Name : Aparna Lakshmanan S.

Official Address : Associate Professor
Department of Mathematics
Cochin University of Science and Technology
Cochin – 22, Kerala, India

EDUCATIONAL QUALIFICATIONS

1. B.Sc. Mathematics from St. Joseph's College, Irinjalakuda under Calicut University (2000)
2. M.Sc. Mathematics from Cochin University of Science and Technology with first Rank (2002)
3. CSIR – UGC – JRF (NET) from University Grants Commission, New Delhi. (2003)
4. Ph. D from Cochin University of Science and Technology (2009)

PROFESSIONAL EXPERIENCE – RESEARCH

Research Guidance: Awarded – 3, Submitted – 1 and Ongoing – 5

Name of Scholar	Title of the Thesis
Anu V	A Study on Two Graph Parameters – Double Roman Domination Number and Homometric Number
Jeepamol J Palathingal	Studies on Graph Operators
Jismy Varghese	A Study on Domination Parameters in Graphs

PROFESSIONAL EXPERIENCE – TEACHING

1. Assistant Professor at St. Xavier's College for Women, Aluva (07/11/2005 to 06/11/2017)
2. Associate Professor at St. Xavier's College for Women, Aluva (07/11/2017 to 13/01/2021)
3. Associate Professor at Cochin University of Science and Technology (14/01/2021 onwards)

AWARDS/RECOGNITIONS AND ACHIEVEMENTS

1) NPTEL Stars – NPTEL Enthusiasts Award from NPTEL in 2020.
2) Best Alumni Award from St. Joseph's College, Irinjalakuda in 2019.
3) IMS prize (Group 1 – Discrete Mathematics) instituted by Indian Mathematical Society in

2013.

4) Kerala State Young Scientist Award instituted by Kerala State Council for Science, Technology and Environment in 2012.
5) First rank for M.Sc. Mathematics from Cochin University of Science and Technology in 2002.

RESEARCH PROJECTS

1. UGC minor project (completed in 2016) – "Study of various graph parameters under graph products" (Rs. 1,50,000/-).
2. KSCSTE Major project (completed in 2019) – "Problems related to Applications of graph theory to Networks" (Rs.11,80,000/-).
3. Seed Money for New Research Initiatives (SMNRI) – "Leech Labeling and its Generalization" (Rs. 1,25,000/-).

EXTERNAL FUNDED STUDENT PROJECTS

1. Soil Suitability Analysis Using Fuzzy Sets (Rs. 8000/-).
2. Reciprocity of inmates of Madhavapuram Colony – A case study (Rs. 6000/-).

MEMBERSHIP IN PROFESSIONAL ORGANISATIONS

1) American Mathematical Society (AMS) - Member
2) Indian Mathematical Society (IMS) – Life Member
3) Ramanujan Mathematical Society (RMS) – Life Member
4) Academy for Discrete Mathematics and its Applications (ADMA) – Life Member, Executive Committee member (2014 – 16), Secretary (2016 – 2020)
5) Kerala Mathamatical Association (KMA) – Life member

OTHER ACADEMIC ACTIVITIES

1. Reviewer for
   - Mathematical Reviews
   - Zentralblatt Math
   - Bulletin of Mathematical Sciences and Applications.

CONFERENCES/ WORKSHOPS/ SYMPOSIA ORGANIZED

1. Convener of the UGC sponsored National Seminar on Graph Theory and its Applications, August 7 – 9, 2014.
2. Convener of the National Symposium on Women in Science, March 7, 2015.
3. Convener of the International Conference on Recent Trends in Graphs and Networks, October 30 – November 1, 2017.
4. Co-convener of the International Conference on Recent Trends in Graph Theory and Combinatorics (ICRTGC 2018), April 26 – 29, 2018.
5. Convener of the Academic Support Programme for Under Graduate Students – One Day International Workshop on November 27, 2018.
6. Convener of Research Discussion on Graphs and Groups (RDGG 2021), March – August, 2021.
7. Convener of Prof. T. Thrivikraman Endowment Lecture on "A window to the scale and structure of 1-dimensional maps" by Herbert Edelsbrunner, Institute of Science and Technology, Austria on May 8, 2021.
8. Convener of International Webinar in Honour of Prof. Laszlo Lovasz on September 22, 2021.
9. Convener of PG Enrichment Programme for MSc Mathematics students, December 20 – 22, 2021.
10. Convener of International Webinar on "Why Does Ramanujan, the Man Who Knew Infinity, Matter?" by Ken Ono, University of Verginia as part of National Mathematics Day observation on December 21, 2021.
11. Convener of alumni lecture on "An Introduction to Species of Structures" by Narayanan N., IIT Madras on March 23, 2022.

