Narayanan N

Assistant Professor

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Personal Details

date of birth	18 May 1977
Nationality	Indian

Research Interests

Graph Colouring, Extremal Graph Theory, Extremal Combinatorics, Graph Algorithms, Graph Domination.

Ph.D. thesis

title	*Acyclic, k-intersection edge colourings and oriented colouring.*
supervisor	C R Subramanian

Education

2009 **Ph.D.**, *Mathematical Sciences*, The Institute of Mathematical Sciences, Homi Bhabha National institute.

2000 **M.Sc.**, *Operations Research and Computer Applications*, Cochin University of Science and Technology, 85%.

1997 **B.Sc.**, *Mathematics*, University of Calicut, 89.4%.

Work Experience

current **Asst. Professor**, *IIT Madras*, Chennai, India.

2011-2012 **Postdoctoral Fellow**, *Laboratoire de Recherche Informatique,Université Paris-Sud*, Orsay, France.

2010-2011 **Postdoctoral Fellow**, *Dept. Mathematics, National Taiwan University*, Taipei, Taiwan.

2009-2010 **Asst. Professor**, *C R Rao Advanced Institute for Mathematics, Statistics and Computer Science*, Hyderabad,India.

2009 **Postdoctoral Fellow**, *Indian Institute of Science*, Bangalore,India.

2003–2008 **Research Scholar**, *IMSc*, Chennai, India.

2007,2011 **Visitor**, *University of Zielona Gora, Poland*, Visited Prof. M. Borowiecki..

2001–2003 **Junior Research Fellow**, *Tata Institute of Fundamental Research*, Mumbai, India.

Conferences Organised

- Organising secretary, Fourth India Taiwan conference on Discrete Mathematics. IIT Madras, Chennai 2015
- Local organising committee member, CALDAM 2016. Thiruvananthapuram 2016

Journal Publications

A V Jayanthan, Narayanan N, B V Raghavendra Rao. Regularity of Binomial Edge Ideals of Certain Block Graphs. Submitted.

V. Borozan, M. Ferrara, S. Fujita, M. Furuya, Y. Manoussakis, N. Narayanan, D. Stolee *Partitioning a graph into highly connected subgraphs* **Journal of Graph Theory.** (2015)

V. Borozan, G. J. Chang, N. Cohen, S. Fujita, N. Narayanan, R. Naserasr, P. Valicov. *From edge colouring to strong edge colouring* **Electronic Journal of Combinatorics** 22(2) (2015)

K. Balakrishnan, M. Changat, A K Lakshmikuttyamma, J Mathews, H M Mulder, Narayanan N, P G Narasimha-Shenoi. *Axiomatic characterization of the interval function of a block graph.* **Discrete Mathematics** 338 (2015) 885-894

Valentin Borozan, Leandro Montero, Narayanan N. *Further results on strong edge-colourings in outerplanar graphs* **Australasian Journal of Combinatorics**, Accepted

Gerard Jennhwa Chang, N. Narayanan *On a conjecture on the balanced decomposition number.* **Discrete Mathematics** 1511-1514 (2013)

Gerard J Chang, Narayanan N. *Strong chromatic index of 2-degenerate graphs.* **Journal of Graph Theory,73(2)** 119-126 (2013)

Anna Fiedorowicz, Mariusz Hałuszczak, and Narayanan N. *About acyclic edge colouring planar graphs.* **Information Processing Letters, 108:412–417, 2008.**

Rahul Muthu, Narayanan N, and C R Subramanian. *Improved bounds on acyclic edge colouring.* (Full version) **Discrete Mathematics, 307:3063–3069, 2007.**

Rahul Muthu, Narayanan N, and C R Subramanian. *Optimal acyclic edge colouring of grid like graphs.* **Discrete Mathematics**, 310:2769-2775, 2010.

Rahul Muthu, Narayanan N, and C R Subramanian. *On k-intersection edge colourings.* In **Discussiones Mathematicae Graph Theory, 29(2):411-418, 2009.**

Aravind Natarajan Narayanan N and C R Subramanian. *Oriented colouring of some graph products.* In **Discussiones Mathematicae Graph Theory**, 31(4): 675-686,2011.

Rahul Muthu, Narayanan N, and C R Subramanian. Improved bounds on acyclic edge colouring. **Electronic Notes in Discrete Mathematics**, Proceedings of GRACO, pages 171–177, 2005.

