CURRICULUM VITAE OF Dr. M. M. SHIKARE

1. Name: Dr. M. M. Shikare

2. Qualification: M.Sc., M.Phil., Ph.D. (Mathematics)

3. Teaching and Research Experience : 35 years
Emeritus Professor, JSPM University, Pune 412207
Formerly Professor and Head, Department of Mathematics
Savitribai Phule Pune University, Pune 411007

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5. Subject : Mathematics (Specialization: Graph Theory, Discrete Mathematics)

6. Research Contributions:

(a) Number of students Guided: Ph.D.: 8
M. Phil. : 4
(b) **Number of research papers published in International Journals: 42**

Books Published: 2

(c) **Research Projects:**

Title of the Project	Name of the Funding Agency	Duration
1. Determination of various Eulerian Subgraphs and eulerian supergraphs of non-eulerian Graphs and the development of the related theory for binary matroids.	University Grants Commission	Two Years (1996-98)
2. Generalization of some graph-theoretic results to matroids and their applications	University of Pune	Two years (2006-2008)
3. Splitt-off operation and element splitting operation for binary matroids and their applications	University of Pune	Two years (2011-2013)

(d) Reviewed 114 research papers for the Mathematical Reviews of The American Mathematical Society. These reviews have been published by the American Mathematical society.

(e) Number of invited lectures given: 46
(f) Number of Conferences, symposia, workshops attended: 59

9. Books Published:

(i) M. M. Shikare and B. N. Waphare (Ed.), **Combinatorial Optimization**, Narosa Publishing House, New Delhi, India (2004).

(ii) M. M. Shikare, A. K. Agarwal, N. K.Thakare, M. A. Pathan, B. N. waphare (**Ed.) Proceedings** of the Seventh International Conference of the Society for Special Functions and their Applications, Pune (India), February 21-23, 2006.

10. International Conferences Attended in Foreign Countries and in India :

Gave invited talks in the following International Conferences :

(i) Ninth Quadrennial International Conference on Graph Theory, Combinatorics, Algorithms and Applications held at **Western Michigan University, Kalamazoo, U.S.A.,** June 4-9, 2000.

(ii) SIAM International Conference on Discrete Mathematics held at Vanderbilt University**, Nashville, TN, U.S.A.,** June 13-16, 2004.

(iii) International Congress of Mathematicians held in Madrid, **Spain** , August 22-30, 2006

(iv) Workshop on Geometric and Topological Combinatorics, Universidad Alcala, Henares, **Spain**, Aug. 31 – Sept. 5, 2006

(v) International Conference on Discrete Mathematics, University of **Mysore**, Mysore, India, June 6-10, 2008.

(vi) International Conference on Group Theory, Combinatorics and Computation, the University of West Australia**, Perth, Australia**, January 5-16, 2009.

(vii) International Congress of Mathematicians, **Hyderabad,** India (August 18-27, 2010)

(viii) The 41st Annual Iranian Mathematics Conference organized by the Department of Mathematics, Urmia University, **Urmia**, **Iran** and gave an invited talk

(ix) International Conference on Discrete Mathematics, Karnatak University, **Dharwad,**

India (June 10-14, 2013).

(x) The 18th International Mathematics Conference held at Independent University, Dhaka, **Bangladesh** during March 20-22, 2014 and gave an invited talk.

(xi) The 39th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing (39ACCMCC), University of Queensland, **Brisbane, Australia,** December 6-*11, 2015.*

(xii) Asian Mathematical Conference 2016 held at **Bali, Indonesia** during July 25-29, 2016.

(xiii) International Congress of Mathematicians (ICM) held at **Rio de Janerio, Brazil** during August 1- 10, 2018.

11. Details of Seminars, Workshops and Conferences organized

1. Eight-day **National level** Workshop on `Emerging Fronteirs in Combinatorial Optimization` during June 21-28, 2002. The Department of Science and Technology (DST), Govt. of India provided the financial support of Rs. 3,70,000/- for the organization of the workshop. (Organizing Secretary of the workshop**).**

2. Four-day **National level** workshop on ` Discrete Mathematics`, March 21-24, 2004. The workshop was supported by the UGC under the SAP programme
(Coordinator of the workshop).

