Dr. Kalpesh M. Popat

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Academic Appointments

2023–Present	**Assistant Professor**, Department of Mathematics, Saurashtra University, Rajkot
2020–2023	**Assistant Professor**, Atmiya University, Rajkot
2011–2020	**Assistant Professor**, Atmiya Institute of Technology, Rajkot

Education

2020	**Ph.D. in Mathematics**, Saurashtra University
2013	**M.Phil. in Mathematics**, Saurashtra University
2009	**M.Sc. in Mathematics**, Saurashtra University
2007	**B.Sc. in Mathematics**, Saurashtra University

Research Interests

Spectral graph theory; graph energy; Laplacian and Seidel energies; graphs with self-loops; vertex and local energies; constructions of equienergetic and borderenergetic graphs; combinatorial matrix analysis.

Honors and Awards

- **SMCR Young Scientist Award**, Society for Mathematical and Computational Research, 2025.
- **Best Research Paper Award**, Academy of Discrete Mathematics and Its Applications (ADMA), ADMA Conference, SSN College of Engineering, Chennai, 2017.

Doctoral Supervision

Supervisor

- Danish Bawani, Junior Research Fellow (JRF), Saurashtra University (pursuing).

Co-supervisor

- Dipakkumar N. Barad, Research Scholar, Saurashtra University (pursuing).
- Kunal Shingala, Research Scholar, Atmiya University (pursuing).

International Research Collaborators

- Enide Andrade, University of Aveiro, Portugal.
- Irena M. Jovanović, Union University, Belgrade, Serbia.
- Fernando C. Tura, Federal University of Santa Maria, Brazil.
- Cahit Dede, Selçuk University, Konya, Turkiye.

Funded Research Project

- **Study of Graph Energy in the Context of Some Graph Operations**. Funded by IQAC, Saurashtra University, Rajkot; 4 August 2016–4 October 2018; grant: Rs. 1,00,000.

Publications

Preprints

1. Ronak B. Dudhat, Vinodray J. Kaneria, and **Kalpesh M. Popat**, "Graph Energies of Generalized and Shadow-Splitting Graphs," preprint, arXiv, 2026.
2. **Kalpesh M. Popat** and Enide Andrade, "On the Vertex Seidel Energy of Graphs," preprint, arXiv, 2026.
3. **Kalpesh M. Popat** and Irena M. Jovanović, "Some New Results on the Seidel Energy of Graphs with Self-Loops," preprint, arXiv, 2026.

Accepted for publication

4. **Kalpesh M. Popat** and Danish Bawani, "Some New Bounds on Laplacian Energy of Graphs with Self-Loops," *TWMS Journal of Applied and Engineering Mathematics*, accepted for publication.
   [Scopus]
5. S. V. Roopa, **Kalpesh M. Popat**, D. P. Pushpa, and M. A. Sriraj, "Some Graph Operations on Regular Graphs and Their Seidel Spectra," *Palestine Journal of Mathematics*, accepted for publication.
   [Scopus]
6. Cahit Dede and **Kalpesh M. Popat**, "Spectral Impact of Edge Deletion on Laplacian Energy of Graphs," *Carpathian Journal of Mathematics*, accepted for publication.
   [SCI & Scopus · SJR: Q2]

