Navdeep Singh Dhindsa

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Employment

- **The Institute of Mathematical Sciences (IMSc), Chennai** — **Post Doctoral Fellow**
  Tamil Nadu, India — *August 2023 - Present*

Academic Qualifications

- **Indian Institute of Science Education and Research (IISER), Mohali** — **PhD, Physics**
  Punjab, India — *January 2019 - June 2023*
  Thesis Title: Non-perturbative Studies of Non-conformal Field Theories
  Supervisor: Dr. Anosh Joseph

- **Punjabi University, Patiala** — **M.Sc., Physics**
  Punjab, India — *August 2016 - August 2018*

Publications/Conference Proceedings

- Exploring Single-Flavor Dibaryons: A lattice perspective
  Navdeep Singh Dhindsa, Nilmani Mathur and M. Padmanath
  Proceedings of Science ***LATTICE2024****, 082* (2024) [*arXiv:2409.10167* [*hep-lat*]]
- Nonperturbative phase diagram of two-dimensional $N = (2, 2)$ super-Yang–Mills
  Navdeep Singh Dhindsa, Raghav G. Jha, Anosh Joseph, and David Schaich
  Phys.Rev.D 110 (2024) 5, 054507 (2024) [*arXiv:2312.04980* [*hep-lat*]]
  Data Release: *doi.org/10.5281/zenodo.10083865*
- Deconfinement Phase Transition in Bosonic BMN Model at General Coupling
  Navdeep Singh Dhindsa, Anosh Joseph, Abhishek Samlodia and David Schaich
  Springer Proc.Phys. 304 (2024) 1020-1022 (2024) [*arXiv:2308.02538* [*hep-lat*]]
- Non-perturbative phase structure of the bosonic BMN matrix model
  Navdeep Singh Dhindsa, Raghav G. Jha, Anosh Joseph, Abhishek Samlodia and David Schaich
  Journal of High Energy Physics ***05****, (2022) 169* (2022) [*arXiv:2201.08791* [*hep-lat*]]
  Data Release: *doi.org/10.5281/zenodo.6462433*
- Large-N limit of two-dimensional Yang–Mills theory with four supercharges
  Navdeep Singh Dhindsa, Raghav G. Jha, Anosh Joseph and David Schaich
  Proceedings of Science ***LATTICE2021****, 433* (2022) [*arXiv:2109.01001* [*hep-lat*]]
- Probing Non-perturbative Supersymmetry Breaking through Lattice Path Integrals
  Navdeep Singh Dhindsa and Anosh Joseph
  European Physical Journal Plus ***137****, 1155* (2022) [*arXiv:2011.08109* [*hep-lat*]]

Preprints

- Precise study of triply charmed baryons (Ω_{ccc})
  Navdeep Singh Dhindsa, Debsubhra Chakraborty, Archana Radhakrishnan, Nilmani Mathur and M. Padmanath

(2024) [*arXiv:2411.12729* [*hep-lat*]]

