Neha Gaur – CV

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Education

- PhD in Mathematics, Banaras Hindu University (BHU), Varanasi, India, 2026
- MSc in Mathematics, Banaras Hindu University (BHU), Varanasi, India, 2018
- BSc in Mathematics, Physics and Defence Studies, Deen Dayal Upadhyay Gorakhpur University, India, 2015

Positions

- 9/2026 – 2/2027: Postdoctoral Researcher (Ernst Mach Worldwide Grant, OeAD, and FWF project "Skolemization and Equality", grant DOI 10.55776/RIC1287724) at the Theory and Logic Group, Institute of Logic and Computation, TU Wien. Host: Dr. Anela Lolic
- 3/2026 – 8/2026: Research Visitor at the Computer Science Unit, Indian Statistical Institute, Chennai (research under Prof. Sujata Ghosh)
- 1/2025 – 2/2026: Ph.D. Scholar at the Department of Mathematics, BHU, Varanasi (doctoral research under Dr. Arun Kumar)
- 1/2022 – 1/2025: Senior Research Fellow (UGC-SRF) at the Department of Mathematics, BHU, Varanasi (doctoral research under Dr. Arun Kumar)
- 1/2020 – 1/2022: Junior Research Fellow (UGC-JRF) at the Department of Mathematics, BHU, Varanasi (doctoral research under Dr. Arun Kumar)

Research Interests

Algebraic logic, duality theory (topological and frame-theoretic dualities), quad algebras, double Stone algebras, and four-valued logics.

Teaching and Outreach Experience

I gave a tutorial on "Set Theory and Logic" at the Indian Women and Mathematics (IWM) Summer School for Young Women in Mathematics, BITS Hyderabad, India. I have also presented my work regularly at the Women in Logic workshop series (2025, 2026) and at the Indian Women in Mathematics conferences.

Peer-Reviewed Publications

1. Arun Kumar, Bisham Dewan, Neha Gaur: Quad Rings, Quad Algebras and a 4-valued Logic. Studia Logica 132 (2025) (doi 10.1007/s11225-025-10204-x)
2. Arun Kumar, Neha Gaur, Bisham Dewan: A Categorical Analysis of Compatibility Frames. J. Log. Comput. 35(4) (2025) (doi 10.1093/logcom/exaf027)
3. Arun Kumar, Neha Gaur, Bisham Dewan: A 4-valued Logic for Double Stone Algebras. Int. J. Approx. Reason. 176(6): 109309 (2025) (doi 10.1016/j.ijar.2024.109309)

Preprints

1. Bisham Dewan, Neha Gaur, Arun Kumar: A Topological Duality for Posets and Semilattices (ResearchGate)
2. Bisham Dewan, Neha Gaur, Arun Kumar: Ring Structure of Principal Regular Double Stone Algebras (ResearchGate)
3. Bisham Dewan, Neha Gaur, Arun Kumar: Topological Duality and Some Structural Results of Quad Algebras (ResearchGate)

Conference Presentations and Participation

1. TACL 2026 (12th Conference on Topology, Algebra, and Categories in Logic), Kraków, Poland: two contributed talks, "A Unified Categorical Duality for Preminimal Negation and Beyond: Extending Compatibility Semantics Along Dunn's Negation Hierarchy" and "Quad Rings and Quad Algebras: From Duality to Logical Perspective"
2. WIL 2026 (10th Women in Logic Workshop), Lisbon, Portugal: contributed talk, "Quad Algebras and a 4-Valued Non-Classical Logic"
3. ISLA 2026 (11th Indian School on Logic and its Applications), Krea University, India: attendee
4. WIL 2025 (9th Women in Logic Workshop), Birmingham, UK: contributed short talk, "A Rough Set Semantics for 4-valued Logic of Double Stone Algebras"
5. FSCD 2025 (10th International Conference on Formal Structures for Computation and Deduction), Birmingham, UK: attendee
6. IWM 2025 (Indian Women in Mathematics Annual Conference), IIT Patna, India: paper presentation, "Categorical Aspects of Distributive Lattices with Preminimal Negations and its Extensions"
7. 28th Conference on Applications of Logic in Philosophy and the Foundations of Mathematics, Szklarska Poręba, Poland: paper presentation, "A Study on Logic Naturally Associated to Double Stone Algebras"
8. AWPL 2025 (6th Asian Workshop on Philosophical Logic), Jadavpur University, Kolkata, India: attendee
9. ICLA 2025 (11th Indian Conference on Logic and its Applications), ISI Kolkata, India: poster, "Descriptive Compatibility Frames and its Extensions"
10. SAT 2024 (27th International Conference on Theory and Applications of Satisfiability Testing), Pune, India: attendee
11. ICLA 2023 (10th Indian Conference on Logic and its Applications), IIT Indore, India: contributed talk, "Categorical Duality of Compatibility Frames"
12. ISLA 2022 (9th Indian School on Logic and its Applications), IIT Kanpur, India: contributed talk, "Modal Logic"

Additional Research Achievements

1. Ernst Mach Worldwide Grant of the OeAD, six-month postdoctoral fellowship at TU Wien (awarded 2026)
2. Participation in the FWF Elise Richter project "Skolemization and Equality", RIC1287724, TU Wien (2026)
3. Travel grant, Women in Logic Workshop 2026
4. Travel grant, Women in Logic Workshop 2025
5. Travel grant, 28th Conference on Applications of Logic in Philosophy and the Foundations of Mathematics (2025)

6. UGC Senior Research Fellowship, University Grants Commission, India (awarded 2022)
7. UGC Junior Research Fellowship, University Grants Commission, India (awarded 2020)
8. UGC-NET (JRF), All India Rank 163 (2019)
9. IIT-GATE, All India Rank 625 (2019)
10. IIT-JAM, All India Rank 1048 (2016)

Other Items of Interest

Technical skills: LaTeX (primary typesetting tool for all research output); Windows environment.