3. International **Conference** on Special Functions and their Applications held at Pune during February 21-23, 2006 (Local Organizing Secretary).

4.. **73rd Annual Conference** (Centenary year Conf.) of the Indian Mathematical Society, Department of Mathematics, University of Pune, Pune, December 27-30, 2007 (Joint organizing secretary)

5.. **International Conference** on Algebraic Geometry, University of Pune, Pune (Dec. 14-18, 2010).

6.. **National Conference** on Discrete Mathematics, Algebra and Analysis, Department of Mathematics, University of Pune, Pune, April 21-24, 2013 (Organizing Secretary).

12. Membership of the professional bodies:

1 Member of the American Mathematical Society
2 Life member of the Indian Mathematical Society
3 Life member of the Indian Science Congress
4 Life member of the Society for special functions.

5 Included the name in the First Edition of Marquis Who's Who in Asia

13**. Evaluations of Ph.D. Thesis**: Evaluated the following five thesis of the other Universities for the Ph.D. degree.

(i) On The Fuzzy Matroids, Algappa University, Tamil Nadu (2004).

(ii) Some Topics in the Theory of Domination in Graphs, Karnatak University, Dharwad-580 003 (2005).

(iii) Some Aspects of Distance Concepts in Graph Theory, Karnatak University, Dharwad (2007).

(iv).. Some studies on Domination parameters and neighbourhood numbers of interval graphs and circular-arc graphs, Sri Padmavati Mahila Visvavidyalayam, Tirupati (2009).

(v) Some studies in theory of graphs, Karnatak University, Dharwad (2011)

14. **Refereed few papers for the following reputed International Journals**

(i) Ars Combinatoria. (Canada)
(ii) Discrete Mathematics (USA)
(iii) Indian Journal of Pure and Applied Mathematics (India)
(iv) Journal of Indian Mathematical Society

15. **Fellowships, Grants and Awards:**

(I) Teacher Fellowship from the U. G. C. (Govt. of India) to pursue M.Phil. degree (1989).

(II) Travel grant from UGC to attend International Conference in USA (2000).

(III) Travel grant from University of Pune to attend International Conference in USA (2004).

(IV) India International Friendship Society's "VIJAY SHREE AWARD for remarkable achievements in the field of education (2005).

(V) Received grant from Department of Sc. and Technology, Govt. of India to attend International Conference on Group Theory, Combinatorics and Computation, the University of West AAustralia, Perth Australia, January 5-16, 2009.

16. **Other Positions / Experience**

(i) Chairman, Board of Studies in Mathematics, University of Pune, Pune (2010- 2012)

(ii) Member, Editorial Board, Journal of Indian Mathematical Society (2007-2010).

(iii).. Programme Facilitator, M.Sc. (Mathematics with Applications to Computer Science) Course, Indira Gandhi National Open University, Pune Region (2008-2011) .

(iv).. Head, Department of Mathematics, University of Pune, Pune (2010-2012).

(v).. Administrative Secretary, Indian Mathematical Society (2011 - 2015).

(vi) Member, Board of Studies in Mathematics, Dr. B. A. M. University, Aurangabad (2010 - 15).

17. **Honours**

(i) **Administrative Secretary**, Indian Mathematical Society (April 1, 2011, to March 31, 2019).

(ii) Gave prestigious 24th V. Ramaswami Aiyar Memorial Award Lecture in the 79th Annual Conferemce of the **Indian Mathematical Society** held at Cochin during December 28-31, 2013.

(iii) Received **Rajiv Gandhi Gold Medal** Award 2014 for excellence in Education and Research; awarded by Global Economic Progress and Research Association, New Delhi.

