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EDUCATION	<p><b>Indian Institute of Technology Madras</b>, Chennai, India</p> <p>Ph.D. Mathematics, July 2008</p> <ul style="list-style-type: none"> <li>• Thesis Title: <i>Weak Monotonicity and Nonnegative Generalized Inverses</i></li> <li>• Advisor: K. C. Sivakumar</li> </ul> <p><b>Texas A &amp; M University</b>, College Station, Texas, USA</p> <p>M.S., Mathematics, May, 2003 (<b>CGPA: 3.9/4</b>)</p> <p><b>Indian Institute of Technology Madras</b>, Chennai, India</p> <p>M.Sc., Mathematics, May, 1999 (<b>CGPA: 8.18</b>)</p> <ul style="list-style-type: none"> <li>• Dissertation Title: <i>Characterization of Compactness in some Infinite-Dimensional Banach Spaces</i></li> <li>• Advisor: S. H. Kulkarni</li> </ul> <p><b>Madura College</b>, Madurai, India</p> <p>B.Sc., Mathematics, May, 1997 (<b>94.8 %</b>)</p>	
HONORS AND AWARDS	<p>NBHM Postdoctoral Fellowship, July 2008 - July 2009, Government of India.</p> <p>JNCASR Summer Fellow, Mumbai University, India; Advisor: M. G. Nadkarni.</p>	
ACADEMIC EXPERIENCE	<p><i>Associate Professor</i>, <span style="float: right;"><b>January, 2020 - present</b></span> School of Mathematics, IISER Thiruvananthapuram, India</p> <p><i>Assistant Professor Grade I</i>, <span style="float: right;"><b>December, 2011 - December, 2019</b></span> School of Mathematics, IISER Thiruvananthapuram, India</p> <p><i>Assistant Professor</i>, <span style="float: right;"><b>July, 2009 - December, 2011</b></span> Department of Mathematical Sciences, IISER Kolkata, India</p> <p><i>NBHM Postdoctoral Fellow</i>, <span style="float: right;"><b>July, 2008 - July, 2009</b></span> Chennai Mathematical Institute, Chennai</p> <p><i>Researcher</i>, <span style="float: right;"><b>January, 2008 - June, 2008</b></span> Centre for Mathematical Sciences, Pala, Kerala, India</p>	
RESEARCH INTERESTS	Linear Algebra and Matrix Analysis.	
CURRENT INTERESTS	Linear preserver problems, Combinatorial matrix theory, Nonlinear Perron-Frobenius theory & Dynamical systems.	

## PUBLICATIONS

1. Sachindranath Jayaraman and Vatsalkumar N. Mer, *On linear preservers of semipositive matrices*, Electronic Journal of Linear Algebra, 37 (2021), 88-112 <https://arxiv.org/abs/1910.11532> (51 pages).
2. A. Chandrashekar, Sachindranath Jayaraman and Vatsalkumar N. Mer, *A characterization of nonnegativity relative to proper cones*, Indian Journal of Pure and Applied Mathematics, 51(3) (2020), 935-944 <https://arxiv.org/abs/1801.09849>, <https://rdcu.be/b8apy>.
3. Joyentanuj Das, Sachindranath Jayaraman and Sumit Mohanty, *Distance matrix of a class of completely positive graphs: determinant and inverse*, Special Matrices, 8 (2020), 160-171 <https://arxiv.org/abs/1906.04636>.
4. A. Chandrashekar, Sachindranath Jayaraman and Vatsalkumar N. Mer, *Semipositivity of linear maps relative to proper cones in finite dimensional real Hilbert spaces*, Electronic Journal of Linear Algebra, 34 (2018), 304-319.
5. A. Chandrashekar and Sachindranath Jayaraman, *Linear maps on  $M_n(\mathbb{R})$  preserving Schur stable matrices*, Bulletin of Kerala Mathematics Association (Special Issue of ICLAA-2017), 16(1) (2018), 127-137, <https://arxiv.org/abs/1802.05531>.
6. A. Chandrashekar and Sachindranath Jayaraman, *Full column rank preservers that preserve semipositivity of matrices*, Special Matrices, 6 (2018), 37-45.
7. A. Chandrashekar and Sachindranath Jayaraman, *Diagonalizability of the product of matrices versus diagonalizability of the individual factors*, Functional Analysis, Approximation and Computation, 8(2) (2016), 31-35.
8. Sachindranath Jayaraman, *A note on self-dual cones in Hilbert spaces*, Extracta Mathematicae, 28(2) (2013), 225-233.
9. Sachindranath Jayaraman, *Nonnegative generalized inverses in indefinite inner product spaces*, Filomat, 27(4) (2013), 259-270.
10. Sachindranath Jayaraman, *EP matrices in indefinite inner product spaces*, Functional Analysis, Approximation and Computation, 4(2) (2012), 23-31.
11. Sachindranath Jayaraman, *Nonnegative generalized inverses and interval linear programs*, Numerical Functional Analysis and Optimization, 31(11) (2010), 1272-1282.
12. Sachindranath Jayaraman, *Nonnegative reflexive generalized inverses and applications to group monotonicity*, Operators and Matrices, 4(3) (2010), 353-363.
13. Sachindranath Jayaraman and K. C. Sivakumar, *Matrix interval monotonicity*, Demonstratio Mathematica, 43(1) (2010), 1-10.
14. Sachindranath Jayaraman and K. C. Sivakumar, *Weak monotonicity of  $A$  Vs  $\{1\}$ -inverses nonnegative in the range space of  $A$* , Linear Algebra and its Applications, 427(2-3) (2007), 171-175.
15. Sachindranath Jayaraman and K. C. Sivakumar, *Some aspects of weak monotonicity*, Proceedings of TOFNA-05, (An International Conference on Topics in Functional and Numerical Analysis, IIT Bombay), Journal of Analysis, 14 (2006), 215-225.
16. Sachindranath Jayaraman and K. C. Sivakumar, *Weak monotonicity of Hilbert space operators*, International Journal of Pure and Applied Mathematics, 29(1) (2006), 65-79.