Conference Publications

Manoj Changat, Ferdoos Hossein Nezhad, Narayanan Narayanan Axiomatic Characterization of Claw and Paw-Free Graphs Using Graph Transit Functions. **CALDAM 2016, Lecture Notes in Computer Science 9602, Springer 2016, 115-125**

Jean-Alexandre Anglès d'Auriac, Csilla Bujtás, Hakim El Maftouhi, Marek Karpinski, Yannis Manoussakis, Leandro Montero, Narayanan Narayanan, Laurent Rosaz, Johan Thapper, Zsolt Tuza Tropical Dominating Sets in Vertex-Coloured Graphs. **WALCOM 2016, Lecture Notes in Computer Science 9627, Springer 2016 17-27**

Narayanan N. Minimally 2-connected graphs and colouring problems. **CTW 2011, pages 215-218, 2011.**

Rahul Muthu, Narayanan N, and C R Subramanian. Acyclic edge colourings of outerplanar graphs. *LNCS, proceedings of AAIM*, 4508:144–152, 2007.

Rahul Muthu, Narayanan N, and C R Subramanian. Optimal acyclic edge colouring of grid like graphs. *LNCS (Proceedings of COCOON)*, 4112:60–367, 2006.

Rahul Muthu, Narayanan N, and C R Subramanian. K-intersection colouring. In *Colourings Independence and Domination (CID)*, 2007.

Misc. Unpublished Manuscripts

Rahul Muthu, Narayanan N, and C R Subramanian. Acyclic edge colouring of partial 2-trees. *Results superseded by an independant simultaneous work (see DOI:10.1002/jgt.20559)*.

Rahul Muthu, Narayanan N, and C R Subramanian. Some graphs statisfying acyclic edge colouring conjecture. *Part of Ph.D. Thesis*

Invited talks

- Coloring problems on the plane. Amrita international conference on graph theory and applications, Amrita viswavidyapeeth. 2015
- Chromatic number of the plane. Dept of Mathematics, CUSAT 2015
- Algebraic methods in combinatorics ICGTA, Univ. of Pondychery 2015
- Erdos Magic National conference on recent trends on colouring,Govt Arts college Melur 2015
- Introduction to The Pobabilistic Method CUSAT 2014
- The Discharging Method CUSAT 2014
- Introduction to The Pobabilistic Method RAAP,TKM EC, Kollam, 2014
- The Polynomial Method National College Trichy 2014
- The Pigeonhole Principle NCET, St Xaviers, Aluva, 2014
- The Pigeonhole Principle VIT Chennai 2014
- The Pigeonhole Principle Bharati Dasan Uni 2014
- The Pobabilistic Method Kerala University 2012
- The Discharging Method Kerala University 2014
- Algorithms and Complexity: upper and lower bounds Kerala University 2014
- The Discharging Method GEC Sreekrishnapuram 2013
- Introduction to The Pobabilistic Method ITCDM 2013
- Strong edge colouring ITCDM, Taiwan 2013
- Strong edge colouring Kerala University 2013
- Puzzle Solving: logical thinking UP School, Sreekrishnapuram 2013
- Combinatorics: Sets and Counting HSS Sreekrishnapuram 2013
- Eigenvalues and Google Pageranking GEC Sreekrishnapuram 2013
- Graph Colouring: Problems, Methods and Bounds ITCDM 2013
- An invitation to research : Graph Theory GEC Sreekrishnapuram 2012
- Balanced decomposition number of 2-connected graphs. Kerala University, 2012
- An invitation to research : Graph Theory GEC Bartonhill 2011
- An invitation to research : Graph Theory NIT Calicut 2010

○ Minimally 2-connected graphs and colouring 2011, Rome, Italy.

Conference Presentations/Invited talks

○ What is a proof in mathematics: LogicDST Inspire talk, Loyola degree college, Kadapa
○ Graphs and countingLoyola degree college
○ Balanced decomposition number of 2-connected graphs. BLED'11, Slovenia
○ Minimally 2-connected graphs and colouring CTW 2011, Rome, Italy.
○ K-intersection Colouring, International Conference on Colourings Independence and Domination, CID 07, Karpach, Poland.
○ Max K-intersection Edge Colouring, IRISS 07, IIITH.
○ Lovasz Local Lemma and Edge colouring - ISW 04, IMSc.
○ Grid Graphs and Acyclic Edge Colouring - IMSc.
○ The power of Probabilistic Method - Cochin university of Science and Technology.
○ A survey on Acyclic Edge Colouring - CMI, Chennai; U. Zielona Gora, Poland;AGH U., Poland;IISc, Bangalore.
○ Acyclic Edge Colouring Planar graphs - Poster,Inter. Conf. on Disc. Math.,

Languages

Malayalam	**Native**
English	**Very Good**
Sanskrit	**Read/Write**
Tamil and Hindi	**Good**

Computer skills

OS	Linux Administration	typography	LaTeX
programming	C/C++	scripting	PHP, Shell

Interests

recreation	Karnatik music, Origami, Kathakali, Violining
other	yoga, trekking, reading, stargazing, Indian philosophy, Science popularisation