

**Sasmita Patnaik, Ph.D.**  
Associate Professor  
Department of Mathematics and Statistics  
Indian Institute of Technology Kanpur, India  
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**Personal Information**

**EDUCATION**

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University of Cincinnati	Cincinnati, USA
Ph.D. Mathematics	
Thesis: Ideals and Commutators of Operators	December 2012
Utkal University, Bhubaneswar	Odisha, India
M.Sc. in Mathematics	June 2004
Regional Institute of Education, Bhubaneswar	Odisha, India
B.Sc.-B.Ed.	April 2002

**PROFESSIONAL/RESEARCH EXPERIENCE**

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Associate Professor	
Indian Institute of Technology-Kanpur	
Department of Mathematics and Statistics	
August 2021-present	
Assistant Professor	
Indian Institute of Technology- Kanpur	
Department of Mathematics and Statistics	December 2013-July 2021
Assistant Professor	
Indian Institute of Science Education and Research (IISER), Bhopal, Department of Mathematics	August-November 2013
Adjunct Instructor	January-April 2013
University of Cincinnati	
Department of Mathematical Sciences, Ohio, USA	

## Teaching

### Courses taught:

#### A. Core course:

(MTH111A) Mathematics I

#### B. Professional courses:

- (MTH301A) Analysis-I
- (MTH433A) Real Analysis

#### C. Elective courses at UG and PG level:

- (MTH404A) Analysis-II
- (MTH405A) Functional Analysis
- (MTH635A) An Introduction to Operator Theory

#### D. Compulsory course for PG level:

- (MTH753A) Analysis

### Courses tutored

- (MTH101A) Mathematics I
- (MTH102A) Mathematics II
- (MTH404A) Analysis II
- (MTH405A) Functional Analysis
- (MTH433A) Real Analysis

### New course introduced:

- (MTH635A) An Introduction to Operator Theory

## Supervision of Undergraduate Project

- Rahul Sethi
- Shambhavi Singh
- Rahul Bareliya

## PhD Supervision

Sanehlata Dhanda

## Publications

1. S. Patnaik, Sanehlata, and G. Weiss, Singly generated selfadjoint-ideal semigroups: spectral density of the generator and simplicity, *Operators and Matrices* (2024), Volume 18, no.2, 479-522
2. J. Loreaux, S. Patnaik, S. Petrovic, and G. Weiss, On commutators of compact operators: generalizations and limitations of Anderson's approach, *Integral Equations Operator Theory* (2024), no. 2, Paper No. 16, 28 pp.
3. S. Patnaik, Sanehlata, and G. Weiss, Automatic selfadjoint-ideal semigroups for finite matrices, *Linear Algebra and its Applications* 676 (2023), 211-240
4. S. Patnaik, On Simplicity of Lie Algebras of Compact Operators: A Direct Approach, *Journal of Mathematical Analysis and Applications* (2022), Volume 510, Issue 1. doi.org/10.1016/j.jmaa.2022.126012
5. J. Loreaux and S. Patnaik, Closedness of the orbit-closed  $C$ -numerical range and submajorization, *Linear and Multilinear Algebra* (2021), doi.org/10.1080/03081087.2021.1984378
6. J. Loreaux and S. Patnaik, Convexity of the orbit-closed  $C$ -numerical range and majorization, *Linear and Multilinear Algebra* (2021), doi.org/10.1080/03081087.2021.1895702
7. S. Patnaik and G. Weiss, Interplay of simple and selfadjoint-ideal semigroups in  $B(H)$ , *Operators and Matrices* (2021), Volume 15, Number 3, Pages 815–851. doi.org/10.7153/oam-2021-15-56.
8. S. Patnaik, S. Petrovic, and G. Weiss, Universal Block Tridiagonalization in  $B(H)$  and Beyond, Special volume dedicated to "The mathematical legacy of Victor Lomonosov," *Operator Theory series: Advances in Analysis and geometry* (2020), 2, Pages: 317–326. doi.org/10.1515/9783110656756

9. D. Beltita, S. Patnaik, and G. Weiss, Cartan subalgebras of operator ideals, *Indiana University Mathematics Journal* (2016), 65, Number 1, 1–37.
10. D. Beltita, S. Patnaik, and G. Weiss, Interplay between algebraic groups, Lie algebras, and operator ideals, *The varied landscape of operator theory* (2014), 77–97, *Theta Series Adv. Math.*, 17, Theta, Bucharest.
11. D. Beltita, S. Patnaik, and G. Weiss, B(H)-commutators: a historical survey II and recent advances on commutators of compact operators, *The varied landscape of operator theory* (2014), 57–75, *Theta Series Adv. Math.*, 17, Theta, Bucharest.
12. S. Patnaik and G. Weiss, Subideals of operators: a survey and introduction to subideal-traces, *Operator theory in harmonic and non-commutative analysis*, 221–234, *Operator Theory Adv. Appl.* (2014), 240, Birkhuser/Springer, Cham.
13. S. Patnaik and G. Weiss, Subideals of operators, *Journal of Operator Theory* 70 (2013), Number 2, 355–373.
14. S. Patnaik and G. Weiss, Subideals of operators II, *Integral Equations and Operator Theory* 74 (2012), Number 4, 587–600.

