

Dr. Aniket Kulkarni

Associate Professor of Mathematics

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PROFILE

Mathematician working in extremal and probabilistic combinatorics, with applications to network algorithms. Known for clear teaching and for building an undergraduate research programme in a public university.

Research interests: Extremal graph theory · probabilistic method · additive combinatorics · algorithms on networks

EDUCATION

Ph.D., Mathematics · 2008 – 2013

Institute of Mathematical Sciences, Deccan

Thesis: Turán-type problems for hypergraphs

M.Sc., Mathematics · 2006 – 2008

Sahyadri University

University Gold Medal

B.Sc., Mathematics · 2003 – 2006

Fergusson Hill College, Pune

RESEARCH EXPERIENCE

Associate Professor · 2019 – Present

Department of Mathematics, Sahyadri University

- › Lead the combinatorics group: 3 Ph.D. students, 2 postdocs.
- › Founded a summer research programme that has placed 40 undergraduates in graduate schools.

Assistant Professor · 2015 – 2019

Department of Mathematics, Sahyadri University

- › Taught core analysis and algebra courses to 400+ students a year.

Postdoctoral Fellow · 2013 – 2015

Centre for Discrete Mathematics, Lakeshore University

- › Solved a 20-year-old conjecture on hypergraph cycles (with co-authors).

PUBLICATIONS

- [1] Kulkarni, A., Kim, J., Okafor, D., & Gupta, R. (2026). Rethinking optimal transport on networks. *Discrete Mathematics Review*, 29(1), 790–810.
- [2] Sato, Y., Mensah, K., Kulkarni, A., & Menon, V. (2026). Revisiting spectral methods for PDEs. *Journal of Combinatorial Structures*, 35(12), 602–620.
- [3] Haddad, N., & Kulkarni, A. (2026). Measuring spectral methods for PDEs. *Discrete Mathematics Review*, 32(7), 225–239.
- [4] Kulkarni, A., Banerjee, P., Chen, L., & Menon, V. (2025). Revisiting random matrix ensembles. *Proceedings of the Indian Mathematical Colloquium*, pp. 144–157.
- [5] Gupta, R., Kulkarni, A., Sato, Y., & Kim, J. (2025). Scaling additive combinatorics. *Discrete Mathematics Review*, 10(9), 722–733.

- [6] Menon, V., Iyer, M., Rao, S., & **Kulkarni, A.** (2025). Revisiting extremal graph theory. *Annals of Applied Analysis*, 22(8), 83–101.
- [7] Haddad, N., & **Kulkarni, A.** (2024). Towards extremal graph theory. *Proceedings of the Indian Mathematical Colloquium*, pp. 577–590.
- [8] Iyer, M., **Kulkarni, A.**, & Okafor, D. (2024). Evidence on random matrix ensembles. *Annals of Applied Analysis*, 42(10), 353–370.
- [9] **Kulkarni, A.**, Sato, Y., Iyer, M., & Menon, V. (2024). Measuring numerical stability of iterative solvers. *Proceedings of the Indian Mathematical Colloquium*, pp. 519–529.
- [10] Menon, V., **Kulkarni, A.**, Haddad, N., & Mensah, K. (2023). Designing for spectral methods for PDEs. *Proceedings of the Indian Mathematical Colloquium*, pp. 732–740.
- [11] Gupta, R., **Kulkarni, A.**, & Chen, L. (2023). Rethinking spectral methods for PDEs. *Discrete Mathematics Review*, 40(3), 263–274.
- [12] Banerjee, P., Sato, Y., Rao, S., & **Kulkarni, A.** (2023). Measuring random matrix ensembles. *Discrete Mathematics Review*, 46(12), 651–662.
- [13] Gupta, R., **Kulkarni, A.**, & Okafor, D. (2022). Towards extremal graph theory. *Discrete Mathematics Review*, 13(7), 413–426.
- [14] **Kulkarni, A.**, & Gupta, R. (2022). New approaches to numerical stability of iterative solvers. *Journal of Combinatorial Structures*, 34(8), 710–728.
- [15] Kim, J., Banerjee, P., **Kulkarni, A.**, & Okafor, D. (2022). Understanding random matrix ensembles. *Journal of Combinatorial Structures*, 11(1), 198–208.

CONFERENCE PRESENTATIONS & INVITED TALKS

- › Seminar: “Revisiting optimal transport on networks”, Discrete Mathematics Review, Melbourne, 2026.
- › Seminar: “Evidence on numerical stability of iterative solvers”, Annals of Applied Analysis, London, 2026.
- › Keynote: “Evidence on spectral methods for PDEs”, Symposium on Combinatorial Structures, Melbourne, 2025.
- › Poster: “Rethinking additive combinatorics”, Annals of Applied Analysis, New Delhi, 2025.
- › Seminar: “A study of extremal graph theory”, Symposium on Combinatorial Structures, London, 2024.
- › Seminar: “Designing for numerical stability of iterative solvers”, Symposium on Combinatorial Structures, London, 2024.
- › Seminar: “Designing for optimal transport on networks”, Annals of Applied Analysis, Singapore, 2023.
- › Seminar: “Scaling spectral methods for PDEs”, Annals of Applied Analysis, Bengaluru, 2023.
- › Keynote: “Scaling random matrix ensembles”, Symposium on Combinatorial Structures, Toronto, 2022.

TEACHING

- › Real Analysis (B.Sc.)
- › Graph Theory (M.Sc.)
- › Probabilistic Methods in Combinatorics (Ph.D.)
- › Mathematical Olympiad training camp (2017–present)

GRANTS, AWARDS & HONOURS

- › Core research grant, national science board (2020–2023), ₹32 lakh
- › Young Mathematician Prize, national mathematical society (2018)
- › Postdoctoral fellowship, Lakeshore University (2013–2015)

PROFESSIONAL SERVICE

- › Editorial board, Discrete Mathematics Review
- › Organiser, Pune Combinatorics Workshop (2018, 2022, 2025)

SKILLS

Research: Extremal combinatorics, probabilistic method, spectral graph theory

Computing: SageMath, Python, LaTeX, Lean (basic)

Languages: Marathi (native), English, Hindi

REFERENCES

Prof. R. Bhat

Professor, Institute of Mathematical Sciences, Deccan
r.bhat@institute.edu

Prof. E. Novak

Professor, Lakeshore University
e.novak@university.example