

Navdeep Singh Dhindsa

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Employment

- ◆ **Tata Institute of Fundamental Research (TIFR), Mumbai**
Maharashtra, India **Post Doctoral Fellow**
September 2025 - Present
- ◆ **The Institute of Mathematical Sciences (IMSc), Chennai**
Tamil Nadu, India **Post Doctoral Fellow**
August 2023 - July 2025

Academic Qualifications

- ◆ **Indian Institute of Science Education and Research (IISER), Mohali**
Punjab, India **PhD, Physics**
January 2019 - June 2023
Thesis Title: Non-perturbative Studies of Non-conformal Field Theories
Supervisor: Dr. Anosh Joseph
- ◆ **Punjabi University, Patiala**
Punjab, India **M.Sc., Physics**
August 2016 - August 2018

Publications/Conference Proceedings

- ◆ Gradient and Hessian-Based Temperature Estimator in Lattice Gauge Theories: A Diagnostic Tool for Stability and Consistency in Numerical Simulations
Navdeep Singh Dhindsa, Anosh Joseph and Vamika Longia
Journal of High Energy Physics 10, (2025) 015 (2025) [[arXiv:2508.05595](https://arxiv.org/abs/2508.05595)] [[hep-lat](#)]
- ◆ Lattice QCD Study of Positive Parity Dibaryons with Maximal Charm and Strangeness
Navdeep Singh Dhindsa, Nilmani Mathur and M. Padmanath
Phys.Rev.D 112 (2025) 5, 054501 (2025) [[arXiv:2507.10660](https://arxiv.org/abs/2507.10660)] [[hep-lat](#)]
- ◆ Precise study of triply charmed baryons (Ω_{ccc})
Navdeep Singh Dhindsa, Debsubhra Chakraborty, Archana Radhakrishnan, Nilmani Mathur and M. Padmanath
(2024) [[arXiv:2411.12729](https://arxiv.org/abs/2411.12729)] [[hep-lat](#)]
- ◆ Exploring Single-Flavor Dibaryons: A lattice perspective
Navdeep Singh Dhindsa, Nilmani Mathur and M. Padmanath
Proceedings of Science LATTICE2024, 082 (2024) [[arXiv:2409.10167](https://arxiv.org/abs/2409.10167)] [[hep-lat](#)]
- ◆ Nonperturbative phase diagram of two-dimensional $\mathcal{N} = (2, 2)$ 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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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 \[hep-lat\]](#)]

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

Organizational Activities

- ◆ Volunteer for **Trends in Astroparticle and Particle Physics 2024** at IMSc Chennai, India
- ◆ Learning Unit translator into Punjabi for **Vigyan Pratibha** at IISER Mohali, 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 : October 2, 2025