M. Rajesh Kannan

Present address

Assistant Professor (from July 2016),
Department of Mathematics,
Indian Institute of Technology Kharagpur,
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West Bengal, India.
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ACADEMIC QUALIFICATIONS

B.Sc. Mathematics, Anja College, Sivakasi, Tamil Nadu, 2005.

M.Sc. Mathematics, Anja College, Sivakasi, Tamil Nadu, 2008.

Ph.D Mathematics, Indian Institute of Technology Madras, Chennai, Tamil Nadu, 2013.

(Thesis title: Some topics in generalized inverse nonnegativity and intervals of matrices)

RESEARCH AREA

Matrix Theory, Spectral Graph Theory, Functional Analysis and Tensors.

RESEARCH EXPERIENCE

November 2015 - June 2016 - Postdoctoral Fellow, Department of Mathematics, University of Manitoba, Winnipeg, Canada. (Supervisor : Prof. Stephen J. Kirkland.)

March 2014 - July 2015, Postdoctoral Fellow, Department of Mathematics, The Technion - Israel Institute of Technology, Haifa, Israel. (Supervisors : Prof. Abraham Berman and Prof. Naomi Shaked-Monderer)(German-Israeli Foundation for Scientific and Research development grant number: 1135-18.6/2011)

September 2013 -February 2014, Postdoctoral Fellow, Stat-Math division, Indian Statistical Institute Delhi, New Delhi. (Supervisor : Prof. R. B. Bapat.)

August 2013, Summer Student, Department of Mathematics, The Technion, Israel Institute of Technology, Haifa, Israel.

July 2010- July 2013, Senior research fellow, Department of Mathematics, IIT Madras.

July 2008- July 2010, Junior research fellow, Department of Mathematics, IIT Madras.

COURSES TAUGHT

At IIT Kharagpur

MA20103 - Partial differential equation (Autumn 2016, Autumn 2017, Autumn 2018)

MA10002 - Mathematics- II (Spring 2017, Spring 2018)

MA30003/MA41003 - Linear Algebra(Autumn 2017, Autumn 2019)

MA10001 - Mathematics- I (Autumn 2018, Autumn 2019)

MA60053 - Computational Linear Algebra(Spring 2019)

MA20013 - Discrete Mathematics(Spring 2019)

ACADEMIC ACHIEVEMENTS

Qualified CSIR-UGC-Net December 2006

Qualified CSIR-UGC Junior Research fellowship December 2007.

Qualified in Graduate Aptitude Test in Engineering (GATE)- 2008.

Qualified National Board for Higher Mathematics, Scholarship for Ph.D in Mathematics- 2009.

National Board for Higher Mathematics, Post doctoral fellowship 2013.

Indian Statistical Institute Visiting Scientist Fellowship 2013.

Awarded full Scholarship for attending the summer school in Nonnegative matrices and its application by The Technion, Israel Institute of Technology, August 2013.

Indian Statistical Institute Visiting Scientist fellowship 2013 (Postdoctoral fellowship).

Postdoctoral fellowship under German-Israeli Foundation for Scientific and Research development 2014, The Technion Israel Institute of Technology, Haifa, Israel.

Postdoctoral fellowship 2015, University of Manitoba, Winnipeg, Canada.

SPONSORED PROJECTS

ISIRD project (Principal Investigator), sponsored by SRIC, IIT Kharagpur.

SERB Early carrier research award (Principal Investigator) sponsored by Department of Science and Technology, India.

SERB National Post doctoral fellowship (Mentor) sponsored by Department of Science and Technology, India.

DST-SERB Matrics project (Mathematical Research Impact-Centric Support).

SUPERVISION

Ph.d students:

1. Ms. Amrita Mondal (2016 -)(Jointly with Dr Bibhas Adhikari)
2. Mr. Aniruddha Samantha (2017-)
3. Ms. Mou Pramanik (2017 -)(Jointly with Dr Bibhas Adhikari)
4. Mr. Mainak Basunia (2018-)
5. Mr. Iswar Mahato (2018-)

6. Ms. Arpita Sikder (2019-)(Jointly with Dr Sanand)

Post-doctoral fellows:

1. Dr. Ranjit Mehatari (2017 - 2018)(National Postdoctoral Fellowship(DST-SERB))

Visiting students:

