

Apoorva Khare

Indian Institute of Science; &
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Curriculum Vitae (abridged)

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Education and Appointments:

- 2020-present Indian Institute of Science: Associate Professor (Mathematics)
- 2017-2020 Indian Institute of Science: Assistant Professor (Mathematics)
- 2017-present Analysis and Probability Research Group: Member
- 2011-2017 Stanford University: Research Associate (Mathematics and Statistics)
- 2009-2011 Yale University: Lecturer (Mathematics)
- 2006-2009 University of California at Riverside: Visiting Assistant Professor (Mathematics)
- 2000-2006 M.S. and Ph.D. (Mathematics), University of Chicago
- 1997-2000 B.Stat. (Hons., First Class with Distinction), Indian Statistical Institute, Kolkata

Short academic visits: Mathematisches Forschungsinstitut Oberwolfach (*Sep-Oct 2025*), ICMS Edinburgh (*Nov 2024, Aug 2016*), ETH Zurich (*May 2024*), Univ. of Plymouth (*Apr-May 2024*), National Univ. of Singapore (*Oct 2023*), Institute for Advanced Study (Princeton, *Jul 2023*), Amer. Inst. of Math. (Pasadena *Jul 2023*, San Jose *Nov 2016*, Palo Alto *Oct 2014*), Math. Sci. Institute (Australian National Univ., Canberra, *Apr-May 2023*), Univ. of Delaware (*Aug 2022, Dec 2021, Jan-Feb 2020*), UCLA (*Sep-Oct 2018*), Univ. of Illinois at Chicago (*Sep-Oct 2015*), HRI (Allahabad, *Dec 2014*), Institut Fourier (Grenoble, *Jun 2008*)

Student academic visits: Tata Institute of Fundamental Research (TIFR), Mumbai (*Jun 1998, '99, '00; Dec '99*)
International Mathematical Olympiad Training Camp, Mumbai (*May 1996, '97*)

Selected grants, awards, and fellowships:

- 2026-29 Anusandhan National Research Foundation (Government of India): Advanced Research Grant
- 2025–27 International Centre for Theoretical Physics (ICTP, Trieste, Italy): Simons Associateship
- 2025 Mathematisches Forschungsinstitut Oberwolfach (Germany): Oberwolfach Research Fellowship
- 2025 Ganit Ratna Award, by Professor Thakare Gaurav Sanstha
- 2024 Indian Mathematical Society (90th annual conference): B.N. Waphare Award (joint with P.N. Choudhury)
- 2023 Institute for Advanced Study (IAS, Princeton, USA): Summer Collaborators program (with A. Belton, D. Guillot, M. Putinar)
- 2023+ Council of Scientific & Industrial Research (Government of India): Shanti Swarup Bhatnagar Prize for 2022 in Mathematical Sciences
- 2023 American Institute of Mathematics (USA): Research award to co-organize a workshop (with full funding) on “Theory and applications of total positivity”
- 2023 Indian Mathematical Society (89th annual conference): A.K. Agarwal Award
- 2023 Mathematical Sciences Institute (Australian National University, Australia): Mathematical Sciences Research Visitor Program
- 2023-25 Ministry of Human Resource Development (Government of India): SPARC research grant (Co-PI; PIs: Tirthankar Bhattacharyya and J. Martin Lindsay)
- 2022+ Indian Academy of Sciences, Bangalore: Elected as a Fellow
- 2022 Department of Science and Technology and Vigyan Prasar (Government of India): One of 75 scientists profiled in the book “75 under 50: Scientists Shaping Today's India”
- 2020-25 Department of Science and Technology (Government of India): SwarnaJayanti Fellowship
- 2018-23 Science and Engineering Research Board (Government of India): Ramanujan Fellowship
- 2018-21 Science and Engineering Research Board (Government of India): MATRICS research grant
- 2017-19 Infosys Foundation (India): Young Investigator Award (research grant)
- 2016 International Centre for Mathematical Sciences (Edinburgh, UK): Research-in-Groups (RiG) programme (with A. Belton, D. Guillot, M. Putinar)

- 2014 [American Institute of Mathematics](#) (USA): Research award to co-organize a workshop (with full funding) on “Positivity, graphical models, and modeling of complex multivariate dependencies”
- 2011-2013 DARPA (USA): Co-investigator, [DARPA Research Grant in pure mathematics](#)