## Funding

- Research Funding

TITLE	ROLE	SCHEME (SERB)	AMOUNT (INR)	STATUS (ONGOING)
Some Compact Commutator Problems in Operator Theory	Principal investigator	Core Research Grant	25,33,200	January 2021 – December 2022

- International Travel Grants
  - DST International Travel Support, 2015
  - NBHM International Travel Support, 2014
  - GPOTS 2012, National Science Foundation (NSF), University of Houston
  - NCGOA 2012, NSF, Vanderbilt University
  - Taft travel grant 2012, University of Cincinnati

## Peer Recognition

### **Awards and Recognitions:**

- University of Cincinnati Awards
  - Charles Phelps Taft Dissertation Fellow, 2011-12
  - Taft Graduate Enrichment Award, May 2012
  - Maita Levine Research Grant, Summer 2011
- Taft Graduate Enhancement Fellowship, 2007-08
- University Graduate Scholarship, 2007-11

### **Contributions to the Institute**

- Committee member in the Department of Mathematics and Statistics
  - (i) Ph.D. Students Seminar Committee (present)
  - (ii) Math-Stat. Colloquium
  - (iii) Department seminar convener
  - (iv) Institute International Relations Committee
- Maintenance Warden of Hall VI: 2018-2024
- Senate Students Affairs Committee (SSAC) member: 2021-2023

### **Contributions outside the Institute**

#### **Technical referee for journal:**

- Operators and Matrices
- Canadian Journal of Mathematics
- Proceedings – Mathematical Sciences

**Reviewer** for AMS – Mathematical Reviews

**International Operator Algebras Mentor Network (OAMN):** Senior Mentor (2023-present)

### **Others**

*Invited Talks at Conferences and Seminars*

- National Conference on Operator Theory and Function Spaces, Shiv Nadar University, Delhi-NCR, March 2024
- 38<sup>th</sup> Annual Conference of Ramanujan Mathematical Society, IIT Guwahati, December 2023
- Indian Women and Mathematics Annual Conference 2023-24, IISER Bhopal, July 2023
- Analysis and Probability Research Group (APRG) seminar, Indian Institute of Science (IISc.), Bangalore, June 2019.
- 47th Canadian Operator Symposium at the Department of Mathematics and Statistics, University of Regina, Canada, June 2019 and Canadian Mathematical Society Summer Meeting, University of Regina, Regina, Saskatchewan, June, 2019 (could not attend)
- Symposium on Operator Theory, Indian Institute of Science (IISc.), Bangalore, February 2019
- International conference on Recent Advances in Operator Theory and Operator Algebras (OTOA), December 2018
- Conference on Functional Analysis at IIT Bombay, October 2017
- The Great Plains Operator Theory International Symposium, Texas Christian University Fort Worth, Texas, USA, May 2017
- Ramanujan Mathematical Society: 31st Annual Conference, India, June 2016
- Complex Geometry and Operator Theory Symposium at ISI Bangalore, December 2015
- The 43rd Canadian Operator Symposium on Operator Theory and Operator Algebras, University of Waterloo, Canada, June 2015
- Young Women and Mathematics Symposium, IISER Pune, India, July 2014
- 25th International Conference on Operator Theory, Timisoara, Romania, July 2014
- Institute of Mathematics of the Romanian Academy, Bucharest, Romania, July 2014
- Special Session on Progress in Noncommutative Analysis of the AMS Western Spring Sectional Meeting, University of New Mexico, Albuquerque, New Mexico, USA, April 2014

- Analysis seminar, Indian Institute of Technology, Kanpur, India, January 2014
- Thematic Session lecture, Multivariable Operator Theory, International Workshop on Operator Theory and its Applications (IWOTA), Indian Institute of Science, India, December 2013
- Mathematics Department Seminar, Indian Institute of Science Education and Research (IISER), Bhopal, India, September 2013
- Workshop in Analysis and Probability, Texas A&M University, USA, July 2012
- Special session lecture, Great Plains Operator Theory International Symposium, University of Houston, USA, May 2012
- University of Cincinnati lectures
  - Taft Annual Research Symposium, May 2012
  - Graduate student mathematics seminar, January 2012
- Lecture series, University of Cincinnati
  - Functional Analysis seminar, January-February 2013
  - Functional Analysis seminar, April-May 2012
  - Functional Analysis seminar, April-May 2011
- Presenter, Graduate Student Poster Forum, University of Cincinnati, USA, March 2012

### ***Research visits***

- Invited at the international workshop Women in Operator Algebras at BIRS (Banff International Research Station) November 4-9, Canada, 2018
- Research visit at University of Cincinnati, Ohio, USA, 2017
- Short research visit at University of Edwardsville, Illinois, USA, 2017
- Short research visit at the Indian Institute of Science, Bangalore, 2016
- One week of research visit at the University of Waterloo, Canada, 2015
- One week of research visit at the Institute of Mathematics of the Romanian Academy, Bucharest, Romania, 2014