1. Mr. Ranjit Mehatari (January 2017 - February 2017)(IISER Kolkata)

JOURNAL PUBLICATIONS

1. M. Rajesh Kannan and K. C. Sivakumar, *Moore-Penrose inverse positivity of interval matrices*, Linear Algebra and its Applications, **436** (2012), 571-578.
2. M. Rajesh Kannan and K. C. Sivakumar, *P_+-matrices: A generalization of P-matrices*, Linear and Multilinear algebra, **62** (2014), 1-12.
3. M. Rajesh Kannan and K. C. Sivakumar, *Intervals of Certain Classes of Z-matrices*, Discussiones Mathematicae - General Algebra and Applications, **34** (2014), 85-93.
4. M. Rajesh Kannan and R. B. Bapat, *Generalized Principal Pivot transforms*, Linear Algebra and its Applications, **454** (2014), 49-56.
5. Naomi Shaked-Monderer, Abraham Berman, Mirjam Dür, M. Rajesh Kannan, *SPN completable graphs*, Linear algebra and its applications, **498** (2016), 58-73.
6. M. Rajesh Kannan, Naomi Shaked-Monderer , Abraham Berman, *Some properties of strong $\mathcal{H}$-tensors and general $\mathcal{H}$-tensors*, Linear Algebra and its Applications, **476** (2015), 42-55.
7. M. Rajesh Kannan, Naomi Shaked-Monderer, Abraham Berman, *On weakly irreducible nonnegative tensors and interval hulls of some classes of tensors*, Linear and Multilinear Algebra, **64** (2016), no. 4, 667-679.
8. M. Rajesh Kannan and K. C. Sivakumar, *On Certain Positivity Classes of Operators*, Numerical Functional Analysis and Optimization, **37** (2016), no. 2, 206-224.
9. Hongwei Jin, M. Rajesh Kannan and Minru Bai, *Lower and upper bounds for H-eigenvalues of even order real symmetric tensors*, Linear and Multilinear Algebra, **65** (2017), no. 7, 1402-1416.
10. M. Rajesh Kannan, *P-proper splittings*, Aequationes Mathematicae, 91(2017), no. 4, 619-633.
11. Projesh Nath Choudhury, M. Rajesh Kannan and K.C. Sivakumar, *New contributions to semipositive and minimally semipositive matrices*, Electronic Journal of Linear Algebra, 34(2018), pp. 35-53.
12. Projesh Nath Choudhury, M. Rajesh Kannan and K.C. Sivakumar, *A note on linear preservers on semipositive and minimal semipositive matrices*, Electronic Journal of Linear Algebra, 34(2018), pp. 687-694.
13. Fouzul Atik, R.B. Bapat and M. Rajesh Kannan, *Resistance matrices of graphs with matrix weights*, Linear Algebra and its applications, 571(2019), 41-57.
14. Fouzul Atik, M. Rajesh Kannan and R.B. Bapat, *On distance and Laplacian matrices of trees with matrix weights*, revised version submitted to Linear Multilinear Algebra.
15. Ranjit Mehatari, M. Rajesh Kannan and Aniruddha Samanta, *On the Adjacency matrix of Complex Unit Gain Graphs*, preprint, submitted.

16. Ranjit Mehatari and M. Rajesh Kannan, *E*igenvalue bounds for some classes of matrices associated with graphs, preprint, submitted.
17. Iswar Mahato, R. Gurusamy, M. Rajesh Kannan and S. Arockiaraj, *S*pectra of eccentricity matrices, preprint, submitted.
18. Projesh Nath Choudhury, M. Rajesh Kannan and K.C. Sivakumar, *P-operators over ordered Banach spaces*, preprint, Submitted.
19. Aniruddha Samanta and M. Rajesh Kannan, *O*n the spectrum of complex unit gain graph, preprint, submitted.
20. M. Rajesh Kannan and Stephen Kirkland, *M*inimizing the Kemeny constant of trees with the given degree sequence, preprint.

REFEREE/ REVIEWER

1. Linear Algebra and its Applications.
2. Linear and Multilinear Algebra.
3. Electronic Journal of Linear Algebra.
4. Special matrices.
5. Open Mathematics (formerly, Central European Journal of Mathematics).
6. Frontiers of Mathematics in China.
7. Advances in Operator theory.
8. Applied Mathematics and computation.
9. Khayyam Journal of Mathematics.
10. Discrete Mathematics, Algorithms and Applications.
11. Filomat.
12. Bulletin of the Iranian Mathematical Society.
13. American Mathematical Society(AMS) Mathematical Reviews.

