

Dr. R. Balakrishnan

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Degrees

- B.Sc., (Hons.) in Mathematics , 1957, Annamalai University..
- M.A. in Mathematics, 1959, Annamalai University.
- M.Sc. (by Research), 1963, Annamalai University.
- Ph. D., 1968, University of Maryland, USA.

Positions held

1968-1973 - Lecturer in Mathematics, Annamalai University.

1973-1986 - Post-Graduate Professor and Head of the Department of Mathematics, National College,
Tiruchirappalli.

1986-1998 - Chairman, Department of Mathematics, Annamalai University,

1998-2012 - Worked as NBHM Emeritus Professor (Two terms), BharathidasanUniversity, Tiruchirappalli.

AICTE Emeritus Professor (one term), BharathidasanUniversity, Tiruchirappalli.

DST Chair in Discrete Mathematics (4 years), SRC. SASTRA University. Kumbakonam.

and DST Project Principal Investigator (3 years), BharathidasanUniversity, Tiruchirappalli.

Current Areas of Research

- Algebraic Graph Theory
- Graph Coloring

Books Published

1. (with N. Ramabhadran) A Textbook of Modern Algebra, Vikas Publishing House, New Delhi.
2. (With K. Ranganathan) A textbook of Graph Theory , (Revised and Enlarged) Second Edition, Springer 2012.
3. (with S. Sridharan) Discrete Mathematics (under preparation).

Books Co-edited

1. Proceedings of the Ramanujan Centennial International Conference held at Annamalai University in December 1987; published by the Ramanujan Mathematical Society.
2. Proceedings of the International Conference on Discrete Mathematics held at Tiruchirappalli in January 1996. Proceedings was published as Vol. 206 (August 1999) of the North Holland (now Elsevier) Journal: Discrete Mathematics.
3. Proceedings of the January 1998 Conference on Graph Connections held at Cochin University of Science and Technology; published by M/s. Allied Publishers, India.
4. Proceedings of the March 2001 Conference on Graph Theory and its Applications, Anna University, Chennai; published by Narosa Publishing House.
5. Proceedings of the International Conference on Discrete Mathematics, December 2006, held at Indian Institute of Science, Bangalore; published under the RMS-LNS Lecture Notes Series International Press, Boston.
6. Proceedings of the ICM 2010 Satellite Congress on Recent Trends in Graphs and Combinatorics (ICRTGC - 2010)- Discrete Mathematics 312 (2012).

International Conferences Organized

One of the principal organizers for the following:

1. Ramanujan Centennial International Conference, 1987, held at Annamalai University.
2. International Conference on Number Theory and Discrete Mathematics 1996, held at Tiruchirappalli.
3. International Conference on Discrete Mathematics ICDM 2006, held at Indian Institute of Science, Bangalore.
4. International Conference on Discrete Mathematics ICDM 2008, held at University of Mysore, Mysore.
5. International Conference on Discrete Mathematical Chemistry (2007), PESIT, Bangalore.
6. International Conference on Discrete Mathematical Chemistry (2008), Kalapet, Kerala.
7. First India-Taiwan Conference in Discrete Mathematics, November 2009, Taipei, Taiwan.
8. International Workshop on Graph Coloring June 2010, Bharathidasan University, Tiruchirappalli.
9. Second India - Taiwan Conference on Discrete Mathematics, Amrita University, Coimbatore, September 8-11, 2011.
10. Third India - Taiwan Conference on Discrete Mathematics held in National Chiao Tung University, Taiwan during November 18-22, 2013.

11. Fourth India-Taiwan Conference on Discrete Mathematics held at the Indian Institute of Technology, Madras, July 10-13, 2015.
12. International Conference on Graph Coloring and Spectral Graph Theory held at Pondicherry University during July 15-16, 2015.
13. International Conference on Graph Theory and its Applications, Amrita University, Coimbatore, December 16-19, 2015
14. 31st Annual (International) Conference of the Ramanujan Mathematical Society held at National college campus, Tiruchirappalli during June 18-21, 2016.
15. International conference on Graph theory, South Asian University, New Delhi, September 15-17, 2016.
16. Workshop on Interconnection Networks, Amrita University, Coimbatore, April 25-29, 2017 (forthcoming).
17. 13th Annual Conference of the Academy of Discrete Mathematics and its Applications, SSN College of Engineering, Chennai, June 8-10, 2017. (forthcoming)
18. 5th India –Taiwan Conference on Discrete Mathematics, Tamkang University, Taipei, Taiwan, July 18-21, 2017. (forthcoming)