Talks Delivered

- Exploring Baryon-Baryon Interactions Using Lattice QCD (April 2, 2025) at **YITP international workshop on Hadron in Nucleus (HIN2025)** , April 2 - April 4 2025, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan
- Exploring Baryon-Baryon Interactions Using Lattice QCD (January 31, 2025) at **Conference on Cosmology, Astrophysics, and Particle Physics (CCAP)**, January 30 - February 2 2025, SRMIST Chennai, India
- Exploring Single-Flavor Dibaryons: A lattice perspective (July 30, 2024) at **41st International Symposium on Lattice Field Theory (LATTICE2024)**, July 28 - August 3 2024, University of Liverpool, UK
- Insights into Dibaryon Interactions in the Heavy Quark Sector (July 15, 2024), Physics seminar at IMSc Chennai, India
- Lattice Gauge Theories and Tensors (February 15, 2024), JC talk at IMSc Chennai, India
- Holography from Large Matrices on Lattice and Beyond (October 30, 2023) at University of the Witwatersrand, South Africa
- Large Matrices on Lattice and Holography (March 30, 2023) at IMSc Chennai, India
- Non-perturbative Studies of Non-conformal Field Theories (March 20, 2023) thesis defense talk at IISER Mohali, India
- Large Matrices and Holography (January 24, 2023) review talk at IISER Mohali, India
- (*ONLINE*) Supersymmetric Theories on Lattice and Holography (November 23, 2022) seminar at APCTP Pohang, Korea
- (*ONLINE*) Non-perturbative study of Yang-Mills theory with four supercharges in two dimensions (August 08, 2022) at **39th International Symposium on Lattice Field Theory (LATTICE2022)**, August 8 - August 13 2022, University of Bonn, Germany
- Non-perturbative phase structure of the bosonic BMN matrix model (January 21, 2022) review talk at IISER Mohali, India
- (*ONLINE*) Non-perturbative study of two-dimensional Yang-Mills with four supercharges at Large N (July 31, 2021) at (*Virtual*) **Shivalik HEPCATS Meeting Summer 2021**, hosted by IIT Ropar, India
- (*ONLINE*) Large-N limit of two-dimensional Yang-Mills theory with four supercharges (July 29, 2021) at **38th International Symposium on Lattice Field Theory (LATTICE2021)**, 26th-30th July 2021, Zoom/Gather @Massachusetts Institute of Technology, USA
- (*ONLINE*) Field Theory Matrix Models on Lattice: A Proem (January 30, 2021) at (*Virtual*) **Shivalik HEPCATS Meeting Winter 2020**, hosted by IISER Mohali, India
- (*ONLINE*) Probing Non-perturbative Supersymmetry Breaking through Lattice Path Integrals (November 26, 2020) at **THEP Journal Club**, IISER Mohali, India
- (*ONLINE*) Supersymmetric Quantum Mechanics on Lattice using Hamiltonian Monte Carlo (July 31, 2020) at (*Virtual*) **Shivalik HEPCATS Meeting Summer 2020**, hosted by IISER Mohali, India

Poster Presented

- Dibaryons: Insights from the Heavy Quark Sector (September 25, 2024) at **Trends in Astroparticle and Particle Physics (TAPP)**, September 25 - September 27 2024, IMSc Chennai, India
- Non-perturbative lattice studies of exotic multiquark systems (July 22, 2024) at **School on Continuum Foundations of Lattice Gauge Theories**, July 22 - July 26 2024, CERN, Switzerland
- Deconfinement phase transition in bosonic BMN model at general coupling (December 15, 2022) at **XXV**

DAE-BRNS HEP Symposium, December 12 - December 16 2022, IISER Mohali, India

Conferences/Workshops Attended

- YITP international workshop on Hadron in Nucleus (HIN2025), Yukawa Institute for Theoretical Physics, Kyoto University, Japan (April 2 - April 4 2025)
- IMSc Spring School on High Energy Physics, IMSc Chennai, India (February 24 - March 7 2025)
- Conference on Cosmology, Astrophysics, and Particle Physics (CCAPP), SRMIST Chennai, India (January 30 - February 2 2025)
- Trends in Astroparticle and Particle Physics (TAPP), IMSc Chennai, India (September 25 - September 27 2024)
- 41st International Symposium on Lattice Field Theory (LATTICE2024), University of Liverpool, UK (July 28 - August 3 2024)
- School on Continuum Foundations of Lattice Gauge Theories, CERN, Switzerland (July 22 - July 26 2024)
- 13th Joburg Theoretical Physics School, University of the Witwatersrand, South Africa (October 23 - October 27, 2023)
- Observables in Quantum Gravity, IISER Mohali, India (March 23 - March 25, 2023)
- XXV DAE-BRNS HEP Symposium, IISER Mohali, India (December 12 - December 16, 2022)
- Nonperturbative and Numerical Approaches to Quantum Gravity, String Theory, and Holography, ICTS-TIFR, India (August 22 - September 02, 2022)
- (*Virtual*) 39th International Symposium on Lattice Field Theory (LATTICE2022), University of Bonn, Germany (August 8 - 13, 2022)
- Shivalik HEPCATS Meeting Winter 2021, IISER Mohali, India (December 18, 2021)
- (*Virtual*) Lattice Practices 2021, The Cyprus Institute, Cyprus (October 6 - 12, 2021)
- (*Virtual*) Shivalik HEPCATS Meeting Summer 2021, IIT Ropar, India (July 31 - August 01, 2021)
- (*Virtual*) 38th International Symposium on Lattice Field Theory (LATTICE2021), Massachusetts Institute of Technology, USA (July 26 - 30, 2021)
- (*Virtual*) Doctoral Training Programme 2021, ECT*, Italy (June 28 - July 23, 2021)
- (*Virtual*) Shivalik HEPCATS Meeting Winter 2020, IISER Mohali, India (January 30, 2021)
- (*Virtual*) Nonperturbative and Numerical Approaches to Quantum Gravity, String Theory, and Holography, ICTS-TIFR, India (January 18-21, 2021)
- (*Virtual*) Asia-Pacific Symposium for Lattice Field Theory (APLAT 2020), KEK Theory Center, Japan (August 04-07, 2020)
- (*Virtual*) Shivalik HEPCATS Meeting Summer 2020, IISER Mohali, India (July 30 - July 31, 2020)
- Shivalik HEPCATS Meeting Winter 2019, IISER Mohali, India (December 7, 2019)