Selected invited talks (see website for larger list of invited talks / links to abstracts, and some slides / videos)

Selected conference talks (including upcoming):

- Nov 2025: ISI Kolkata: **INSA–IMU Colloquium**
- Oct 2025: AMS Fall Eastern Virtual Sectional Meeting: [Special Session on Notions of Positivity, Preserving Transforms, and Inequalities](#) (45 minute talk)
- Jul 2025: International Workshop on Operator Theory and its Applications (IWOTA): [Special Session on Matrix theory and linear algebra](#)
- Jun 2025: ILAS Meeting (Int. Lin. Alg. Soc.), Kaohsiung (Taiwan): [Special Session on Total Positivity](#)
- Jan 2025: SRM University AP (Amaravati): 3rd conference on [Recent advances in Mathematics and related areas](#)
- Dec 2024: NCM Advanced Instructional School on Representation theory of quivers and BGG Category O for semisimple Lie algebras: [Mini-course on Category O \(with notes and videos\)](#)
- Dec 2024: ICTS Bangalore: Workshop on [Combinatorial Methods in Enumerative Algebra](#)
- Nov 2024: ICMS Edinburgh (Scotland): [Workshop on Applied Matrix Positivity II](#)
- Jun 2024: International Conference on Lie Algebra and Number Theory (ICLANT): [Keynote Lecture](#)
- Dec 2023: 89th Annual Conference of the Indian Mathematical Society, BITS Pilani at Hyderabad: [A. K. Agarwal Award Lecture](#)
- Oct 2023: National University of Singapore: [Oppenheim Workshop on Random Systems](#)
- Jul 2023: [American Institute of Mathematics](#), Pasadena (USA): [Workshop on Theory and applications of total positivity](#)
- May 2023: Mathematical Sciences Instt. (ANU Canberra): [Workshop on Braids: Algebra and Geometry](#)
- Jan 2023: AMS Joint Mathematics Meetings, Boston (USA), [ILAS Invited Address \(Plenary\)](#)
- Dec 2022: 88th Annual Conference of the Indian Mathematical Society, BIT Mesra: [Hansraj Gupta Memorial Award Lecture](#)
- Jul 2022: FPSAC (Formal Power Series and Algebraic Combinatorics; *Satellite of ICM-2022*), IISc Bangalore, [Invited \(Plenary\) talk](#)
- Jun 2022: ILAS Meeting (Int. Lin. Alg. Soc.), Galway (Ireland): [Special Session on General Preservers](#)
- Apr 2022: Kerala School of Mathematics: 2nd conference on [Recent advances in Mathematics and related areas](#)
- Mar 2022: Oberwolfach (Germany): [Workshop on The Laguerre–Pólya Class and Combinatorics](#)
- Dec 2021: 4th BRICS Mathematics Conference, IISER Trivandrum, [Invited talk](#)
- Aug 2021: 36th Annual conference of the Ramanujan Math. Society, Amrita University: [Invited talk](#)
- Jul 2021: ICMS Edinburgh (Scotland): [Workshop on Applied Matrix Positivity](#)
- Sep 2019: [MAT-TRIAD](#), Liblice (Czechia)
- Jul 2019: ILAS Meeting (International Linear Algebra Society), Rio de Janeiro (Brazil): [Plenary talk](#)
- Jul 2019: 8th [ICMAA](#), University of Nevada at Reno (USA)
- Aug 2018: Algebras, Representations and Applications: [ICM Satellite Conference](#), Cusco (Peru)
- Jul 2017: [Mathematical Congress of the Americas](#), Centre Mont-Royal, Montreal (Canada)
- **AMS–MAA Joint Mathematics Meetings**: 4 Jan 2017 and 6 Jan 2016 and 10, 12, 13 Jan 2015
- Oct 2014: [American Institute of Mathematics](#), Palo Alto (USA): [Workshop on Positivity, graphical models, and modeling of complex multivariate dependencies](#)

