

# Dr. Kalpesh M. Popat

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## Education

Ph.D. (Mathematics)	Saurashtra University	2020
M.Phil. (Mathematics)	Saurashtra University	2013
M.Sc. (Mathematics)	Saurashtra University	2009
B.Sc. (Mathematics)	Saurashtra University	2007

## 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.

## Courses Taught

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

## Technical Skills

LaTeX; R (data analysis, visualization); SageMath.

## Honors and Awards

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

## Research Interests

Graph spectral theory; Energy of graphs; Laplacian and Seidel energies; Graphs with self-loops; Vertex Energies; Local Energies; Equienergetic and borderenergetic graph constructions; Combinatorial matrix analysis.

## List of Publications

1. **Kalpesh M. Popat** and Irena M. Jovanović, "Some New Results on the Seidel Energy of Graphs with Self-Loops", Indian Journal of Pure and Applied Mathematics (communicated). (**SCI & Scopus Indexed**)
2. **Kalpesh M. Popat** and Fernando C. Tura, "Complementary Laplacian Equienergetic Graphs", Computational and Applied Mathematics (communicated). (**SCI & Scopus Indexed, SJR: Q2**)
3. **Kalpesh M. Popat** and Cahit Dede, "Local Energy of Line Graph of Some Regular Graphs", Ukrainian Mathematical Journal (communicated). (**SCI & Scopus Indexed**)

4. Cahit Dede and **Kalpesh M. Popat**, "Spectral Impact of Edge Deletion on Laplacian Energy of Graphs", Carpathian Journal of Mathematics (Article is in Press). (**SCI & Scopus Indexed, SJR: Q2**)
5. Cahit Dede and **Kalpesh M. Popat**, "Vertex Energy Invariance in Double Graphs and Bipartite Double Covers", Communications in Combinatorics and Optimization (Article in Press). (**Scopus Indexed, SJR: Q1**)
6. Cahit Dede and **Kalpesh M. Popat**, "Locally Equienergetic Graphs", MATCH Communications in Mathematical and in Computer Chemistry, 95(3) (2025) 759–766. (**SCI & Scopus Indexed, SJR: Q1**)
7. Samir K. Vaidya and **Kalpesh M. Popat**, "Some Borderenergetic and Equienergetic Graphs", Kragujevac Journal of Mathematics, 48(6) (2024) 935–949. (**Scopus Indexed**)
8. **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 Indexed, SJR: Q2**)
9. **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 Indexed**)
10. **Kalpesh M. Popat**, "Some New Classes of Equienergetic Graphs", South East Asian Journal of Mathematics and Mathematical Sciences, 43(5) (2022) 93–100. (**Scopus Indexed**)
11. Samir K. Vaidya and **Kalpesh M. Popat**, "Construction of L-Borderenergetic Graphs", Kragujevac Journal of Mathematics, 45(6) (2021) 873–880. (**Scopus Indexed**)
12. Samir K. Vaidya and **Kalpesh M. Popat**, "On Equienergetic, Hyperenergetic, Hypoenergetic Graphs", Kragujevac Journal of Mathematics, 44(4) (2020) 523–532. (**Scopus Indexed**)
13. Samir K. Vaidya, **Kalpesh M. Popat**, "Construction of L-equienetic graphs using some graph operations", AKCE International Journal of Graphs and Combinatorics, 17(3) (2020) 877–882. (**SCI & Scopus Indexed, SJR: Q2**)
14. Samir K. Vaidya and **Kalpesh M. Popat**, "Spectra of Graphs Obtained by Duplication of Graph Elements", Mathematics Today, 35 (2019), 50–60.
15. Samir K. Vaidya and **Kalpesh M. Popat**, "Some New Results on Seidel Equienergetic Graphs", Kyungpook Mathematical Journal, 59(2) (2019) 335–340. (**Scopus Indexed**)
16. Samir K. Vaidya and **Kalpesh M. Popat**, "Construction of Sequences of Borderenergetic Graphs", Proyecciones Journal of Mathematics, 38(4) (2019) 837–847. (**Scopus Indexed**)
17. 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 Indexed**)
18. Samir K. Vaidya and **Kalpesh M. Popat**, "Some New Results on Energy", MATCH Communications in Mathematical and Computer Chemistry, 77(3) (2017), 589–594. (**SCI & Scopus Indexed, SJR: Q1**)

## Books and Book Chapters

- 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.

## Research Projects

- Study of Graph Energy in the Context of Some Graph Operations. Funding Agency: IQAC, Saurashtra University, Rajkot. Duration: 04-Aug-2016 – 04-Oct-2018. Total Grant: Rs. 1,00,000/-.

## Ph.D. Supervision

### Supervisor:

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

### Co-supervisor:

- Kunal Shingala, Research Scholar, Atmiya University (Pursuing).

### International Collaborators

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

### 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 & 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), Siddhaganga 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.

### Session Chair

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).

### Invited Talks

1. "Research Methodology and Use of Statistical Methods" — Ph.D. Coursework Lecture Series, Department of Mathematics, Saurashtra University, Rajkot.

2. "Introduction to LaTeX" — Ph.D. Coursework Lecture Series, Department of Mathematics, Saurashtra University, Rajkot.
3. "Presentation Using LaTeX" — Pedagogy Sessions, Department of MCA, Atmiya University, Rajkot.
4. "Quantitative Techniques-I" — Seminar for MBA Students, Atmiya Institute of Technology & Science, Rajkot.
5. "Introduction to Hypothesis Testing and Statistical Methods" — Seminar for MCA Students, Atmiya University, Rajkot.

### **Extension Activities**

- 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).

### **Professional Memberships**

- Life Member, Academy of Discrete Mathematics and Its Applications (ADMA).
- Life Member, Society for Mathematical and Computational Research (SMCR).

### **Research Profiles**

- Google Scholar: [Link](#)
- ResearchGate: [Link](#)
- ORCID: [0000-0002-8504-2466](#)
- Scopus Author ID: [57193848923](#)
- Web of Science / Publons: [Link](#)