## BOOK CHAPTERS

1. Sachindranath Jayaraman, *The reverse order law in indefinite inner product spaces*, Combinatorial Matrix Theory and Generalized Inverses of Matrices, (Edited by Ravindra B. Bapat, Steve J. Kirkland, K. Manjunatha Prasad and Simo Puntanen), Springer, 2013, 133-141.

PAPERS  
COMMUNICATED

1. Sachindranath Jayaraman, Yogesh Prajapaty and Shrihari Sridharan, *Dynamics of products of nonnegative matrices*, <https://arxiv.org/abs/2010.05560> (October 2020).

MANUSCRIPTS  
UNDER  
PREPARATION

1. Sachindranath Jayaraman, Yogesh Prajapaty and Shrihari Sridharan, *Dynamics of matrix products over the max algebra*.

CURRENT PROJECTS

1. Linear preservers of certain positivity classes of matrices.
2. Problems involving matrix polynomials.

MISCELLANEOUS

1. Sachindranath Jayaraman, *Solution to Problem 48.1, Reverse order law for the core inverse*, IMAGE, Bulletin of the International Linear Algebra Society, 49 (Fall 2012).
2. Sachindranath Jayaraman, *Solution to Problem 43.1, Characterization of EP matrices*, IMAGE, Bulletin of the International Linear Algebra Society, 44 (Spring 2010).
3. Sachindranath Jayaraman, *Solution to Problem 37.3, Rank of a nonnegative definite matrix*, IMAGE, Bulletin of the International Linear Algebra Society, 39 (Fall 2007).

CONFERENCE  
PRESENTATIONS

Sachindranath Jayaraman, Nonsingular subspaces of  $M_n(\mathbb{F})$ ,  $\mathbb{F}$  a field, *International Conference on Matrix Analysis and its Applications*, Japan, July 2018.

Sachindranath Jayaraman, Nonsingular subspaces of  $M_n(\mathbb{F})$ ,  $\mathbb{F}$  a field, *International Conference on Linear Algebra and its Applications*, Manipal University, India, December 2017.

Sachindranath Jayaraman, Semipositivity of matrices over the  $n$ -dimensional ice cream cone and some related questions, *International Conference on Matrix Analysis and its Applications*, Vietnam, June 2017.

Sachindranath Jayaraman, Linear preservers of semipositivity, *International Conference on Linear Algebra and its Applications*, Manipal University, India, December 2014.

Sachindranath Jayaraman, Some aspects of nonnegative generalized inverses, *International Conference on Matrix Analysis and its Applications*, Konya, Turkey, July 2013.

Sachindranath Jayaraman, Matrix partial orders and the reverse order law in indefinite inner product spaces, *International Conference on Combinatorial Matrix Theory and Generalized Inverses of Matrices*, Manipal University, India, January 2012.