In honour of: [S.B. Nimse](#) (Nov 2025), [K.N. Raghavan](#) (Feb 2025), [K.B. Sinha](#) (Oct 2024), [V. Chari](#) (Nov 2023), [M.N.N. Namboodiri](#) (Nov 2023), [G. Misra](#) (Nov 2022), [K.B. Sinha](#) (Dec 2019), [R.B. Bapat](#) (Dec 2019), [S.H. Kulkarni](#) (Jun 2018), [R. Bhatia](#) (Dec 2017), [D.S. Passman](#) (Oct 2015), [S.E. Rao](#) (Dec 2014), [J. Lepowsky](#) and [R. Wilson](#) (May 2005)

Colloquia, Joint seminars, Annual Day Talks, etc.:

- May 2025: 5th [Aveek Guha Memorial Lecture](#) of the Alumni Association, TIFR Mumbai
- Dec 2024: National Mathematics Day Lecture, IIT Roorkee
- Dec 2024: 7th Srinivasa Ramanujan Memorial Oration, on National Mathematics Day, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
- Jan–Feb 2024: [Harish-Chandra birth centenary lecture series](#), IIT Kanpur
- Dec 2023: Sixth [Sarvadaman Chowla Memorial Lecture](#), Panjab University, Chandigarh
- Dec 2023: [National Mathematics Day Lecture](#), IISER Mohali
- Dec 2023: [National Mathematics Day Lecture](#), joint between (a) Chapters of NASI, INSA, & INYAS North Central Zone, (b) Society of Promotion of Science & Tech. in India (SPSTI), and (c) Amity Univ.
- Apr 2023: [Public Lecture](#), Math. Sciences Institute, Australian National University, Canberra (Australia)
- Feb 2023: [Workshop on Popular Mathematics](#), IIT Madras
- Jul 2022: Indian Academy of Sciences Mid-Year Meeting, IISc Bangalore: [Inaugural Fellows' Lecture](#)
- Jan 2022: 2nd [K.S.S. Nambooripad Endowment Lecture](#), IMRT, Kerala
- Oct 2021: [Mathematics Discipline Seminar](#), IIT Gandhinagar
- Feb 2021: [Research Scholars' Day](#), IIT Roorkee
- Feb 2020: Annual Math-Stat Departmental Symposium, IISER Kolkata
- Sep 2019: [20th Professor Wazir Hasan Abdi Memorial Lecture](#), CUSAT, Cochin
- Jul 2018: Joint [New York Group Theory](#) + [New York Combinatorics](#) Seminar, CUNY (New York)
- May 2018: International Mathematics Olympiad Training Camp: Valedictory Lecture, Mumbai
- Apr 2017: San Francisco State Univ., [Joint Algebra–Geometry–Combinatorics + Analysis Seminar](#)
- **Colloquia** at: IIT Madras (Dec 2025), TIFR Mumbai (Math; Apr 2025), IIT Bombay (Apr 2025), IISER Pune (Apr 2025), IIT Jammu (Feb 2025), IIT Kanpur (Jan 2024), Univ. of Queensland (May 2023), Australian National Univ. (Math. Sci. Inst., Apr 2023), Univ. of Toledo (Mar 2023), IIT Madras (Feb 2023), NISER Bhubaneswar (Oct 2021), IISER Pune (Jan 2021), ICTS Bangalore (Sep 2020), Drexel Univ. (Feb 2020), Delhi Univ. (Oct 2019), CMI Chennai (Apr 2019), IIT Kanpur (Apr 2019), TIFR-CAM (Mar 2019), IMSc Chennai (Nov 2018), IIT Bombay (May 2018), ISI Bangalore (May 2018), TIFR Mumbai (CS; Oct 2017), ISI Bangalore (Nov 2013), De Paul Univ. (Oct 2013), Univ. of Toledo (Apr 2013), Iowa State Univ. (Feb 2011), IMSc Chennai (Sep 2009).

Selected seminar talks:

- 2025: **(a)** Univ. Maryland (BC); **(b)** IIT Chicago; **(c)** STEMS, CMI; **(d)** Agastya, IISc
- 2024: **(a)** Univ. Plymouth; **(b)** Univ. of Exeter; **(c)** ETH Zurich; **(d)** ISI Delhi; **(e)** NCSU
- 2023: **(a)** UQAM Montreal; **(b)** Northeastern Univ.; **(c)** Univ. Sydney; **(d)** ANU Canberra; **(e)** Univ. Melbourne; **(f)** Univ. Otago; **(g)** National Univ. Singapore; **(h)** PROMYS India
- 2022: **(a)** UniRoma-1 “La Sapienza”; **(b)** UniRoma-2 “Tor Vergata”; **(c)** CUSAT
- 2022 Webinars: **(a)** Univ. Georgia; **(b)** Ruhr Universität Bochum; **(c)** ARCSIN; **(d)** Unofficial IMOTC
- 2021 Webinars: **(a)** Univ. Sao Paulo; **(b)** IMAR “Simion Stoilow”; **(c)** ISI Delhi; **(d)** IISER Mohali
- 2020 Webinars: **(a)** IMSc Chennai; **(b)** Special Functions/Number Theory (India); **(c)** Preserver Webinar
- 2020: **(a)** Univ. of Pennsylvania; **(b)** Temple University; **(c)** CUNY; **(d)** Univ. of Delaware
- 2019: **(a)** Univ. of Maryland at College Park; **(b)** Rutgers University; **(c)** CUNY; **(d)** TIFR, Mumbai
- 2018: **(a)** Massachusetts Inst. of Technology (MIT); **(b)** UCLA; **(c)** Univ. of Sydney; **(d)** TIFR, Mumbai
- 2017: **(a)** UC Berkeley; **(b)** UCLA; **(c)** CalTech; **(d)** Stanford; **(e)** CUNY; **(f)** San Francisco State
- 2016: **(a)** Univ. of California at Santa Barbara; **(b)** IISc, Bangalore
- 2015: **(a)** Univ. of Pennsylvania; **(b)** Rutgers Univ.; **(c)** Northeastern Univ.; **(d)** Univ. of Chicago
- 2014: **(a)** UC Berkeley; **(b)** Univ. of Wisconsin, Madison; **(c)** IIT Bombay
- 2013: **(a)** Univ. of Washington at Seattle; **(b)** Univ. of Illinois at Chicago; **(c)** IISc, Bangalore
- 2010–2012: **(a)** TIFR, Mumbai; **(b)** Univ. of Michigan at Ann Arbor; **(c)** ISI Delhi; **(d)** UC Riverside
- 2009: **(a)** CalTech; **(b)** Univ. of Michigan at Ann Arbor; **(c)** Yale; **(d)** Univ. of Southern California
- 2008: **(a)** TIFR, Mumbai; **(b)** Univ. of Chicago; **(c)** Yale; **(d)** Cornell Univ.; **(e)** Rutgers Univ.

Professional service: 1. Editorial

- Associate Editor, [American Mathematical Monthly](#) (Sep 2024-present)
- Associate Editor, [Linear Algebra and its Applications](#) (2023-present)
- Editor, [Acta Scientiarum Mathematicarum \(Szeged\)](#) (2022-present)
- Editor, [Indian Journal of Pure and Applied Mathematics](#) (2020-present)
- Editor, [TRIM Series](#) (Texts and Readings in Mathematics), Hindustan Book Agency (2018-present)
- Associate Editor, [Sao Paulo Journal of Mathematical Sciences](#) (2018-present)
- Guest Editor, [Journal of Algebraic Combinatorics](#) (2026 Special issue in honor of Vyjayanthi Chari's 65th birthday)
- Guest Editor, [Indian Journal of Pure and Applied Mathematics](#) (2024 Tribute volume in memory of K.R. Parthasarathy: Volume 55 issue 3)
- Guest Editor, [Journal of Indian Institute of Science](#) (2022 Special volume on "Number Theory and Representation Theory": Volume 102 issue 3)
- Editor, [Linear and Multilinear Algebra](#) (Jan 2020-Dec 2022)
- Proceedings Editor, [Volume 80B](#), Séminaire Lotharingien de Combinatoire (2018)

Professional service: 2. Other

- [Board of Directors](#), International Linear Algebra Society (Mar 2021 – Feb 2024)

Professional Service: 3. Refereeing (including *quick opinion)