(iv) Gave an invited talk at the 41st Annual Iranian Mathematics Conference organized by the Department of Mathematics, Urmia University, Urmia, **Iran, Sept. 2010**

(v) Gave an invited talk at the 18th International Mathematics Conference held at Independent University, Dhaka, **Bangladesh** during March 20-22, 2014.

(vi) Gave an invited talk at the Asian Mathematical Conference 2016 held at **Bali, Indonesia** during July 25-29, 2016.

(vii) Member of the National Committee formulated for the review of the B. Sc programme of the Indira Gandhi National Open University (IGNOU), New Delhi.

(viii) **Principal,** Jaikranti College of Computer Science and Management Studies, Katraj, Pune 411046 (July 2017 to May 2023).

(ix) **Ediitor-in-Chief**: The Mathematics Student, An International Journal Published by the Indian Mathematical Society (April 1, 2019, to March 31, 2023).

(x) **General Secretary**, Indian Mathematical Society, April 1, 2023 onwards

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18. Administrative **and Research Contributions: A Brief Review**

Prof. M. M. Shikare served as the Head **of the Department of Mathematics**, S. P. Pune University, Pune, which is one of the leading and reputed Departments in the country. In 2010, when he was the Head of the Department, the UGC granted the **status of Center for Advanced Study** in Mathematics to the Department. This is a remarkable achievement in the history of the Department. He also served as the Chairman, Board of Studies in Mathematics and was member of the Academic Council of the University.

His research in **Matroid Theory** (a part of discrete mathematics) also gave him recognition as a mathematician internationally. The **international recognition** that he received for my researches is revealed by the following facts: he presented our findings in Matroid Theory in the conferences held in (i) **USA** at Western Michigan University (2000) and at Vanderbilt University (2004); (ii) **Spain** at Universidad, Alcala (2006); (iii) **Australia** at University of Western Australia, Perth (2009) and University of Queensland, Brisbane (2015). In fact, he was an invited speaker at (i) Urmia University, Urmia, **Iran** (2010); (ii) Independent University, Dhaka, **Bangladesh** (2014) and International Congress of Mathematicians held in **Brazil** in August 2018. He collaborated two research papers with **Professor Ivan Gutman, a** renowned Mathematician from Siberia.

42 research papers published in International Journals of high reputation are to his credit. He also co-edited the **book** titled 'Combinatorial Optimization' (2004) and the **Proceedings** of the Seventh International Conference of the Society for Special Functions and their Applications (2006). Moreover, world renowned Matroid Theorists such as (i) D. J. A. Welsh of Oxford University, U. K. (ii) Robert Jamison, Clemson University, USA; (iii) Luis Goddyn, Canada (iv) J. G. Oxley, Louisiana State Univ. USA; (v) Gordon Royley, Australia; (vi) Yaokum Wu, China; (vii) Allan Mills, USA (viii) Ivan Gutman, Siberia and many more have appreciated quality of his work. and some have further extended our results. He was shortlisted for the post of **Vice Chancellor** of Savitribai Phule Pune University, Pune in the year 2017.

He served as the **Administrative Secretary** of the Indian Mathematical Society from April 2011 to March 2019 while from April 1, 2019, to March 2023, he served as the Editor**-in-Chief** of "The Mathematics Student", an International Journal Published by the Indian Mathematical Society. Presently he is holding the position as **The General Secretary** of The Indian Mathematical Society.

LIST OF PUBLICATIONS

1. M. M. Shikare, Ph.D. Thesis, Splitting in Binary Matroids, University of Pune (1997). Supervisor: T. T. Raghunathan.

2. M. Shikare, T. T. Raghunathan and B. N. Waphare, Some properties of circuits in graphs, **J. Advances in Science and Technology**, 11 (1) (1995), 45-47.

3. M. M. Shikare and T. T. Raghunathan, A Characterization of binary Eulerian matroids, **Indian J. of pure and appl. Math.,** 27 (2), 153-155 (1996).

4. T. T. Raghunathan, M. M. Shikare and B. N. Waphare, Splitting in a binary matroid, **Discrete Mathematics**, 184 (1998), 267-271.