Other Facts

1. Founder - Secretary of the Ramanujan Mathematical Society
2. Life Member of Ramanujan Mathematical Society, Indian Mathematical Society, American Mathematical Society and Academy of Discrete Mathematics and Applications (ADMA).
3. Chief Editor of Mathematics Newsletter from 1991 to 2004, published by the Ramanujan Mathematical Society and sponsored by the National Board for Higher Mathematics, India.
4. President of Academy of Discrete Mathematics and Applications (ADMA) for the period 2016-2018.

Research Guidance-Completed Ph. D Students

1. N. Sudharsanam
2. K. Ranganathan
3. P. Paulraja
4. Rahim Basha
5. V. Yegnanarayanan
6. R. Sampathkumar
7. Selvam

8. S. Francis Raj
9. T. Kavaskar
10. Anuradha

Papers published (Since 2004)

1. The Energy of a Graph, Linear Algebra and its Applications, 387(2004), 287-295.
2. (With N. Sridharan and K. Viswanathan Iyer) The Wiener Index of Odd Graphs, Journal of Indian Institute of Science, 86 (2006), 527-531.
3. (With K. Viswanathan Iyer and K.T. Raghavendra) Wiener Index of two special tress, MATCH Communications, Math. Comput. Chem. 57(2007), 385-392.
4. (With N. Sridharan and K. Viswanathan Iyer) A Sharp lower bound for the Wiener Index of a graph, Ars Combinatoria, 2011.
5. (with C. Adiga and Wasin So) The Skew Energy of a Digraph, Linear Algebra and its Applications, 432(2010), 1825-1835.
6. (with T. Kavaskar and Wasin So) The energy of the Mycielskian of regular graphs, Australasian Journal of Combinatorics, 52 (2012), Pages 163–171.
7. (with S. Francis Raj) Connectivity of the Mycielskian of a Graph, Discrete Mathematics, 308(2008), 2607-2610.
8. (with S. Francis Raj) The Wiener number of Kneser Graphs, Discussiones Mathematicae Graph Theory, 28(2008), 219-228.
9. (with S. Francis Raj) Bounds for the b-chromatic Number of Vertex Deleted Subgraphs and the Extremal Graphs, Electronic Notes in Discrete Mathematics, 34(2009), 353-358.
10. (with S. Francis Raj) The Wiener Number of Powers of the Mycielskian, Discussiones Mathematicae Graph Theory, 30 (2010).
11. (with T. Kavaskar) Fall Coloring of Graphs-I, Discussiones Mathematicae Graph Theory, 30 (2010), 385-391.
12. (with T. Kavaskar) Fall Coloring of Graphs-II, Journal of Combinatorial Mathematics and Combinatorial Computing, 76 (2011), 21-31.
13. (with T. Kavaskar) Color Chain of a Graph, Graphs and Combinatorics, Springer, 27 (2011), 487-493.
14. Lecture Notes in Spectra and Energies of Graphs, Manipal Institute of Technology, Manipal University Press (2012), 16-26.
15. (With T. Kavaskar) b-coloring of Kneser graphs, Disc. Applied Math.(Elsevier) 160 (2012), 9-14.

