved currents at deconfined quantum critical points*. Topological Aspects of Condensed Matter, Harvard University (CMSA), April 1 (2019).
- *Machine learning physics: from quantum mechanics to holographic geometry*. APS March Meeting, Invited Talk, February 13 (2019).
- *Entanglement features of random Hamiltonian dynamics*. Conference on Novel Approaches to Quantum Dynamics, Kavli Institute for Theoretical Physics, August 30 (2018).
- *Valley fluctuations and $SO(4)$ symmetry in twisted bilayer graphene*. Workshop on Electron Correlation and Superconductivity in Graphene and Related Materials: Moire is Different, Kavli Institute of Theoretical Science, Beijing, July 12 (2018).
- *Machine learning holography*. The First International Conference on Machine Learning and Physics, Tsinghua University, Beijing, July 6 (2018).
- *Deconfined criticality - from bosonic topological transitions to symmetric mass generation*. International Workshop on New Paradigms in Quantum Matter, Institute of Physics Chinese Academy of Science, Beijing, June 28 (2018).
- *Machine learning holography*. Workshop on Machine Learning in Geometry and Physics, Tsinghua Sanya International Math Center, Sanya, June 14 (2018).
- *From bosonic topological transition to symmetric mass generation*. Workshop on Field Theory Dualities and Strongly Correlated Matter, Aspen Center for Theoretical Physics, March 20 (2018).
- *Exotic quantum criticalities among 2+1D symmetry protected topological phases*. Workshop on Entanglement Universality in Correlated Electronic Systems, Southern University of Science and Technology of China, December 23 (2017).
- *Tensor network holography and deep learning*. Western Forum on Machine Learning and its Applications, Sichuan Normal University, December 13 (2017).
- *Symmetric mass generation in Dirac semimetals*. Workshop on Chaos, Duality, and Topology in Condensed matter Physics, University of Illinois at Urbana-Champaign, November 4 (2017).
- *Hyperbolic network, Boltzmann machine and holographic duality*. Frontiers in Artificial Intelligence and Application. Tsinghua University, July 22 (2017).

- *Machine learning and tensor network holography*. Workshop on Machine Learning and Many-Body Physics, Kavli Institute for Theoretical Science, June 30 (2017).
- *Bilayer graphene as a platform for bosonic symmetry protected topological states*. Many-body Entanglement and Topological Quantum Phenomena Workshop, Tsinghua Sanya International Mathematics Forum, December 13 (2016).
- *Exotic topological phase transitions in correlated spin-orbit coupled systems*. Program on New Phases and Emergent Phenomena in Correlated Materials with Strong Spin-Orbit Coupling, Kavli Institute for Theoretical Physics, September 3 (2015).
- *Exotic quantum phase transitions in strongly interacting topological insulators*. Asia Pacific Workshop, Zhejiang University, April 14 (2015).
- *Two-fluid model for Iron-based superconductors*. Beijing Forum on High-Temperature Superconductivity, Tengchong, May 30 (2013).

Seminar Talks:

- *Fermi surface anomaly and symmetric mass generation*. Simons Center of Geometry and Physics, May 24 (2023).
- *Fermi surface anomaly and symmetric mass generation*. Ohio State University, April 10 (2023).
- *Fermi surface anomaly and symmetric mass generation*. University of California, Santa Barbara, March 31 (2023).
- *Symmetric mass generation*. University of Colorado Boulder, March 24 (2023).
- *Classical shadow tomography with locally scrambled quantum dynamics*. Texas A&M University, April 23 (2022).
- *Deconfined quantum criticality beyond the Standard Model*. University of California Santa Barbara, January 28 (2022).
- *Intervalley coherence and intervalley superconductivity in ABC-stacked trilayer graphene*. University of Florida, November 29 (2021).
- *Intervalley coherence and intervalley superconductivity in ABC-stacked trilayer graphene*. University of California Berkeley, October 6 (2021).
- *Machine learning physics: from quantum mechanics to holographic geometry*. Alibaba DAMO Academy, August 19 (2021).
- *Quantum magnetism in Wannier-obstructed Mott insulators*. Pennsylvania State University, February 12 (2021).
- *Machine learning physics: from quantum mechanics to holographic geometry*. University of Southern California, March 9 (2020).
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