Published articles

7. **Kalpesh M. Popat** and Fernando C. Tura, "Complementary Laplacian Equienergetic Graphs," *Proyecciones Journal of Mathematics*, 45(4) (2026), 606–617.
   [Scopus]
8. Dipakkumar N. Barad, Vinodray J. Kaneria, and **Kalpesh M. Popat**, "Maximum Degree Energy and Minimum Degree Energy in the Context of Some Graph Operations," *International Journal of Mathematics Trends and Technology*, 72(7) (2026), 14–24.
9. Cahit Dede and **Kalpesh M. Popat**, "Vertex Energy Invariance in Double Graphs and Bipartite Double Covers," *Communications in Combinatorics and Optimization*, XX(x) (2025), 1–12.
   [Scopus · SJR: Q1]
10. Cahit Dede and **Kalpesh M. Popat**, "Locally Equienergetic Graphs," *MATCH Communications in Mathematical and in Computer Chemistry*, 95(3) (2025), 759–766.
    [SCI & Scopus · SJR: Q1]
11. Samir K. Vaidya and **Kalpesh M. Popat**, "Some Borderenergetic and Equienergetic Graphs," *Kragujevac Journal of Mathematics*, 48(6) (2024), 935–949.
    [Scopus]
12. **Kalpesh M. Popat** and Kunal R. Shingala, "Some New Results on Energy of Graphs with Self Loops," *Journal of Mathematical Chemistry*, 61(6) (2023), 1462–1469.
    [SCI & Scopus · SJR: Q2]
13. **Kalpesh M. Popat** and Kunal R. Shingala, "On Equienergetic Graphs and Graph Energy of Some Standard Graphs with Self Loops," *Proyecciones Journal of Mathematics*, 43(5) (2023), 1269–1281.
    [Scopus]
14. **Kalpesh M. Popat**, "Some New Classes of Equienergetic Graphs," *South East Asian Journal of Mathematics and Mathematical Sciences*, 43(5) (2022), 93–100.
    [Scopus]
15. Samir K. Vaidya and **Kalpesh M. Popat**, "Construction of L-Borderenergetic Graphs," *Kragu-*

jevac Journal of Mathematics, 45(6) (2021), 873–880.

[Scopus]

16. Samir K. Vaidya and **Kalpesh M. Popat**, "On Equienergetic, Hyperenergetic, Hypoenergetic Graphs," *Kragujevac Journal of Mathematics*, 44(4) (2020), 523–532.

[Scopus]

17. Samir K. Vaidya and **Kalpesh M. Popat**, "Construction of L-Equienergetic Graphs Using Some Graph Operations," *AKCE International Journal of Graphs and Combinatorics*, 17(3) (2020), 877–882.

[SCI & Scopus · SJR: Q2]

18. Samir K. Vaidya and **Kalpesh M. Popat**, "Spectra of Graphs Obtained by Duplication of Graph Elements," *Mathematics Today*, 35 (2019), 50–60.
19. Samir K. Vaidya and **Kalpesh M. Popat**, "Some New Results on Seidel Equienergetic Graphs," *Kyungpook Mathematical Journal*, 59(2) (2019), 335–340.

[Scopus]

20. Samir K. Vaidya and **Kalpesh M. Popat**, "Construction of Sequences of Borderenergetic Graphs," *Proyecciones Journal of Mathematics*, 38(4) (2019), 837–847.

[Scopus]

21. Samir K. Vaidya and **Kalpesh M. Popat**, "Energy of m-Splitting and m-Shadow Graphs," *Far East Journal of Mathematical Sciences*, 102(8) (2017), 1571–1578.

[Scopus]

22. Samir K. Vaidya and **Kalpesh M. Popat**, "Some New Results on Energy," *MATCH Communications in Mathematical and in Computer Chemistry*, 77(3) (2017), 589–594.

[SCI & Scopus · SJR: Q1]

Book Chapter

- Samir K. Vaidya and **Kalpesh M. Popat**, "L-Spectra of Graphs Obtained by Duplicating Graph Elements," Chapter 31 in *Recent Advancements in Graph Theory*, CRC Press, 2021. ISBN: 9780367458867.

Teaching Experience

Courses taught: Discrete Mathematics; Mathematical Statistics; Topology; Financial Mathematics; Numerical Methods; Business Statistics; Biostatistics.

Invited Talks and Lectures

1. **"On the Local Energy of Graphs"**, 41st Annual Conference of the Ramanujan Mathematical Society (RMS), Manipal Institute of Technology, Bengaluru, 2–5 July 2026.
2. **"Research Methodology and Use of Statistical Methods"**, Ph.D. Coursework Lecture Series, Department of Mathematics, Saurashtra University, Rajkot, 4, 5, 6, 12, 14, and 20 February 2019.
3. **"Introduction to LaTeX"**, Ph.D. Coursework Lecture Series, Department of Mathematics, Saurashtra University, Rajkot, 27 April 2019.
4. **"Presentation Using LaTeX"**, Pedagogy Sessions, Department of MCA, Atmiya University, Rajkot, 10 September 2018.

