

Dr. A. Chandrashekar

Associate Professor,

School of Mathematics and Computer Sciences,

Central University of Tamil Nadu (CUTN), Thiruvarur,

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Education

- **Ph.D**, *Indian Institute of Technology Madras (IIT Madras)*, Chennai - 36 ; July 2010.
Thesis title: ***Standard and semidefinite linear complementarity problems***
- **M.Sc**, *Ayya Nadar Janaki Ammal College*, Sivakasi
affiliated to Madurai Kamaraj University, Madurai; 2002 - 2004 (**81.87%**).
- **B.Sc**, *Ayya Nadar Janaki Ammal College*, Sivakasi
affiliated to Madurai Kamaraj University, Madurai; 1999 - 2002(**82.45%**).
- **Pre Degree/HSC**, *Tiruthangal Lions Matric. Hr.Sec. School*, Tiruthangal ; 1997
- 1999(**81.83%**).
- **SSLC**, *Tiruthangal Lions Matric. Hr. Sec. School* , Tiruthangal ; 1996 - 1997(**77.18%**).

Academic Positions/Visits

- Associate Professor, Department of Mathematics, Central University of Tamil Nadu, Thiruvarur; March 2024 - till date.
- Assistant Professor, Department of Mathematics, Central University of Tamil Nadu, Thiruvarur; March 2012 - March 2024.
- Research Visit to Arbeitsgruppe Technomathematik, Technische Universitat, Kaiserslautern, Germany; January 11 - February 25, 2023.
- Visiting Faculty, Indian Institute of Management Indore; November 2013 - January 2014.
- Visiting Scientist, Indian Statistical Institute Hyderabad; June, 2013.
- Assistant Professor, Department of Mathematics, Birla Institute of Technology and Science Pilani, K. K. Birla Goa campus, Goa; December 2011 to February 2012.
- Guest Faculty, Department of Mathematics, University of Hyderabad; December 2010 and November 2011.
- Research Associate (DST Postdoctoral Fellow) at DST-CMS, C R Rao Advanced Institute of Mathematics Statistics and Computer Science (AIMSCS), Hyderabad; February 2010 to November 2011.

- Research Assistant (JRF), DST Project titled “Non-smooth vector bundles”, Department of Mathematics, Indian Institute of Technology Madras, Chennai; September 2004 to December 2004.

Teaching Experience

- **Courses taught in the past:** Linear Algebra, Complex Analysis, Algebra I, Discrete Mathematics, Complex Analysis and Measure Theory, Functional Analysis, Optimization, Nonlinear Programming, Operations Research, Game Theory, Fixed Point Theory, Discrete Dynamical Systems, Scientific Computing Lab I (Python) and Scientific Computing Lab II (SageMath).
- **Teaching in MTTTS:** The Mathematics Training and Talent Search (MTTS) programme is a training programme started by Prof. S. Kumaresan and funded by the National Board for Higher Mathematics (NBHM), India. This programme has been running every summer since 1993 at various venues throughout India. I was a student participant in this programme in 2002 and a resident faculty since 2013. My experiences with this programme and my interactions with students from across the entire country with various backgrounds are something that I will cherish forever.
- We also guide final year Integrated MSc students at the Central University of Tamil Nadu on a project that involves helping the students read and learn Mathematics independently from books and research papers. Further, we help them write rigorous Mathematics as a project report or dissertation. In some instances, we guide the students to bring out new results.

Thesis Supervision

- Dr. S. Gokulraj, Thesis title: *A study on linear and bilinear games*, Date of Viva: March 16, 2021.
Present Position: Assistant Professor, National Institute of Technology, Calicut, India.
- Ms. A. Shanmugapriya, Joined in 2019 - Submitted March 2025.
- Mr. Manu Mathew, Joined in 2021 and working towards his PhD thesis.

Research Work and Publications

Preprints

1. Manu Mathew and Chandrashekar A. *Sufficient conditions for being a completely positive matrix*, Submitted, 2025.
2. Chandrashekar A. *Visualizing Riemann-Stieltjes integral as area under a curve*, 2025.

