

Yi-Ting Hsu

CONTACT INFORMATION Physics Department, University of Notre Dame e-mail: yhsu2@nd.edu
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PROFESSIONAL EXPERIENCE **Physics Department**, University of Notre Dame, IN **2020 –**
Assistant Professor

Condensed Matter Theory Center, University of Maryland, MD **2017 – 2020**
Postdoctoral Research Associate

EDUCATION **Cornell University**, Ithaca, New York **May 2017**
Doctor of Philosophy
Thesis title: Topological Phases in the Real World
Advisor: Eun-Ah Kim

National Tsing-Hua University, Hsinchu, Taiwan **May 2009**
Bachelor of Science

RESEARCH INTERESTS Theoretical Condensed Matter Physics

REFeree EXPERIENCE Nature
Nature Communication
Asia Materials
Physics Review Letter
Physics Review B
Physical Review Materials
Physica B

SELECTED PUBLICATIONS **“Boundary-diagnosing topological invariants beyond symmetry indicators: A case study of two-fold rotational symmetric superconductors”**
Y. Chen, S.-J. Huang, Y.-T. Hsu, T.-C. Wei, arXiv:2109.06959 (2021).

“Spin-valley locked instabilities in moiré transition metal dichalcogenides with conventional and higher-order Van Hove singularities”
Y.-T. Hsu, F. Wu, S. Das Sarma, Phys. Rev. B **104**, 195134 (2021).

“Faithful derivation of symmetry indicators: A case study for topological superconductors with time-reversal and inversion symmetries
S.-J. Huang and Y.-T. Hsu, Phys. Rev. Research **3**, 013243 (2021)

“Topological superconductivity, ferromagnetism, and valley-polarized phases in moiré systems: Renormalization group analysis for twisted double bilayer graphene”
Y.-T. Hsu, F. Wu, S. Das Sarma, Phys. Rev. B **102**, 085103 (2020). Editor’s suggestion.

“Higher-Order Topological Dirac Superconductors”
R.-X. Zhang, Y.-T. Hsu, S. Das Sarma, Phys. Rev. B **102**, 094503 (2020)

“Inversion-protected topological crystalline superconductivity in monolayer WTe₂”
Y.-T. Hsu, W. S. Cole, R.-X. Zhang, J. D. Sau, Phys. Rev. Lett. **125**, 097001 (2020)

“Butterfly effect in interacting Aubry-Andre model: Thermalization, slow scrambling, and many-body localization”

S. Xu, X. Li, Y.-T. Hsu, B. Swingle, S. Das Sarma, Phys. Rev. Research **1**, 032039 (2019)

“Machine learning many-body localization: Search for the elusive nonergodic metal”

Y.-T. Hsu, X. Li, D.-L. Deng, S. Das Sarma, Phys. Rev. Lett. **121**, 245701 (2018)

“Hybridization-induced interface states in a topological insulator-magnetic metal heterostructure”

Y.-T. Hsu, K. Park, E.-A. Kim, Phys. Rev. B **96**, 235433 (2017)

“Band-structure-dependence of renormalization-group prediction on pairing channels”

Y.-T. Hsu, A. F. Rebola, C. J. Fennie, E.-A. Kim, arXiv:1701.07884 (2017)

“Topological superconductivity in monolayer transition metal dichalcogenides”

Y.-T. Hsu, A. Vaezi, M. H. Fischer, E.-A. Kim, Nat. Comm. **8**, 14985 (2017)

“Manipulating superconductivity in ruthenates through Fermi surface engineering”

Y.-T. Hsu, W. Cho, A. F. Rebola, B. Burganov, C. Adamo, K. M. Shen, D. G. Schlom, C. J. Fennie, E.-A. Kim, Phys. Rev. B **94**, 045118 (2016)

“Effects of surface-bulk hybridization in three-dimensional topological metals”

Y.-T. Hsu, M. H. Fischer, T. L. Hughes, K. Park, E.-A. Kim, Phys. Rev. B **89**, 205438 (2014)

“Field-induced long-lived supermolecules”

S.-J. Huang, Y.-T. Hsu, H. Lee, Y.-C. Chen, A. G. Volosniev, N. T. Zinner, D.-W. Wang, Phys. Rev. A **85**, 055601 (2012)

“Interaction-induced ferroelectricity in the rotational states of polar molecules”

C.-H. Lin, Y.-T. Hsu, H. Lee, D.-W. Wang, Phys. Rev. A **81**, 031601(R) (2010)

SPECIAL
PUBLICATION

“Spin-triplet Superconductivity in twisted trilayer graphene”, Y.-T. Hsu, *Nature News & views*, to appear soon (2021)

SELECTED TALKS

“Majorana corner modes in transition metal dichalcogenides”, Invited talk, March meeting (March 2022)

“Inversion-protected higher-order topological superconductivity: material candidates, recipe, database search”, Seminar, Harvard (April 2021)

“Inversion-protected Majorana corner modes in superconducting topological metal: A case study of monolayer WTe₂”, invited talk, MRS Spring Meeting (April 2021)

“Inversion-protected higher-order topological superconductivity: material candidates, recipe, database search”, Seminar, Virginia Tech (Feb. 2021)

“Material search and realization of topological superconductors”, Colloquium, City University of Hong Kong (Feb. 2021)

“Inversion-protected Majorana corner modes in superconducting topological metal: A case study of monolayer WTe₂”, KITP (Oct. 2020)

“Inversion-protected higher-order topological superconductivity in two dimension”, Leibniz Institute for Solid State and Materials Research Dresden (May 2020)

“Topological phases in the real world”, Colloquium, University of Notre Dame (Oct. 2019)

“Machine-learning manybody localization”, Perimeter Institute (Sep. 2019)

“Inversion-protected higher-order topological superconductivity in monolayer WTe₂”, Perimeter Institute (Sep. 2019)

“Machine-learning dynamical phases: searching for the elusive non-ergodic metal”, National Center for Theoretical Sciences, Hsinchu, Taiwan (July 2019)

“Inversion-protected higher-order topological superconductivity in monolayer WTe₂”, Academia Sinica, Taiwan (July 2019)

“Topological superconductivity in monolayer transition metal dichalcogenides”, Invited talk, March meeting (Mar. 2018)

“Topological superconductivity in monolayer transition metal dichalcogenides”, KITP (Aug. 2017)

RECENT
WORKSHOPS AND
CONFERENCES

New Directions in Strong Correlation Physics: From Strange Metals to Topological Superconductivity, Aspen (23 Jan.-28 Jan. 2022)

Correlated Systems with Multicomponent Local Hilbert Spaces, KITP (28 Sep.-18 Dec. 2020)

Spin and heat transport in quantum and topological materials, KITP (4-22 Nov. 2019)

Machine-learning for Many-body Physics, KITP (28 Jan.-22 Feb. 2019)

Intertwined Order and Fluctuation in Quantum Materials, KITP (17 July-25 Aug. 2017)

Synthetic Quantum Matter, KITP (17 Oct.-10 Nov. 2016)