

Curriculum Vitae

Ranjana Jain

Associate Professor
Department of Mathematics
University of Delhi
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Education:

- **Ph.D. in Mathematics** January, 2012
Thesis Title:
Operator Space Tensor Products of C^ -algebras and their Ideal Structure*
Advisor: Prof. Ajay Kumar
University of Delhi
 - **M.Phil. in Mathematics** July, 2005
Dissertation Title:
A Study of Frames in Banach Spaces and Localization of Frames
Advisor: Prof. P. K. Jain
University of Delhi
 - **M.A. in Mathematics** July, 2003
St. Stephen's College
University of Delhi
 - **B.A. (Hons.) in Mathematics** July, 2001
St. Stephen's College
University of Delhi
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Research Interests:

Functional Analysis, Operator spaces, Operator algebras, Various tensor products of Banach spaces and of C^* -algebras, Lie ideals.

Research Publications:

- (1) *Birkhoff-James orthogonality in certain tensor products of Banach spaces*
Mohit and Ranjana Jain. *Operators and Matrices* 17 (1) (2023), 235-244.
- (2) *Independent point-set domination in line graphs*
Purnima Gupta, Alka Goyal and Ranjana Jain. *AKCE Int. J. Graphs and Combinatorics* (2022) 18(3), 180-185.
- (3) *Center of Banach algebra valued Beurling algebras*
Bharat Talwar and Ranjana Jain, *Bull. Aust. Math. Soc.* (2022), 105(3) 490-498.
- (4) *On closed Lie ideals and center of generalized group algebras*
Ved Prakash Gupta, Ranjana Jain and Bharat Talwar. *J. Math. Anal. Appl.* 502 (1) (2021)

- (5) *Closed ideals and Lie ideals of minimal tensor product of certain C^* -algebras*
Bharat Talwar and Ranjana Jain. *Glasgow Math. Journal* 63(2) (2021), 414-425.
- (6) *Automorphisms of Banach space projective tensor product of C^* -algebras*
Ranjana Jain, *Arch. Math* 114 (6) (2020) 677-686.
- (7) *Independent point-set dominating sets in graphs*
Purnima Gupta, Alka Goyal and Ranjana Jain. *AKCE International Journal of Graphs and Combinatorics*, 17 (1) (2020) 229-241.
- (8) *On Banach space projective tensor product of C^* -algebras*
Ved Prakash Gupta and Ranjana Jain. *Banach J. Math. Anal.* 14 (2020) 524-538.
- (9) *On closed Lie ideals of certain tensor products of C^* -algebras II*
Ved Prakash Gupta, Ranjana Jain and Bharat Talwar. *Math. Nachr.* 293 (1) (2020) 101-114
- (10) *On closed Lie ideals of certain tensor products of C^* -algebras*
Ved Prakash Gupta and Ranjana Jain. *Math. Nachr.*, 291 (8-9), 2018,1297-1309.
- (11) *The operator space projective tensor product: Embedding into the second dual and ideal structure*
Ranjana Jain and Ajay Kumar, *Proc. Edinburgh Math. Soc.* (2014) 57, 505-519.
- (12) *Spectral synthesis for the operator space projective tensor product of C^* -algebras.*
Ranjana Jain and Ajay Kumar, *Bull. Malays. Math. Sci. Soc.*(2) 36(4) (2013), 855-864.
- (13) *Projective tensor product*
Ranjana Jain and Ajay Kumar, Proc. 21st Annual Conference of Jammu Math. Soc. and a National Seminar on analysis and its applications, Feb 25-27, 2011, 27-40.
- (14) *Ideals of operator space projective tensor product of C^* -algebras.*
Ranjana Jain and Ajay Kumar, *J. Aust. Math. Soc.* 91 (2011), 275-288.
- (15) *Operator Space Tensor Products of C^* -algebras.*
Ranjana Jain and Ajay Kumar, *Math. Zeit.* 260 (2008), 805-811.

Grants/Scholarships/Awards:

- **Faculty Research Programme Grant- IoE, University of Delhi**
2022-2023, on "Birkhoff-James orthogonality for tensor products of Banach Spaces"
- **Faculty Research Programme Grant- IoE, University of Delhi**
2020-2021, on "A Study of Center and Closed Lie Ideals of Vector-Valued Beurling Algebras"
- **Research and Development Grant, University of Delhi**
October, 2015- September, 2016, on 'Closed Lie ideals of spatial tensor product of von Neumann algebras'.

- **Research and Development Grant, University of Delhi**
October, 2014- September, 2015, on 'Closed Lie Ideals of Operator Space projective tensor Product of C^* -algebras'.
- **Research Grant G.0231.07 under Research Foundation Flanders(FWO)**
July, 2009 - July, 2010.
(Availed at *K. U. Leuven, Leuven, Belgium as an International Research Scholar*)
- **UGC-CSIR Junior Research Fellowship**
July, 2003 - November, 2005.
- **Gold Medalist in M.A. Mathematics**
University of Delhi, 2003.
- **Mukharji Ram Behari Prize for highest score in M.A.**
St. Stephen's College, 2003.
- **55th IMS Annual Conference Scholarship**
University of Delhi, July, 2001 - July, 2003.
- **Kesar Devi Scholarship**
St. Stephen's College, July, 2001 - July, 2003.