ARTICLES PUBLISHED IN NATIONAL AND INTERNATIONAL JOURNALS

- **International Journals – 30**

1. Aparna Lakshmanan S., S. B. Rao, A. Vijayakumar, Gallai and anti-Gallai graphs of a graph, Mathematica Bohemica, 132(1)(2007), 43 – 54.
2. Aparna Lakshmanan S., A. Vijayakumar, Clique irreducibility of some iterative classes of graphs, Discuss. Math. Graph Theory, 28 (2008), 307 – 321.
3. Aparna Lakshmanan S., A. Vijayakumar, The <t>-property of some classes of graphs, Discrete Math., 309 (2009), 259 – 263.
4. Aparna Lakshmanan S., A. Vijayakumar, Clique irreducibility and clique vertex

irreduciblility of graphs, Appl. Anal. Discrete Math., 3 (2009), 137 – 146.

5. S. B. Rao, Aparna Lakshmanan S., A. Vijayakumar, Cographic and global cographic domination number of a graph, Ars Combinatoria, 95 (2010), 273 – 486.
6. Aparna Lakshmanan S., A. Vijayakumar, On weakly clique irreducible graphs, Bull. Inst. Combin. Appl., 58 (2010), 48 – 58.
7. Aparna Lakshmanan S., A. Vijayakumar, The Gamma graph of a graph, AKCE J. Graphs. Combin., 7(1)(2010), 53 – 59.
8. Aparna Lakshmanan S., Cs. Bujtas, Zs. Tuza, Small edge sets meeting all triangles of a graph, Graphs Combin., 28 (2012), 381 – 392.
9. Aparna Lakshmanan S., A. Vijayakumar, T. M. Wang, Weakly clique irreducibility of NEPS of two graphs, Util. Math., 92 (2013), 351 – 358.
10. Aparna Lakshmanan S., Cs. Bujtas, Zs. Tuza, Generalized line graphs: Cartesian products and complexity of recognition, Electron. J. Combin., 22(3) (2015), #P3.33.
11. Aparna Lakshmanan S., Cs. Bujtas, Zs. Tuza, Induced cycles in triangle graphs, Discrete Applied Mathematics, 209 (2016), 264 – 275.
12. Aparna Lakshmanan S., Manju K. Menon, Anu V., Homometric number of graphs, International Journal on Recent and Innovation Trends in Computing and Communication, 5(7) (2017), 846 – 850.
13. Jeepamol J. Palathingal, Aparna Lakshmanan S., Gallai and anti-Gallai graph operators, Electronic Notes in Discrete Mathematics, 63 (2017), 447 – 453.
14. Jeepamol J. Palathingal, Aparna Lakshmanan S., Forbidden Subgraph Characterizations of Extensions of Gallai graph operators in Signed Graphs, Annals of Pure and Applied Mathematics, 14(3) (2017), 437 – 448.
15. Anu V., Aparna Lakshmanan S., Double Roman Domination Number, Discrete Applied Mathematics, 244 (2018), 198 – 204.
16. Jeepamol J. Palathingal, Aparna Lakshmanan S., Commutativity of Some Graph Operator, Research & Reviews: Discrete Mathematical structures, 6(1)(2019), 1–5.
17. V. G. Deepa, Aparna Lakshmanan S., V. N. Sreeja, Centrality and reciprocity in directed social networks - A case study, Malaya Journal of Mathematik, Vol. S(1) (2019), 479 – 484.
18. Seena Varghese, Aparna Lakshmanan S., S. Arumugam, Two Classes of Non-Leech Trees, Electronic Journal of Graph Theory and Applications, 8(1) (2020), 205 – 210.
19. Anu V., Aparna Lakshmanan S., The Double Roman Domination Number of Generalized Sierpinski Graphs, Discrete Mathematics Algorithms and Applications, 12(4) (2020), 2050047.