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| • Trans. Amer. Math. Soc. | • Proc. Amer. Math. Soc. | • Communications in Algebra |
| • Int. Math. Res. Not. IMRN | • Pacific Journal of Math. | • Algebr. Represent. Theory |
| • Forum of Math., Sigma* | • Kyoto Journal of Math. | • Acta Math. Hungarica |
| • J. London Math. Soc.* | • J. Non-Comm. Geometry | • Journal of Algebra and Appl. |
| • Israel Journal of Math. | • J. Pure and Appl. Algebra | • Computat. and Appl. Math.* |
| • J. Functional Analysis | • Linear Algebra and Appl. | • Results in Mathematics* |
| • J. Combin. Theory Series A | • Letters Math. Phys. | • Operators and Matrices |
| • European J. Combinatorics* | • AMS Contemporary Math. | • Electronic J. Linear Algebra |
| • J. Geom. Analysis | • J. Algebraic Combin.* | • Bull. Iranian Math. Society |
| • Math. Zeitschrift | • Indian J. Pure Appl. Math. | • Open Mathematics |
| • Journal of Algebra | • FPSAC (Sem. Loth. Combin.) | • Resonance |
| • SIAM J. Discrete Math. | • Discrete Mathematics | • American Math. Monthly |
| • Bull. London Math. Soc. | • Linear Multilinear Algebra | |

Also a referee for *grant proposals* for SERB (Science and Engineering Research Board, India).

Professional service: 4. Teaching and mentoring

- **IISc Mentoring:** 4 PhD students (3 graduated); and 10+ NPDF/NBHM/CV-Raman/other Postdocs and Inspire Faculty.
- *Indian Institute of Science:* Developed and taught new course "MA341: Matrix analysis and positivity".
- *Yale University:* Developed+taught new course "Math 107 : Mathematics in the Real World", in 2011 – the course is taught at Yale every year since then. Also co-authored the Course textbook (2015; below).
- *Stanford University:* Developed and proposed new course "Math 16/Stats 90: Mathematics and Statistics in the Real World", co-taught with Bala Rajaratnam.
- Co-advised a Math. PhD Student at Stanford (2012-16) with Bala Rajaratnam.
- Mentored a Math. PhD student of V. Futorny of Univ. Sao Paulo (Spring+Summer 2016).
- Taught 50+ courses – undergraduate and graduate – at University of Chicago, University of California at Riverside, Yale University, Stanford University, and Indian Institute of Science.

Professional service: 5. Conference organization (see website for complete list + co-organizers)

- Jan 12-16, 2026: Symposium on Positivity and Matrix Analysis, [First Indo-European Conference in Mathematics](#), Savitribai Phule Pune University (SPPU) and Indian Institute of Science Education and

Research (IISER), Pune.

- Nov 30-Dec 5, 2025: BIRS–CMI workshop on [Quivers in Representation Theory](#) (Banff International Research Station; Chennai Mathematical Institute), CMI Chennai.
- Jul 28-Aug 1, 2025: [Third joint SIAM/CAIMS annual meetings \(AN25\)](#), Montréal Convention Center.
- Jun 23-27, 2025: Mini-Symposium on “[Total positivity](#)”, International Linear Algebra Society (ILAS) Meeting, National Sun Yat-sen University, Kaohsiung (Taiwan).
- Nov 13-24, 2023: Conference on “[Algebraic and Combinatorial Methods in Representation Theory](#)”, ICTS Bangalore: Member of the Scientific Committee.
- Jul 24-28, 2023: Workshop on “[Theory and applications of total positivity](#)” (supported by the AIM and NSF), American Institute of Mathematics.
- Jun 20-24, 2022: Invited Mini-Symposium on “[Distance Matrices of Graphs](#)”, International Linear Algebra Society (ILAS) Meeting, National University of Ireland, Galway.
- Jul 16-20, 2018: 30th International Conference on [Formal Power Series and Algebraic Combinatorics](#) (FPSAC), supported by the NSF, Dartmouth College. (Also the *Proceedings Editor* – see above.)
- Jul 24-28, 2017: Invited Mini-symposium on “[Linear Algebra and Positivity with Applications to Data Science](#)”, International Linear Algebra Society (ILAS) Meeting, Iowa State University.
- Jan 13, 2015: AMS Special Session on “[Positivity and Matrix Inequalities](#)”, AMS-MAA Joint Mathematics Meetings, San Antonio.
- Oct 13-17, 2014: Workshop on “[Positivity, graphical models, and modeling of complex multivariate dependencies](#)” (supported by the AIM and NSF), American Institute of Mathematics.
- Feb 1-2, 2014: [Lie Theory Workshop on Quantum Groups](#) (supported by the NSF), Stanford University.
- May 26-27, 2012: [Young Researchers’ Meet](#) (Math and CS), Stanford University.
- Feb 4-5, 2012: [Lie Theory Workshop on Quantum Groups](#) (supported by the NSF), Stanford University.