Fellowships/Grants/Awards

- **DiRAC computing allocation, 9.64M core hours** **April 2025 - March 2026**
  Science and Technology Facilities Council (*STFC*),
  UK Research and Innovation (UKRI),
  PI: David Schaich, Co-PIs: Navdeep Singh Dhindsa, Raghav G. Jha, and Anosh Joseph.

- **International Travel Award** **April 2025**
  Anusandhan National Research Foundation (*ANRF*),
  Government of India.

- **CSIR Senior Research Fellowship** **February 2021 - March 2023**
  Human Resource Development Group (HRDG),
  Council of Scientific & Industrial Research (CSIR), Government of India.
- **CSIR Junior Research Fellowship** **January 2019 - January 2021**
  Human Resource Development Group (HRDG),
  Council of Scientific & Industrial Research (CSIR), Government of India.

Teaching Experience

- **PHY304, Statistical Mechanics** **IISER, Mohali**
  Grader *January 2022 - April 2022*
- **PHY635, Gravitation and Cosmology** **IISER, Mohali**
  Grader *September 2021 - December 2021*
- **PHY 112, Physics Laboratory II** **IISER, Mohali**
  Teaching Assistant *May 2021 - July 2021*
- **PHY304, Statistical Mechanics** **IISER, Mohali**
  Grader *January 2021 - April 2021*
- **PHY 112, Physics Laboratory II** **IISER, Mohali**
  Teaching Assistant *January 2020 - March 2020*

Organizational Activities

- Volunteer for **Trends in Astroparticle and Particle Physics** 2024 at IMSc Chennai, India
- Student coordinator for **XXV DAE-BRNS HEP Symposium** 2022 at IISER Mohali, India
- Co-organizer of **HEP Journal Club** in Spring 2022 semester at IISER Mohali, India
- Student coordinator for (*Virtual*) **Shivalik HEPCATS Meeting Winter 2021**, IISER Mohali, India
- Co-organized (*Virtual*) **MPI Workshop** from April 26, 2021 to April 29, 2021 at IISER Mohali, India
- Student coordinator for (*Virtual*) **Shivalik HEPCATS Meeting Summer 2020** and (*Virtual*) **Shivalik HEPCATS Meeting Winter 2020** hosted at IISER Mohali, India
- Organizer of **Lattice Journal Club** at IISER Mohali in Spring and Fall 2020 semesters and Spring 2021 Semester.

Expertise

- **Technical:** Experienced in following lattice packages: openQCD, SIMULATeQCD, Grid Python Toolkit, SUSY Lattice. I work with C/C++/Fortran, LaTeX, Gnuplot, Matlab, MPI, Bash, and Python in my research extensively.
- **Languages:** English, Punjabi, Hindi.

Mentoring Experience

- I was a scholar mentor for various Summer interns and Masters thesis students in Lattice Field Theory group at IISER Mohali.

Last updated : April 3, 2025