Refereed Journals/Book Chapters

1. Shanmugapriya A. and Chandrashekar A. *A construction of non-isomorphic polyhedral cones using Lyapunov rank*, Linear and Multilinear Algebra **73**, (2025) 2907-2916.
2. Shanmugapriya A. and Chandrashekar A. *Lyapunov-like transformations on the tensor product of nuclear pairs of proper cones*, Electronic Journal of Linear Algebra, **41**, (2025) 142-151.
3. Manu Mathew and Chandrashekar A. *Self-duality and Maximal Angle of Proper Cones*, Indian Journal of Pure and Applied Mathematics, **56**, (2025) 1177-1181.
4. Shanmugapriya A. and Chandrashekar A. *On the dual of the tensor product of semidefinite cones*, J Anal, **32**, (2024) 19-26.
5. Gokulraj S. and Chandrashekar A. *A characterization for the self-duality of proper cones*, Positivity, **27**, 11 (2023).
6. Gokulraj S. and Chandrashekar A. *Linear Games and Complementarity Problems*, Game theory and networks - new perspectives and directions, (2021) 17-35.
7. Gokulraj S. and Chandrashekar A. *Linear complementarity problems and bi-linear games*, Applications of Mathematics, **65**, (2020) 665-675.
8. Chandrashekar A., Sachindranath Jayaraman and Vatsalkumar N. Mer *A characterization of non-negativity relative to proper cones*, Indian Journal of Pure and Applied Mathematics, **51** (2019), no. 3, 935-944.
9. Gokulraj S. and Chandrashekar A. *On symmetric linear games*, Linear Algebra Appl, **562** (2019), 44-54.
10. Chandrashekar A., 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.
11. Chandrashekar A. and Sachindranath Jayaraman *Linear maps on $M_n(\mathbb{R})$ preserving Schur stable matrices*, Bulletin of Kerala Mathematical Association, **16** (2018) 127-138.
12. Chandrashekar A. and Sachindranath Jayaraman *Full column rank preservers that preserve semipositivity of matrices*, Spec. Matrices **6** (2018), 37-45.
13. Chandrashekar A. and Sachindranath Jayaraman *Diagonalizability of the product versus diagonalizability of the individual factors*, Funct. Anal. Approx. Comput. **8** (2016), no. 3, 31-35.
14. Chandrashekar A., Parthasarathy T. and Vetrivel V. *Solving strongly monotone linear complementarity problems*, Int. Game Theory Rev., **15** (2013), no. 4, 1340035, 13.

15. Chandrashekar A., Parthasarathy T. and Ravindran, G. *On strong Z matrices*, Linear Algebra Appln, **432** (2010), 964-969.
16. Chandrashekar A., Parthasarathy T. and Vetrivel V. *On the P_2' and P_2 -properties in the semidefinite linear complementarity problem*, Linear Algebra Appln, **432** (2010), 134-143.

Administrativ Roles at CUTN

- Member, The Court, Central University of Tamil Nadu since August 2025.
- Coordinator, Remedial Coaching Cell, Central University of Tamil Nadu from November 2015 to November 2025.
- Served in many other roles in Central University of Tamil Nadu like Head i/c, Department of Mathematics, Member of Academic Council, Member of BoS, Dept. of Mathematics, Hostel Committee, Grievance Redressal Committee (Staff), Library Advisory Committee etc.,

MOOCS Courses

- Recorded a series of 73 lectures (7 modules) for a course titled *A Foundation Course in Mathematics* to be broadcasted in one of the SwayamPraba DTH Channel. Language: Tamil
- Presently recording a course on Operations Research for SwayamPraba DTH Channel (September 2025).

Sponsored Projects

- (COMPLETED) Early Career Research Award(ECRA) project titled, *Linear complementarity problems over the cone of completely positive matrices* funded by Science and Engineering Research Board(SERB), India. 2018 - 21; Sanctioned Amount: Rs. 21,22,560/-.
- (COMPLETED) Mathematical Research Impact Centric Support(MATRICES) project titled, *A study on proper cones with applications to mathematical programming* funded by Science and Engineering Research Board(SERB), India. 2020 - 23; Sanctioned Amount: Rs. 6,60,000/-.