Selected peer-reviewed publications: (see website for [complete list](#))

I. Papers (post 2015):

1. (With Projesh Nath Choudhury.) *Distance matrices of a tree: two more invariants, and in a unified framework*, [European Journal of Combinatorics](#) 115, #103787 (30 pp.), **2024**.
2. (With Alexander Belton, Dominique Guillot, and Mihai Putinar.) *Totally positive kernels, Pólya frequency functions, and their transforms*, [Journal d’Analyse Mathématique](#) 150, pages 83–158, **2023**.
3. (With Siddhartha Sahi.) *From Cauchy’s determinant formula to bosonic and fermionic immanant identities*, [European Journal of Combinatorics](#) 110, #103683 (16 pp.), **2023**.
4. (With Alexander Belton, Dominique Guillot, and Mihai Putinar.) *Moment-sequence transforms*, [Journal of the European Mathematical Society](#) 24, pages 3109–3160, **2022**.
5. *Smooth entrywise positivity preservers, a Horn–Loewner master theorem, and symmetric function identities*, [Transactions of the American Mathematical Society](#) 375, pages 2217–2236, **2022**.
6. (With Gurbir Dhillon.) *The weights of simple modules in Category O for Kac–Moody algebras*, [Journal of Algebra](#) 603, pages 164–200, **2022**.
[12-page extended abstract published in [Séminaire Lothar. Combin.](#) 78B, #77, **2017**.]
7. (With Alexander Belton, Dominique Guillot, and Mihai Putinar.) *Hirschman–Widder densities*, [Applied and Computational Harmonic Analysis](#) 60, pages 396–425, **2022**.
8. (With Terence Tao.) *On the sign patterns of entrywise positivity preservers in fixed dimension*, [American Journal of Mathematics](#) 143, pages 1863–1929, **2021**.
[12-page extended abstract published in [Séminaire Lothar. Combin.](#) 80B, #14, **2018**.]
9. (With Projesh Nath Choudhury and M. Rajesh Kannan.) *Sign non-reversal property for totally non-negative and totally positive matrices, and testing total positivity of their interval hull*, [Bulletin of the London Mathematical Society](#) 53, pages 981–990, **2021**.
10. (With Carolina Benedetti, Rafael S. González D’León, Christopher R.H. Hanusa, Pamela E. Harris, Alejandro H. Morales, and Martha Yip.) *A combinatorial model for computing volumes of flow polytopes*, [Transactions of the American Mathematical Society](#) 372, pages 3369–3404, **2019**.
[12-page extended abstract published in [Séminaire Lothar. Combin.](#) 80B, #87, **2018**.]

11. (As D.H.J. Polymath: with Tobias Fritz, Siddhartha Gadgil, Pace Nielsen, Lior Silberman, and Terence Tao.) Polymath14: *Homogeneous length functions on groups*, [Algebra & Number Theory](#) 12, pages 1773–1786, **2018**.
[10-page student-targeted account in [The Mathematics Student](#) 92, pages 127–136, **2023**.]
12. *Generalized nil-Coxeter algebras over discrete complex reflection groups*, [Transactions of the American Mathematical Society](#) 370, pages 2971–2999, **2018**.
[12-page extended abstract published in [Seminaire Lothar. Combin.](#) 80B, #29, **2018**.]
13. (With Gurbir Dhillon.) *Faces of highest weight modules and the universal Weyl polyhedron*, [Advances in Mathematics](#) 319, pages 111–152, **2017**.
14. *Standard parabolic subsets of highest weight modules*, [Transactions of the American Mathematical Society](#) 369, pages 2363–2394, **2017**.
15. (With Bala Rajaratnam.) *The Hoffmann-Jørgensen inequality in metric semigroups*, [Annals of Probability](#) 45, pages 4101–4111, **2017**.
 - Sequel paper: *Probability inequalities for strongly left-invariant metric semigroups/monoids, including all Lie groups*, [Indian Journal of Pure and Applied Mathematics](#) (tribute volume in memory of K.R. Parthasarathy) 55, pages 1026–1039, **2024**.
16. (With Dominique Guillot and Bala Rajaratnam.) *Preserving positivity for rank-constrained matrices*, [Transactions of the American Mathematical Society](#) 369, pages 6105–6145, **2017**.
17. (With Alexander Belton, Dominique Guillot, and Mihai Putinar.) *Matrix positivity preservers in fixed dimension. I*, [Advances in Mathematics](#) 298, pages 325–368, **2016**.
[12-page abstract published in [DMTCS Proceedings](#) BC, pages 155–166, **2016**.]
18. (With Dominique Guillot and Bala Rajaratnam.) *Preserving positivity for matrices with sparsity constraints*, [Transactions of the American Mathematical Society](#) 368, pages 8929–8953, **2016**.
19. (With Dominique Guillot and Bala Rajaratnam.) *Critical exponents of graphs*, [Journal of Combinatorial Theory Series A](#) 139, pages 30–58, **2016**.
[12-page extended abstract published in [Seminaire Lothar. Combin.](#) 78B, #62, **2017**.]
20. *Faces and maximizer subsets of highest weight modules*, [Journal of Algebra](#) 455, pages 32–76, **2016**.
21. (With Akaki Tikaradze.) *On Category O over triangular generalized Weyl algebras*, [Journal of Algebra](#) 449, pages 687–729, **2016**.
22. (With Peter Diao, Dominique Guillot, and Bala Rajaratnam.) *Differential calculus on graphon space*, [Journal of Combinatorial Theory, Series A](#) 133, pages 183–227, **2015**.