Resource Person/Invited Talks/Conference Talks:

- *Title: Some applications of non-negative matrices*
Invited talk at @ May 12 Initiative, Dyal Singh College , University of Delhi, June 14, 2023.
- *Title: Real life applications of mathematics*
Invited talk at Lakshmibai College, University of Delhi, April 12, 2023.
- *Title: Closed Lie ideals of certain Banach algebras*
Invited Talk at Annual Conference of Indian Women and Mathematics, IISER Pune, December 27-29, 2022.
- *Title: Creating e-content using open-source tools*
Resource person at One Week Interdisciplinary Faculty Development Programme on "MOOCs and e-Content Development", Shivaji College (sponsored by Mahatma Hansraj Faculty Development Center under the scheme of PMMMMNMTT, Govt. of India), November 25, 2022.
- *Title: Hahn Banach Theorem and its Applications*
Resource person at online Refresher Course on "Mathematics with an Emphasis on Topology, Analysis and Applications" organised by CPDHE, University of Delhi, September 12, 2022.
- *Functions, Continuity and Differentiability*
Invited speaker for the online training session for the teachers of the Delhi Public Schools teaching Mathematics in Classes 9-12 on August 18, 2022.
- *Title: Some applications of non negative matrices*
Invited Talk on the occasion of Pi Day at Hansraj College, University of Delhi, March 14, 2022.

- *Title: Some applications of Perron Frobenious Theorem*
Invited talk at the Annual Fest "Tangentia'22" of Atma Ram Sanatan Dharam College, University of Delhi, February 19, 2022.
- *Title: Research methodology in mathematics and Plagiarism*
Resource Person at Two-Weeks "Refresher Course in Mathematics" organised by Ramanujan College, University of Delhi, September 9, 2021.
- *Title: Creating e-content using open source tools*
Resource Person at Two-Week Faculty Development Programme on "Introduction and Working with Open Source Software-R" (Sponsored by PMMMNMTT, MHRD, Govt. of India), Kalindi College, University of Delhi, August 4, August 7, 2021.
- *Title: Linear algebra behind the web search*
Invited Talk at the Webinar "Trisectrix", Sri Venkateswara College, University of Delhi, January 28, 2021.
- *Title: Research Methodology in Mathematics*
Resource Person at MHRD Faculty Development Program, Kalindi College, University of Delhi, December 21, 2019.
- *Title: Lie ideals of certain tensor products of C^* -algebras*
Invited talk at the Conference on "Topics in Analysis", Ashoka University, Sonapat, December 18-19, 2019.
- *Title: Mathematics behind Google*
Invited Talk at the Annual fest of Hindu College, University of Delhi, February 20, 2019.
- *Title: Ideals vs Lie ideals in Banach algebras*
Invited talk at the Annual Conference of Ramanujan Mathematical Society, University of Delhi, June 1-3, 2018.
- *Title: The operator space projective tensor product: Embedding into bidual and its ideal structure*
Conference on "Groups and Operators", August 15-18, 2016, Chalmers Institute of Technology and University of Gothenburg, Gothenburg, Sweden.
- *Title: Closed Lie ideals of certain operator algebras*
Conference on "Indian Women and Mathematics", June 29-July 1, 2016, University of Hyderabad.
- *Title: On Certain Tensor Products of Operator Spaces*
Invited Talk at Indian Science Congress, January 3-7, 2015, Mumbai University.
- *Title: Tensor Products of Operator Spaces*
Young Women and Mathematics, July 25-27, 2014, IISER Pune.
- *Title: The Effros-Ruan Conjecture for Bilinear Forms on C^* -algebras*
Operator Algebra Seminar, October 23, 2009, Department of Mathematics, K.U. Leuven, Belgium.
- *Title: Operator Space Projective Tensor Product of C^* -algebras*
EU Review Meeting and Conference in Non Commutative Geometry
September 29-October 3, 2009, Copenhagen University, Copenhagen, Denmark.

- *Title: Embedding Projective Tensor Product of C^* -algebras into Second Dual*
Research Scholar Seminar, January 21-22, 2009, University of Delhi, Delhi.
- *Title: Ideal Structure of Operator Space Projective Tensor Product of C^* -algebras*
Research Scholar Seminar, April, 2008, University of Delhi, Delhi.
- *Title: Ideal Structure of Operator Space Projective Tensor Product of C^* -algebras*
International Conference on Operator Theory and Related Areas.
January 9-12, 2008, University of Delhi, Delhi.