Professional Activities

Recent Talks

- Delivered lectures in various academic programmes of Mathematics Training and Talent Search (MTTS) Trust since 2013. The recent one is for MTTS 2025 held at Indian Institute of Science Education and Research, Pune during the period between May to June, 2025.

- Initiation into Mathematics programme held at Sri G V G Visalakshi College for Women, Udumalpet during the period from 17 - 23 March 2025.
- Initiation into Mathematics programme held at V O Chidambaram College, Thoothukudi during the period from 22 - 27 July 2024.
- Initiation into Mathematics programme held at Tezpur University, Tezpur during the period from 3 - 8 January 2024.
- Linear Complementarity Problems, Pi Day Celebrations, Indian Institute of Technology Tirupati, Tirupati, India. Date: March 14, 2023.
- Optimization problems from the paper industry, AG Optimierung, Technische Universität, Kaiserslautern, Germany. Date: January 24, 2023.
- Lyapunov-like maps over the tensor product of propercones, AG Technomathematik, Technische Universität, Kaiserslautern, Germany. Date: January 23, 2023.

Conferences/Workshops Organized at CUTN

- Mathematics Training and Talent Search (MTTS), 20 May - 15 June 2024 under the aegis of MTTS Trust and funded by National Board for Higher Mathematics (NBHM), India.
- Pedagogical Training for Mathematics Teachers (PTMT), 11 - 16 December, 2023 under the aegis of MTTS Trust and funded by National Board for Higher Mathematics (NBHM), India.
- Workshop on Differential Geometry by Prof. S. Kumaresan, March 11 to 16, 2022 funded by CUTN.
- Workshop on Game Theory by Prof. T. Parthasarathy, February 17 to 18, 2022 funded by Science and Engineering Research Board (SERB), India.
- Pedagogical Training for Mathematics Teachers (PTMT), 17 - 29 December, 2018 under the aegis of MTTS Trust and funded by National Board for Higher Mathematics (NBHM), India.
- Advanced Instructional School on Mathematical Programming, July 4 to 23, 2016 funded by National Centre for Mathematics (NCM), India.
- Mathematics Workshop for Undergraduate students, January 31 to February 2, 2016 funded by National Board for Higher Mathematics, India.
- Workshop on Analysis and Geometry, 13 & 14th February, 2015 funded by Central University of Tamil Nadu, India.
- Mathematics Workshop for Undergraduate students, 23rd to 25th January 2016 funded by National Board for Higher Mathematics, India.

Membership and Activities in Professional Associations

- Member, Advisory Board, Cloud Supply Chain Solutions, USA & India, Since February 2023.
- Special Invitee, Mathematics Training and Talent Search Trust, since April 2021.
- Member, The Institute for Operations Research and the Management Sciences (INFORMS), USA, 2022 - 2023.
- Member, American Mathematical Association (AMS), USA, 2021 - 2022.
- Life Member, IIT Madras Alumni Association.

Honors and Awards

- Senior Research Fellow, Council of Scientific and Industrial Research(CSIR), India; February 2007 to January 2010, Department of Mathematics, IIT Madras.
- Junior Research Fellow, Council of Scientific and Industrial Research (CSIR), India; January 2005 to January 2007, Department of Mathematics, IIT Madras.
- National Board for Higher Mathematics (NBHM) Research Award (JRF) 2004.
- National Board for Higher Mathematics (NBHM) MSc fellowship 2002.
- INSA Summer Research Fellow, Department of Mathematics, University of Hyderabad; under the guidance of Prof. V. Kannan, on the topic Discrete Dynamical Systems; April - May 2002.

Community Service

- Refereed/reviewed research papers for different journals and databases.
 - MOODLE (A learning management system). I have installed, customized and managed the Central University of Tamil Nadu Learning Management system from 2013; Another instance of my customized MOODLE installation is the MTTTS Classrooms.
 - KOHA (A library management system). I have installed, customized and managed the Central University of Tamil Nadu Library Management system for the initial five years (2012 to 2017).
 - I recommend open source packages related to Mathematics and other sciences. In particular, I have delivered talks about Python, SageMath and Geogebra at various colleges in Tamil Nadu, India. I have introduced two courses on Python and SageMath for Integrated M.Sc students of Central University of Tamil Nadu.
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