II. Books and survey articles:

23. (Invited survey article.) *The entrywise calculus and dimension-free positivity preservers, with an Appendix on sphere packings*: [arXiv:math.CA/2511.08406](#), 90th anniversary of the Indian National Science Academy (INSA), **in press**.
24. *KRP's contributions in Lie theory*, in [The Indian Mathematics Consortium Bulletin](#) (tribute volume to Prof. K.R. Parthasarathy): Volume 5 issue 4, pages 5–8, **2024** ; Reprinted in: [Indian Journal of Pure and Applied Mathematics](#) (tribute volume to Prof. K.R. Parthasarathy) 55, pp. 834–837, **2024**.
25. (**Book**.) *Matrix analysis and entrywise positivity preservers*, **2022**.
Vol. 471 in [London Mathematical Society Lecture Note Series](#), Cambridge University Press (314 pp.); and Vol. 82 in [Texts and Readings In Mathematics](#) (TRIM Series), Hindustan Book Agency (361 pp.).
26. (Survey article, peer-reviewed, with Alexander Belton, Dominique Guillot, and Mihai Putinar.) *A panorama of positivity*: [arXiv:math.CA/1812.05482](#) (unified version).
 - Part I: Dimension free, in: *Analysis of Operators on Function Spaces* (The Serguei Shimorin Memorial Volume; A. Aleman, H. Hedenmalm, D. Khavinson, M. Putinar, Eds.), pp. 117–165, Trends in Mathematics, Birkhauser, **2019**.
 - Part II: Fixed dimension, in: *Complex Analysis and Spectral Theory* (in honor of Thomas Ransford), Proceedings of the CRM Workshop held at Laval University, QC, May 21–25, 2018 (G. Dales, D. Khavinson, J. Mashregi, Eds.). CRM Proceedings – AMS Contemporary Mathematics, American Mathematical Society 743, pp. 109–150, **2020**.

27. (**Book**, with Anna Lachowska.) *Beautiful, Simple, Exact, Crazy: Mathematics in the Real World*, [Yale University Press](#), 480 pp., **2015**.
28. (Invited survey article.) *Representations of complex semi-simple Lie groups and Lie algebras*, in [Connected at Infinity II: A Selection of Mathematics by Indians](#) (Rajendra Bhatia, Conjeevaram S. Rajan, and Ajit I. Singh, Eds.), TRIM, Hindustan Book Agency, pp. 85–129, **2013**.

Seminar organization:

- 2019-present: Current organizer of the [Eigenfunctions](#) Series, IISc
- 2019-present: Current co-organizer of the [APRG Seminar](#) Series, IISc
- 2018-present: Co-organizer of the [Algebra & Combinatorics Seminar](#) Series, IISc
- 2021-22: Co-organizer of the [ARCSIN Seminar](#) Series, IISc–IIT Kanpur–IMSc