5. M. M. Shikare, Splitting operation and connectedness in binary matroids, Indian **J. of pure and appl. Math.,** 31 (12) (2000), 1691-1697.

6. M. M. Shikare, New Characterizations of binary Eulerian Matroids, Indian **J. of pure and appl. Math., 32 (2)(2001), 215- 219.**

7. M. M. Shikare and G. Azadi, Determination of the bases of a splitting matroid, European **Journal of Combinatorics** 24 (2003), 45-52.

8. M. M. Shikare, G. Azadi, and B. N. Waphare, Generalised splitting off operation for binary matroids, Electronic **Notes in Discrete Mathematics,** Vol. 15(2003), 188-190.

9. M. M. Shikare, B. N. Waphare (ed.), **Combinatorial Optimization**, **Narosa** Publishing House, New Delhi (2004).

10. M. M. Shikare and K. V. Dalavi, On splitting off operation for graphs and its applications, International **J. of Math. Sci and Engg. Appls.,** Vol. 1 No. 2 (2007), 317-331.

11. M. M. Shikare and B. N. Waphare, A characterization of connected matroids, **Ars Combinatoria,** 86 (2008), 345-347.

12. M. M. Shikare, Splitting lemma for binary matroids, **Southeast Asian Bulletin of Mathematics** 32 (2008), 151-159.

13. M. M. Shikare and S. Dhotre, Construction of a Hamiltonian cycle in generalized Petersen graph of order 4n**, International J. of Math. Sci and Engg. Appls**., Vol. 2 No. III (2008), 251-256.

14. M. M. Shikare, H. Azanchiler and B. N. Waphare, The cocircuits of splitting matroids, **J. Indian Math. Society,** Vol. 74, Nos. 3-4(2007), 185-202.

15. M. M. Shikare, K. V. Dalavi and Y. M. Borse, Forbidden-minor characterization for the class of graphic element splitting matroids, **Discussions Mathematicae Graph Theory** 29 (2009), 215-227.

16. M. M. Shikare and B. N. Waphare, Excluded minors for the class of graphic splitting matroids, Ars **Combinatoric** 97 (2010), 111-127.

17. M. M. Shikare, Y. M. Borse and K. V. Dalavi., Forbidden Minors for Graphic and Cographic ES-Splitting Matroids, **Lobachevskii J. of Math.** 31, (2010), 27-35

18. M. M. Shikare, G. Azadi and B. N. Waphare, Generalized Splitting operation for binary matroids and its applications, **J. Indian Math. Society,** Vol. 78, Nos. 1 - 4 (2011), 145-154.

19. M. M. Shikare, K. V. Dalvi and S. B. Dhotre, Splitting off Operation for binary matroids and Its applications, **Graphs and Combinatorics,** 27 (2011), 871-882.

20. Dalvi Kiran, Borse Y. M. and Shikare M.M., Forbidden-Minor characterization for the class of cographic element splitting matroids, Discuss. Math. Graph Theory 31 (2011), 601-606.

21. M. M. Shikare, S. D. Dhotre and K. V. Dalavi, A characterization of the graphic splitt-off matroids, **Australasian J. of Combinatorics**, 50 (2011), 25-35.

22. M. M. Shikare and S. B. Dhotre, Forbidden-minors for es-splitting binary Gammoids, **Lobachevskii Journal of Mathematics**, 33 (2012), 33-38.

23. M. M. Shikare and Pirouz Naiyer, Some results involving the splitting operation on binary matroids, ISRN **Discrete Mathematics** (2012), Art. ID 406147, 8 pages.

24. M. M. Shikare, S. B. Dhotre and P. P. Malvadkar, A Forbidden- minor characterization for the class of regular matroids which yield the cographic es-splitting matroids, **Lobachevskii Journal of Mathematics**, 34 (2) (2013), 173-180.