16. (With S. Francis Raj and T. Kavaskar) b-chromatic number of Cartesian product of some families of graphs, *Disc. Applied Math.(Elsevier)* 160 (2012), 2709-2715.
17. (With A. Anuradha) Skew Spectrum of the Cartesian product of an Oriented Graph with an Oriented Hypercube, *Proc. International Workshop and Conference on Combinatorial Matrix Theory and Generalized Inverses of Matrices* (2012), Springer.
18. (with S. Francis Raj) Bounds for the b-chromatic number of $G-v$, to appear in *Discrete Applied Mathematics*, 161 (2013), 1173-1179.
19. (With A. Anuradha, Xiaolin Chen, Xueliang Li, Huishu Lian and Wasin So, Skew Spectra of Oriented Bipartite Graphs, *The Electronic Journal of Combinatorics*,20(4) (2013), # of pages18.
20. (With T. Kavaskar) Interpolation theorem for partial Grundy coloring, *Disc. Mathematics (Elsevier)* 313 (2013), 949-950.
21. (With A. Anuradha and Wasin So), Skew Spectra of Graphs without Even Cycles, *Linear Algebra and its Applications (Elsevier)*, 444 (2014), 67-80.
22. (With A. Anuradha and G. Indulal) Some New Families of Integral Graphs, *Indian Journal of Pure and Applied Mathematics (Springer)*, (2014), 805-817.
23. (With S. Francis Raj and T. Kavaskar) Bounds for the b-chromatic number of Cartesian product of graphs, *Graphs and Combinatorics (Springer)*, 30, 511-520 (2014).
24. A Chapter on “Adjacency Spectrum and Laplacian Spectrum of a graph” in the book: ”Handbook of Graph Theory, Combinatorial Optimization and Algorithms”, C.R.C. Press, December 2015.
25. (With S. Francis Raj and T. Kavaskar), b- Coloring of Cartesian product of trees, *Taiwanese Journal of Mathematics*, Vol. 20, No. 1, pp. 1–11, February 2016.
26. (with S. Francis Raj) Bounds for the b-chromatic Number of the Mycielskian of some families of graphs, to appear in *ARS Combinatoria*.
27. (with G. Indulal) Distance Spectrum of Indu-Bala Products of Graphs, *AKCE International Journal of Graphs and Combinatorics*, July 2016.

Invited Talks Delivered

1. Delivered an Invited Talk at the International Workshop on Graph Theory, National Sun-Yat sen University, Kaohsiung, Taiwan, August 14-16, 2012. Title: Skew spectra of Oriented Graphs.
2. Delivered an Invited Talk on “Choosability in Graphs” at the Workshop on Graph Coloring held at Indian Statistical Institute, Chennai during January 25-27, 2013.

3. Delivered an Invited Talk at the India-Slovenia Conference in Discrete Mathematics held at the Department of Future Studies, Kerala University, Thiruvananthapuram. Topic: Skew Spectrum of the Cartesian Product of an Oriented Graph with an Oriented Hypercube.
4. Delivered a course of 5 lectures in the Workshop preceding International Conference on Discrete Mathematics (ICDM 2013) on Spectral Graph Theory on June 7-9, 2013 at Karnatak University, Dharwad.
5. Delivered an Invited Talk at the National Conference on Graph Coloring and its Applications, Dr. Ambedkar Institute of Technology, Bangalore July 27-28, 2013.
6. Delivered an Invited Talk on “Coloring Games in Graphs” at the National Conference on Graph Theory and its Applications held at Periyar University, Salem, January 6-7, 2014.
7. Delivered the Frank Harary Endowment Lecture at the Annual Conference of ADMA, Reva University, Bengaluru, June 10-13, 2014. Title: Two major theorems in graph theory.
8. Delivered an Invited Talk on Interconnection Networks at the Conference on Graph Theory held at St. Xavier’s College for Women, Aluwa, Kerala, August 7-9, 2014.
9. Delivered a lecture at the Workshop on Linear Algebra held at Reva University, Bangalore on December 15, 2014.
10. Delivered an Invited Talk on:”Knodel Graphs in Interconnection Networks” at the National Conference on Graph Theory at SSN College of Engineering, Chennai, held during December 18-20, 2014.
11. Delivered an Invited talk on “Ramanujan Graphs” at the National Conference on Graph Theory and Automata held at St. Joseph’s College, Tiruchirappalli held during January 9-10, 2015.
12. Delivered an Invited Talk on “The automorphism group of Knodel graphs at the International Conference on Graph Coloring and Spectral Graph Theory held at Pondicherry University during July 15-16, 2015.
13. Delivered an Invited Talk on “Polynomials with Integer Coefficients” at the Seethalakshmi Ramaswami Collge, Trichy on January 19, 2016.
14. Delivered a course of lectures on, “Combinatorial Nullstellensats” at the pre conference workshop on “Algebraic and Applied Combinatorics” held at National college, Tiruchirappalli during June, 15-17, 2016.

Other Academic Activities

I am presently involved in organizing an Outreach Program in Mathematics at the Ramanujan Mathematical Society Building, National College Campus at Tiruchirappalli for the benefit of M.Sc. M.Phil. and Ph.D. scholars in mathematics. These scholars are being taught the foundations of mathematics and the methods to solve problems so that they would be better placed to meet the National Entrance Tests like NET, SLET etc. with greater confidence. It is a continuing program which is being conducted for 3 days in a month and for a longer period during summer vacation.

Updated on 7th October 2016.