CONFERENCES, WORKSHOPS ORGANIZING/ORGANIZED

1. Weekly seminar on "Graphs, matrices and applications", in the Department of Mathematics, IIT Kharagpur.
2. Lecture series "Combinatorics commutative algebra: introduction to edge ideals", from 02-07-2018 to 06-07-2018 in the department of mathematics and center for theoretical studies, IIT Kharagpur.
3. AICTE QIP short term course on "Linear Algebra and Differential Equations" 24 - 28 August 2018 in the Department of Mathematics, IIT Kharagpur.
4. AICTE QIP short term course on "Advanced Matrix Algebra and Applications" 18 - 22 Sepetember 2019 in the Department of Mathematics, IIT Kharagpur.

INVITED TALKS IN CONFERENCES/WORKSHOPS

1. Mini workshop on "Linear complementarily problems and generalizations" September 24- 25, 2016, Indian Statistical Institute, Chennai Center, Chennai.
2. NBHM sponsored two days "National seminar on some recent research directions in graph theory" March 9 -10, 2017, The centre for Graph Theory, Ayya Nadar Janaki Ammal College, Sivakasi.
3. National Conference on "Some Contemporary Research Direction in Discrete Mathematics" May 30, 2017, organized by Department of Mathematics, Mepco Schlenk engineering college, Sivakasi.
4. Workshop on "Nonnegative matrices and applications" December16, 2017, Department of Mathematics, NITK Surathkal.
5. Conference on "Applications of Mathematics and science in engineering" January 21, 2018,Department of Mathematics, NIT Raipur.
6. A six day workshop on "Algebraic Graph Theory" January 25 - 30, 2018, Department of Mathematics, NITK Surathkal.
7. A two days symposium on "Nonlinear analysis and Fluid dynamics", March 30-31, 2018, Department of Mathematics, IIT Madras.
8. One week workshop on "Analysis, Algebra and descriptive statistics" June 4 -9, 2018, Department of Mathematics, Mepco Schlenk engineering college, Sivakasi.
9. Conference on "Analysis and applications", June 18-22, 2018, Department of Mathematics. IIT Madras.
10. "CALDAM 2019" 5th Annual International Conference on Algorithms and Discrete Applied Mathematics IIT Kharagpur, India. February 14-16, 2019
11. "Two-day National seminar on emerging trends in Topology and Geometry", February 15-16, 2019, organized by ANJA College Sivakasi.
12. International conference on "Emerging area of Mathematics for science and technology", 19 February 2019, organized by Rathinam College of Arts and Science, Coimbatore.
13. "International Conference on Number Theory and Graph Theory", June 27-29, 2019, Department of Studies in Mathematics, University of Mysore, Mysuru.

TALKS

1. January, 2012 : International Conference on Game Theory, Operations Research and their Applications (GTORA 2012), Indian Statistical Institute, Chennai center, India. (Title: P_+-matrices: A generalization of P-matrices.)
2. August, 2013 : Summer school in Nonnegative matrices: Theory and Applications, The Technion, Israel Institute of Technology, Haifa, Israel. (Title: P_+-matrices: A generalization of P-matrices.)
3. August, 2014 : Summer school in Nonnegative matrices: Theory and Applications, The Technion, Israel Institute of Technology, Haifa, Israel. (Title: Spectral theory of nonnegative tensors)
4. October, 2014: Department of Mathematics, Indian Institute of Technology Hyderabad, Hyderabad, India. (Title: Spectral theory of nonnegative tensors)

5. October, 2014: Department of Mathematics, Indian Institute of Technology Madras, Chennai, India. (Title: Spectral theory of nonnegative tensors)
6. October, 2014: Indian Statistical Institute, Chennai center, India. (Title: Spectral theory of nonnegative tensors)
7. May, 2016: Western Canadian Linear Algebra Meeting, University of Manitoba, Winnipeg, Canada. (Title: Some properties of semipositive matrices)
8. December, 2017: ICLAA 2017 : International Conference on Linear Algebra and its Applications, Manipal University, Manipal, Karnataka, India.

DECLARATION

I confirm that all the above stated particulars in this CV are true to the best of my knowledge and that I can provide documentary evidence to verify all the given information.

M. Rajesh Kannan

Last updated: September 2, 2019