Nishchhal Verma

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Education

The Ohio State University, Columbus 2017 – 2022

PhD in Physics, Thesis: "*Topology and Correlations in Quantum Materials*"
Advisor: Mohit Randeria

Indian Institute of Science, Education and Research, Kolkata 2012 – 2017

BS-MS in Physics, Senior Thesis: "*Melting in 2D One Component Plasma*"

Professional Appointments

Department of Physics, Columbia University, New York City 2022 – Present

Postdoctoral Reserach Scientist
Advisor: Raquel Queiroz

Mechanobiology Institute, Singapore 2016

Summer Research Fellow
Advisors: Jean-Francois Rupprecht and Jacques Prost

Max-Planck Institute for Radio Astronomy, Bonn 2015

DAAD WISE Fellow
Advisor: Emmanouil Angelakis

Honors and Awards

Presidential Fellowship, Ohio State University 2022
Hazel Brown Outstanding TA Award, Ohio State University 2019
University Fellowship, Ohio State University 2017
IAS-INSA-NASI Fellowship, Govt. of India 2014
KVPY Fellowship, Govt. of India 2012-2017

Publications

As of September 4, 2025: Total citations – 454; h-index – 10; i10-index – 10

13. **N. Verma**, P. J. W. Moll, T. Holder, R. Queiroz, arxiv:2504.07173 (2025)
12. **N. Verma**, R. Queiroz, arxiv:2503.24344 (2025)
11. **N. Verma**, R. Queiroz, arxiv:2403.07052 (2024)
10. V. Crepel*, P. Ding*, **N. Verma**, N. Regnault, R. Queiroz, *Phys. Rev. X* **15**, 021056 (2025)
9. **N. Verma**, R. Queiroz, *Phys. Rev. Lett.* **134**, 106403 (2025)
8. M. Kreidel et al., **N. Verma**, *Phys. Rev. Research* **6**, 043245 (2024)
7. **N. Verma***, D. Guerci*, R. Queiroz, *Phys. Rev. Lett.* **132**, 236001 (2024)
6. T. Webb et al., **N. Verma**, *Nano Lett.* **24**(15), 4393–4399 (2024)
5. **N. Verma***, Z. Addison*, M. Randeria, *Sci. Adv.* **8**, eabq2765 (2022)
4. G. Wu et al., **N. Verma**, *Nano Lett.* **22**(3), 1115–1121 (2022)
3. **N. Verma**, T. Hazra, M. Randeria, *Proc. Natl. Acad. Sci.* **118** (34), e2106744118 (2021)
2. R. Lyu*, Z. Tuchfeld*, **N. Verma***, *Phys. Rev. B* **103**, 245424 (2021)
1. T. Hazra, **N. Verma**, M. Randeria, *Phys. Rev. X* **9**, 031049 (2019)
0. S. Tlili et al., **N. Verma**, *Proc. Natl. Acad. Sci.* **116** (51), 25430-25439 (2019).

Technical Skills

Languages: Python, SQL, MATLAB, Julia
Libraries: NumPy, SciPy, Pandas, Matplotlib, scikit-learn, seaborn, tqdm
Tools: Git, GitHub, GitLab, LaTeX, Bash, Slurm

Conferences and Talks

Boulder School for Condensed Matter and Materials Physics, Boulder — July 2025

"*Quantum Geometry in Correlated Matter*" — May 2025
FTPI Workshop on Quantum Matter, Minneapolis (invited)

"*Time-dependent Quantum Geometry*" — April 2025
Max-Planck New York Center Symposium, Flatiron Institute (invited)

"*Quantum Geometry: A new perspective in Quantum Materials*" — March 2025
APS Global Physics Summit, Anaheim (invited)

"*Some rules on sum rules*" — October 2024
Workshop on moire materials, KITP Santa Barbara (invited)

"*Quantum metric and generalized sum rules*" (Blackboard Talk) — June 2024
Aspen Center for Physics, Aspen (invited)

"*Instantaneous response and quantum geometry of insulators*" — March 2024
CUNY Graduate Center Conference, New York City (invited)

APS March Meeting — March 2021, 22, 23, 24

FTPI March Meeting, Minneapolis — March 2024

Gordon Research Conference on Topology and Correlations, Ventura — May 2023

MagLab Theory Winter School, Tallahassee — December 2022

Gordon Research Conference on Strongly Correlated Systems, Mt. Holyoke — May 2022

Topological Matter School, Donostasia-San Sebastian (virtual) — August 2021

Harnessing Quantum Matter Data Revolution, Cornell University (virtual) — June 2021

Natural Language Processing Boot Camp, Erdős Institute, (virtual) — March 2021

Ultra Quantum Matter Summer School, Perimeter Institute (virtual) — August 2020

Data Science Boot Camp, Erdős Institute (virtual) — May 2020

Lindau Nobel Laureates Meeting, Germany — June 2016

Professional Activities

Referee — 2022 – Present
Reviewer for *Phys. Rev. X*, *Phys. Rev. Lett.*, *Phys. Rev. B*, *Nat. Commun.*

Co-Organizer — 2022 – 2025
Quantum Materials Seminar, Columbia University

Chair, Internal Advisory Council — 2021 – 2022
Center for Emergent Materials, NSF-MRSEC, Ohio State University

Mentor — 2020 – 2021
Polaris Mentorship Program, Ohio State University

References

Raquel Queiroz
Assistant Professor,
Columbia University
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Mohit Randeria
Professor,
Ohio State University
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Professor,
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