Workshops/ Conferences Organized:

- **Convener:** International Meet on Analysis held at Department of Mathematics, University of Delhi, November 24, 2018.
- **Co-Convener:** Workshop on Indian Women and Mathematics held at Department of Mathematics, University of Delhi, April 2-4, 2015.
- Member of Organising Committee of Conference on "14th Discussion meet on Harmonic Analysis" held at Department of Mathematics, University of Delhi, December 10-12, 2015.

Workshops, Schools and Conferences attended:

- **Conference on Groups and Operators**
August 15-18, 2016, Chalmers Institute of Technology and University of Gothenburg, Gothenburg, Sweden.
- **Conference on Indian Women and Mathematics**
June 29-July 1, 2016, University of Hyderabad.
- **Indian Science Congress**
January 3-7, 2015, Mumbai University.
- **Sympisoum on Young Women and Mathematics**
July 25-27, 2014, IISER Pune.
- **2nd Belgian Mathematical Society-London Mathematical Society Conference**
December 4-December 5, 2009, K.U.Leuven, Leuven, Belgium.
- **EU Review Meeting and Conference in Non Commutative Geometry**
September 29-October 3, 2009, Copenhagen University, Copenhagen, Denmark.
- **Compact Course in Multi-Norms and Multi-Banach Algebras**
January 01-09, 2009, IISc, Bangalore, India.
- **Pre-ICM International Conference**
October 18-20, 2008, University of Delhi, Delhi, India.
- **International Conference on Operator Theory and Related Areas**
January 9-12, 2008, University of Delhi, Delhi, India.
- **10th Discussion meeting on Harmonic Analysis**
December 28, 2007 - January 1, 2008, IISc, Bangalore, India.
- **National Workshop on Analysis**
September 27-28, 2007, University of Delhi, Delhi, India.

- **Workshop on Fractal Geometry**
October 5-7, 2006, University of Delhi, Delhi, India.
 - **9th Discussion meeting on Harmonic Analysis**
October 17-19, 2005, HRI, Allahabad, India.
 - **Annual Foundation School I**
May 10 - June 5, 2004, IIT Bombay, Mumbai, India.
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Membership of Learned Bodies:

- Life membership of Indian Science Congress Association (Membership No.: L28033)
 - Life membership of Ramanujan Mathematical Society (Membership No.: 1184)
 - Life membership of Indian Mathematical Society (Membership No.: L/2015/88)
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Teaching Experience:

- Associate Professor, Department of Mathematics, University of Delhi.
March, 2022 - till date.
 - Assistant Professor, Department of Mathematics, University of Delhi.
March, 2014 - March, 2022.
 - Assistant Professor, Department of Mathematics, Lady Shri Ram College for Women,
University of Delhi.
July, 2006 - March, 2014.
 - Lecturer (Temporary), Department of Mathematics, Sri Venkateswara College, Uni-
versity of Delhi.
November, 2005 - July, 2006
 - Lecturer (Ad-hoc), Department of Mathematics, Ramjas College, University of
Delhi.
November, 2004 - November, 2005
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Courses Taught:

- Ph.D./M.Phil Level: Research Methodology
 - Post-Graduate Level: Measure and integration, Topology, Functional Analysis,
Module Theory, Matrix Analysis, Abstract Harmonic Analysis.
 - Under-Graduate Level: Complex analysis, Algebra, Real Analysis, Calculus, Differ-
ential Equations, Mechanics
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Administrative Responsibilities:

- **At College Level:** Worked for Internal Assessment Committee, Attendance Com-
mittee, Examination Committee, NSS, Admission Committee, Worked as Depart-
ment In-Charge, Association In-Charge.
- **At Department/ University Level:** Worked as Convener of Seminar Committee,
Website Committee, worked as a member of M.Phil. Committee, Departmental
Research Committee, Committee of Courses, Committee for Examiner setting for
Undergraduate Courses, Moderation Committee, Data Analysis Committee, Alumni
Committee, Nodal Officer of NAAC Committee (2018), Nodal Officer of Open Book

Examination during July-September, 2020. Convener of the Committee to prepare syllabus for Computer related Courses under UGCF, NEP, 2022.

Students Guided:

• **M.Phil:**

- Daljeet Singh Bajaj (2017); Title of Dissertation "Closed Lie Ideals of Certain Operator Algebras"
- Krishan Kumar (2018); Title of the Dissertation "Classification and Sum of Commutators in Some C^* -Algebras"
- Prashant Kumar (2021); Title of the Dissertation: "Birkhoff-James Orthogonality in Banach Spaces"

• **Ph.D.**

- Janson Antony (2020); Title of the Thesis: "Tensor Products of Operator Spaces; their Inductive and Projective Limits"
 - Bharat Talwar (2021); Title of the Thesis: "Closed Lie ideals of Certain Tensor Products of C^* -algebras and of Generalised Group Algebras"
 - Alka (2023), Title of the Thesis: "Various Aspects of Point-set Domination in Graphs"
 - Mohit Dhandha, under progress
 - Anmol Paliwal, under progress
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