25. Y. M. Borse, M. Shikare and Kiran Dalvi, Excluded-Minor characterization for the class of cographic splitting matroids, Ars **Combinatoria,** 115 (2014), pp. 219-23.

26. M. M. Shikare, Generalizations of some graph-theoretic results to matroids, **The Mathematics Student,** Vol 83, Nos. 1-4 (2014), p. 1-15.

27. M. M. Shikare, P. P Malvadkar and S. B. Dhotre, A characterization of n-connected splitting matroids, **Asian European Journal of Mathematics**, Vol. 7, No. 4, (2014), pp. . 601-607

28. Y. M. Borse, M. M. Shikare and Pirouz Naiyer, A characterization of graphic matroids which yield cographic splitting matroids, **Ars Combinatoria,** Vol. 118 (2015), pp. 357-366.

29. M. M. Shikare, S. B. Dhotre and P. P. Malvadkar, On 3-connected es-splitting binary matroids, **Asian-European Journal of Mathematics,** Vol. 9, No. 1 (2016) 1650017 (10 pages).

30. M. M. Shikare, Pirouz Naiyer and K. V. Dalavi, Cographic element splitting matroids of regular matroids, **Utilitas Mathematica,** 101 (2016), 91-107.

31. Patekar S. C. and Shikarte M. M., On the path matrices of graphs and their properties, **Adv. Appl. Discr. Math**. 17 (2016), pp. 169-184.

32. M. M. Shikare, P. P. Malvadkar and S. B. Dhotre, **A** Characterization of cocircuits of an es-splitting matroid, **Journal of Combinatorial Mathematics and Combinatorial Computing** 105 (2018), pp. 247-258.

33. M. M. Shikare, Extension of Splitting Operation from Graphs to Binary matroids, **Southeast Asian Bulletin of Mathematics** 42 (5) (2018), pp. 747-756.

34. M. M. Shikare, P. P. Malvadkar, S. C. Patekar **and Ivan Gutman**, On Path Eigenvalues and Path Energy of Graphs, **MATCH Communications in Mathematical and in Computer Chemistry** 79 (2018), pp. 387-398.

35. S. C. Patekar and M. M. Shikare, On Path Laplacian Eigenvalues and Path Laplacian Energy of Graphs, Journal of New Theory, 20 (2018), pp. 93-101.

36. M. M. Shikare, P. P. Malvadkar and S. B. Dhotre, Forbidden minors for the class of cographic matroids which yield the graphic element splitting matroids, **Southeast Asian Bulletin of Mathematics,** 43 (1) **(**2019), pp. 105-119.

37. S. C. Patekar, S. A. Barde and M. M. Shikare, On the Average degree Eigenvalues and Average Degree Energy of Graphs, J. Math. Comput. Sci. 9 (2019), pp. 46-59.

38. M. M. Shikare, P. P. Malvadkar and S. B. Dhotre, The closure operator of the es-splitting matroid, **Journal of the Indian Math. Soc**., Volume 88 (3-4) 2021, pp. 334-345.

39. P. P. Malavadkar, S. B. Dhotre and M. M. Shikare, On n-conneceted minors of the es-splitting binary matroids, **Electronic Journal of Graph Theory and Applications**, Volume 9(2) (2021), pp. 265-275.

40. Amol P. Narke, Prashant P. Malavadkar, Maruti M. Shikare, **and Ivan Gutman**, On Path-equienergetic graphs, **Bulletin of International Mathematical Virtual Institute, 13 (2) (2023), 233-237.**

41. P. P. Malavadkar, M. M. Shikare and B. N. waphare, The es-Splitting operation for matroids representable over prime fields GF(p), F. Hoffman et. Al. (eds.), Combinatorics, Graph Theory, and Computing, **Springer** Proceedings in Mathematics and Statistics 448 (2024), pp. 1-10.

42. Uday Jagadale, Prashant Pralhad Malavadkar, Sachin Gunjal, Maruti Shikare, On the characterization of Eulerian es-splitting p-matroids, **Electronic Journal of Graph Theory and Applications** (submitted for publication).