

# JUNKAI DONG

337 Lyman Hall, Harvard University  
(+1)6073795651  $\diamond$  junkaidong@g.harvard.edu

## EDUCATION

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### Harvard University

August 2021 - Present

Doctor of Philosophy

Major: Physics

Advisor: Ashvin Vishwanath

### Cornell University

August 2017 - May 2021

Bachelor of Arts, Summa cum Laude.

Majors: Physics, Math

GPA: 4.174/4.3

Senior Thesis: *Averaging over deformed WZW models*

## HONORS AND AWARDS

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- Purcell Fellowship, Harvard University, 2021
- Shou-Cheng Zhang Fellowship, Stanford University, 2021 (Declined)
- First-year Fellowship, MIT, 2021 (Declined)
- Donald R. Yennie Prize in Physics, Cornell University, 2021
- Bethe Thesis Prize in Physics, Cornell University, 2021

## MANUSCRIPTS

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9. J. Dong, J. Wang, P. J. Ledwith, A. Vishwanath, and D. E. Parker, “Composite Fermi Liquid at Zero Magnetic Field in Twisted  $\text{MoTe}_2$ ”, *Phys. Rev. Lett.* **131**, 136502 (2023). *arXiv:2306.01719*. (Editor’s Suggestion, Featured in *Physics*)
8. Q. Gao, J. Dong, P. J. Ledwith, D. E. Parker and E. Khalaf, “Untwisting moiré physics: Almost ideal bands and fractional Chern insulators in periodically strained monolayer graphene”, *Phys. Rev. Lett.* **131**, 096401 (2023). *arXiv:2211.00658*. (PRL cover)
7. J. Dong, P. J. Ledwith, E. Khalaf, J. Y. Lee and A. Vishwanath, “Many-Body Ground States from Decomposition of Ideal Higher Chern Bands: Applications to Chirally Twisted Graphene Multilayers”, *Phys. Rev. Research* **5**, 023166 (2023). *arXiv:2210.13477*.
6. J. Dong, J. Wang and L. Fu, “Dirac electron under periodic magnetic field: Platform for fractional Chern insulator and generalized Wigner crystal”, *arXiv:2208.10516*.
5. J. Dong, T. Hartman and Y. Jiang, “Averaging over moduli in deformed WZW models”, *J. High Energ. Phys.* **2021**, 185 (2021). *arXiv:2105.12594*.
4. J. Dong, V. Juricic and B. Roy, “Topoelectric circuits: Theory and construction”, *Phys. Rev. Research* **3**, 023056 (2021). *arXiv:2008.11202*.
3. J. Dong, V. Elser, G. Gyawali, K. Y. Jee, J. Kent-Dobias, A. Mandaiya, M. Renz and Y. Su, “Glass phenomenology in the hard matrix model”, *J. Stat. Phys.* **2021**(9), 093302 (2021). *arXiv:1912.07558*.
2. J. Dong and E. Mueller, “Exact Topological Flat Bands from Continuum Landau Levels”, *Phys. Rev. A* **101**, 013629 (2020). *arXiv:1910.08429*.
1. J. Dong, Y. Chen, D. Xu and Z.-Q. Yin, “Greenberger-Horne-Zeilinger test for multi-dimension and arbitrary time nodes entangled histories”, *Sci. Bull.* **62**(18), pp.1235-1238 (2016). *arXiv:1610.04296*.

## PRESENTATIONS

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- *Composite Fermi Liquid at Zero Magnetic Field in Twisted  $\text{MoTe}_2$* , Invited Talk, Special AEP Seminar, Cornell University, August 2023.
- *Composite Fermi Liquid at Zero Magnetic Field in Twisted  $\text{MoTe}_2$* , Poster, Princeton Summer School on Condensed Matter Physics 2023, Princeton University, July 2023.
- *Composite Fermi Liquid at Zero Magnetic Field in Twisted  $\text{MoTe}_2$* , Invited Talk, Thouless Institute for Quantum Matter Seminar, University of Washington Seattle, June 2023.
- *Exact Many-Body Ground States from Decomposition of Ideal Higher Chern Bands: Applications to Chirally Twisted Graphene Multilayers*, Poster, Spring 2023 meeting of the Simons Collaboration on Ultra-Quantum Matter, CU Boulder, CO, May 2023.
- *Exact Many-Body Ground States from Decomposition of Ideal Higher Chern Bands: Applications to Chirally Twisted Graphene Multilayers*, Talk, APS March Meeting, 2023.
- *Exact Many-Body Ground States from Decomposition of Ideal Higher Chern Bands: Applications to Chirally Twisted Graphene Multilayers*, Poster, National High Magnetic Field Laboratory Theory Winter School, FL, Jan 2023.
- *Exact Many-Body Ground States from Decomposition of Ideal Higher Chern Bands: Applications to Chirally Twisted Graphene Multilayers*, Invited Talk, Quantum Matter in Mathematics and Physics, Center of Mathematical Sciences and Applications, Harvard University, MA, Dec 2022.
- *Exact Topological Flat Bands from Continuum Landau Levels*, Poster, ARO/AFOSR MURI Program Review Meeting, UMass Amherst, MA, Oct 2019.

## TEACHING EXPERIENCE

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### Teaching Fellow, Fall 2023

Held sections and office hours for PHYSICS 195A (Solid State Physics).

### Teaching Assistant, Fall 2019

Held one-hour study halls for PHYS 7651 (Quantum Field Theory 1) every week.

### Teaching Assistant, Fall 2020

Graded homework and answers questions online for PHYS 7681 (Quantum Information Processing).

## SKILLS

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*Languages*      Chinese (native), English (fluent)

*Software*      Julia, bash, MATHEMATICA, Powerpoint,  $\text{\LaTeX}$