Sachindranath Jayaraman, The nonnegative rank factorization problem, *Summer School and Advanced Workshop on Trends and Developments in Linear Algebra*, International Centre for Theoretical Physics, Italy, July 2009.

Sachindranath Jayaraman, Matrix interval monotonicity, *CMASM-07, Computational, Mathematical and Statistical Methods*, Indian Institute of Technology Madras, India, January 2007.

Sachindranath Jayaraman, Weak monotonicity of Hilbert space operators, *TOFNA-05, Topics in Functional and Numerical Analysis*, Indian Institute of Technology Mumbai, India, December 2005.

SPECIAL LECTURES Sachindranath Jayaraman, Lectures on  $M$ -matrices and doubly stochastic matrices, *National Workshop on Special Matrices and Stochastic Games*, Sikkim Manipal Institute of Technology, India, January 2020.

Sachindranath Jayaraman, Interval linear programs, *Workshop on Operations Research*, Indian Statistical Institute, Chennai Centre, India, February 2009.

TEACHING  
EXPERIENCE

Single Variable Calculus	}	At IISER-TVM
Introduction to Probability and Statistics		
Linear Algebra		
Real Analysis		
Topology		
Numerical Analysis		
Multivariable Analysis		
Functional Analysis		
Probability Theory and Stochastic Processes		
Topics in Analysis		
Nonnegative Matrices and Applications		
Topics in Linear Algebra & Topics in Matrix Analysis		

Functional Analysis	}	At IISER-K
Topology		
Advanced Linear Algebra		
Graph Theory and Combinatorics		
Integration and Measure		

Teaching Assistant / Grader for Calculus, Probability and Topology, Fall 1999 - Summer 2003, Texas A & M University, USA.

STUDENT  
SUPERVISION

Mr. Vatsalkumar Nandkishor Mer, IISER Thiruvananthapuram, Ph.D. Student, January 2015 - December 2019

Topic : *Semipositivity of linear maps relative to proper cones: structure and linear preservers.*  
(**Thesis defended on May 15, 2020**)

Currently a visiting scientist at the Indian Statistical Institute, Delhi Center.

Mr. Joyentanuj Das, IISER Thiruvananthapuram, Ph.D. Student, August 2018 – (Co-Supervised with Dr. Sumit Mohanty, Currently at IISc)

Topic : *Yet to be decided.*

Mr. Yogesh Kumar Prajapaty, IISER Thiruvananthapuram, Ph.D. Student, August 2018 – (Jointly supervised with Dr. Shrihari Sridharan, IISER-TVM)

Topic : *Yet to be decided.*

Ms. Athira Surendran  
 Topic : *Simultaneous triangularization.*  
 Mr. Meesala Bhanu Teja  
 Topic : *Graph theoretic proofs of some theorems in matrix theory.* } BS-MS Project at IISER-TVM

Ms. Akhila Henry, TKM College, Kollam, Kerala, India, May-June, 2019  
 Topic: *Finite dimensional vector spaces.*  
 Mr. Ayush Udeep, Central University of Bihar, India, May-July, 2015  
 Topic: *Schur's theorem and its consequences.*  
 Mr. T. Aasaimani, NISER Bhubhaneshwar, India, May-July, 2013  
 Topic: *The singular value decomposition of a linear operator.*  
 Ms. Bhagyashree Hegde, Uttara Kannada, India, May-July, 2012  
 Topic: *The fundamental theorem of algebra.*  
 Mr. A. Sudhir Kumar, Andhra University, Vizag, India, May-July, 2012  
 Topic: *The Weyr canonical form of a nilpotent matrix.* } Support from INSA

Mr. T. Venkata Karthik, IISER Kolkata, India, India, May-July, 2015.  
 Mr. Ajitabh Kakoti, Tezpur Unuversity, India, June – July, 2012. } Support from IISER-TVM

PROFESSIONAL  
 SERVICE

Referee for indexed journals in the subject area of Linear Algebra & Matrix Analysis, Reviewer for Math Reviews (since October, 2011).

Resource preson for Refresher Course on Matrix Analysis at the Kerala School of Mathematics, September, 2015.

Joint Convenor, Annual Foundation School - II, IISER Thiruvananthapuram, May – June, 2015.

Member of the American Mathematical Society, SIAM (as well as SIAG-LA), Life member of the Indian Mathematical Society and Member of the International Linear Algebra Society.

Mentor for Summer Trainees (sponsored by the National Science Academies of India), since May 2011.

Have served in various committees (academic, co & extra curricular) at IISERs-K & TVM.

REFERENCES

Available on request.