JUNKAI DONG

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EDUCATION

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

- 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

10. J. Dong, T. Wang, T. Wang, T. Soejima, M. P. Zaletel, A. Vishwanath, and D. E. Parker, "Anomalous Hall Crystals in Rhombohedral Multilayer Graphene I: Interaction-Driven Chern Bands and Fractional Quantum Hall States at Zero Magnetic Field", *arXiv:2311.05568*.

9. J. Dong, J. Wang, P. J. Ledwith, A. Vishwanath, and D. E. Parker, "Composite Fermi Liquid at Zero Magnetic Field in Twisted $MoTe_2$", *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, "Topolectric 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

- *Composite Fermions Form and Flow without a Magnetic Field*, Invited Talk, Physical Review Journal Club, American Physical Society, November 2023.
- *Composite Fermi Liquid at Zero Magnetic Field in Twisted $MoTe_2$*, Invited Talk, Special AEP Seminar, Cornell University, August 2023.
- *Composite Fermi Liquid at Zero Magnetic Field in Twisted $MoTe_2$*, Poster, Princeton Summer School on Condensed Matter Physics 2023, Princeton University, July 2023.
- *Composite Fermi Liquid at Zero Magnetic Field in Twisted $MoTe_2$*, 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

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

Languages Chinese (native), English (fluent)
Software Julia, bash, MATHEMATICA, Powerpoint, LaTeX