Conference Presentations

1. **"Some New Classes of Equienergetic Graphs"**, National Conference on Emerging Trends in Discrete Mathematics (NCETDM-2022), Hemchandracharya North Gujarat University, Patan.
2. **"Some Borderenergetic and Equienergetic Graphs of Arbitrarily Large Order"**, International Conference on Recent Trends in Mathematics and Its Applications to Graphs, Networks and Petri Nets (ICRTMA-GPN-2020), Jawaharlal Nehru University, New Delhi.
3. **"L-Spectra of Graphs Obtained by Duplications of Graph Elements"**, Recent Advancement in Graph Theory (RAGT-2019), Gujarat University, Ahmedabad.
4. **"Construction of L-Borderenergetic Graphs"**, International Conference on Discrete Mathematics (ICDM-2019), Christ (Deemed to be University), Bengaluru.
5. **"Construction of Sequences of Borderenergetic Graphs"**, Prof. P. C. Vaidya National Conference on Mathematical Sciences, St. Xavier's College, Ahmedabad, and Gujarat Ganit Mandal.
6. **"Construction of L-Equienergetic Graphs Using Some Graph Operations"**, 14th National ADMA Conference & Graph Theory Day-XIII (ADMA-2018), DAIICT, Gandhinagar.
7. **"Some New Results on Seidel Equienergetic Graphs"**, National Conference on Applied Mathematics, Gujarat University, Ahmedabad, and Parul University, Vadodara.
8. **"On Equienergetic, Hyperenergetic, Hypoenergetic Graphs"**, 13th National ADMA Conference & Graph Theory Day-XIII (ADMA-2017), SSN College of Engineering, Chennai.
9. **"Energy of m-Splitting & m-Shadow Graphs"**, National Conference on Algebra, Analysis & Graph Theory (NCAGG-2017), Saurashtra University, Rajkot.
10. **"Some New Results on Energy of Graphs"**, International Conference on Discrete Mathematics (ICDM-2016), Siddaganga Institute of Technology, Tumkur (Bangalore), Karnataka.
11. **"On Energy of Graphs"**, State-Level Conference on Challenges for Sciences and Technology Education During Coming Decades (XXX Gujarat Science Congress Conference), K.S.K.V. Kachchh University & Gujarat Science Academy.

Conference Session Chairing

1. Ninth International Congress on Information and Communication Technology, organised by Global Knowledge Research Foundation and G. R. Scholastic LLP, 21–22 February 2024 (online via Zoom).
2. Eighth International Conference on Information and Communication Technology for Intelligent Systems, organised by Global Knowledge Research Foundation and G. R. Scholastic LLP, 4–5 April 2024 (online via Zoom).
3. Ninth International Conference on ICT for Sustainable Development, organised by Global Knowledge Research Foundation and G. R. Scholastic LLP, 8–9 August 2024 (online via Zoom).

Academic Service and Responsibilities

- Member, Board of Studies, Department of Mathematics, Saurashtra University.
- Member, Departmental Internal Quality Assurance Cell (D-IQAC), Saurashtra University.
- RAC Coordinator; Admission Coordinator; Departmental IQAC Coordinator (since March 2023).
- Member, Research Advisory Committee (RAC), Darshan University, Rajkot.

Professional Memberships

- Member, International Linear Algebra Society (ILAS).
- Life Member, Indian Mathematical Society (IMS).
- Life Member, Ramanujan Mathematical Society (RMS).
- Life Member, Academy of Discrete Mathematics and Its Applications (ADMA).
- Life Member, Society for Mathematical and Computational Research (SMCR).

Technical Skills

LaTeX; R (data analysis and visualisation); SageMath.

Research Profiles

Google Scholar	scholar.google.com/citations?user=Q8tdhe4AAAAJ
ResearchGate	researchgate.net/profile/Kalpesh-Popat-2
VIDWAN	vidwan.inflibnet.ac.in/profile/124875
ORCID	0000-0002-8504-2466
Scopus Author ID	57193848923
Web of Science / Publons	AAE-3195-2022