20. Jeepamol J Palathingal, Gopalapillai Indulal, Aparna Lakshmanan, Spectrum of Gallai Graph of Some Graphs, Indian Journal of Pure and Applied Mathematics, 51(4) (2020), 1829 – 1841.
21. Jismy Varghese, Aparna Lakshmanan S., Italian Domination on Mycielskian and Sierpinski Graphs, Discrete Mathematics Algorithms and Applications, 13(4) (2021), 2150037.
22. Jeepamol J Palathingal, Gopalapillai Indulal, Aparna Lakshmanan S, Spectrum of anti-Gallai Graph of Some Graphs, Indian Journal of Pure and Applied Mathematics, 52 (2021), 304 – 311.
23. Jismy Varghese, Anu V., Aparna Lakshmanan S., Italian Domination and Perfect Italian Domination on Sierpinski Graphs, Journal of Discrete Mathematical Sciences & Cryptography, 24(7) (2021), 1885 - 1894.
24. Jismy Varghese, Aparna Lakshmanan S., Perfect Italian Domination Number of Graphs, Palestine Journal of Mathematics, 11(1) (2022), 260 - 270.
25. Anu V., Aparna Lakshmanan S., Impact of Some Graph Operators on Double Roman Domination Number, International Journal of Combinatorial Graph Theory and Applications, 6(1) (2021), 97 - 105.
26. Jismy Varghese, Aparna Lakshmanan S., Perfect Italian Domination Number of Graphs, Palestine Journal of Mathematics, 11(1) (2022), 260 - 270.
27. Seena Varghese, Aparna Lakshmanan S, S Arumugam, Two Extensions of Leech Labeling to the Class of all Graphs, AKCE International Journal of Graphs and Combinatorics, 19(2) (2022), 159 - 165.
28. Jismy Varghese, Aparna Lakshmanan S., Impact of Vertex Addition on Italian Domination Number, Indian Journal of Discrete Mathematics, 8(1) (2022), (online ready).
29. Seena Varghese, Aparna Lakshmanan S., S. Arumugam, Leech Index of a Tree, Journal of Discrete Mathematical Sciences & Cryptography (online ready).
30. Jeepamol J. Palathingal, Aparna Lakshmanan S., Forbidden Subgraph Characterizations of Extensions of anti-Gallai Graph Operator to Signed Graph, (accepted for AIP conference proceedings).
31. Seena Varghese, Aparna Lakshmanan S, S Arumugam, Leech Labeling Problem on Tristars, (accepted for AIP conference proceedings).
32. Jeepamol J Palathingal, Aparna Lakshmanan S, Spectrum of Cycle Graph of Some Graphs, (accepted for The Mathematics Student).

- **Proceedings of International Conferences – 5**

1. Aparna Lakshmanan S., A. Vijayakumar, Some properties of the clique graph of a cograph, RMS Lecture Note Series 7 (2008), (Proceedings of the International Conference on Discrete Mathematics, Bangalore, India, 2006), 227 – 232.
2. Aparna Lakshmanan S., A. Vijayakumar, A note on some domination parameters in graph products, J. Combin. Math. Combin. Comput., 69 (2009), 31 – 38.
3. Anu V., Aparna Lakshmanan S., Homometric number of a graph and some related concepts, Lecture Notes in Computer Science, 10398 (2017), 30 – 37.
4. V. G. Deepa, Aparna Lakshmanan S., V. N. Sreeja, The Role of Social Factors in Education: A Case Study in Social Network Perspective, Lecture Notes in Networks and Systems, 75 (2019), 61 – 68.
5. V. G. Deepa, Aparna Lakshmanan S., V. N. Sreeja, A Comparative Study on Various Sharing Among Undergraduates in PreCovid-19 and Covid-19 Period Using Network Parameters, Lecture Notes in Networks and Systems (book series Intelligent Sustainable Systems) 334 (2021), 525 - 536.

- **National Journals – 1**

1. Aparna Lakshmanan S., Characterization of some special classes of Gallai and anti Gallai graphs, Discourse, 1 (2013), 85 – 89.

Invited talks/Paper presentations abroad

1. "Domination in Graph Products- Vizing's Conjecture" in the workshop on Graph Theory and Interconnection Networks Department of Applied Mathematics, Tunghai university, Taichung, Taiwan (November 16 – 17, 2013).
2. "On Tuza's Conjecture related to triangles in graphs" in the Third India – Taiwan Conference on Discrete Mathematics organized by Department of Applied mathematics, National Chiao Tung University (November 19 – 22 , 2013).
3. "On Leech Trees" in Fifth India-Taiwan Conference on Discrete Mathematics 2017 organized by Department of Mathematics, Tamkang University, Tamsui, Taiwan (July 18 – 21, 2017).
4. "The <t>-property of Some Graph Products" in International Congress of Mathematicians (ICM 2018) at Rio de Janeiro, Brazil (August 1 – 10, 2018).
5. "Double Roman Domination Number" in 9th Slovenian International Conference on Graph

Theory – Bled'19 organized by Institute of Mathematics, Physics and Mechanics, Slovenia (August 23 – 29, 2019) .

Dr. Aparna Lakshmanan S.