

# TANUJ GUPTA

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## Employment

Postdoctoral Fellow, TIFR CAM

June 2026 – present

Guest Faculty, GGS Indraprastha University

Feb 2026 – May 2026

## Education

**Ph.D. in Mathematics**, Texas A&M University, 2025

*Thesis:* Diederich–Fornæss index and the global regularity of the complex Green operator

Advisor: Prof. Emil J. Straube

**M.A. in Mathematics**, Central Michigan University, 2019

*Thesis:* Extrinsic curvature of hypersurfaces in Hermitian space

Advisor: Prof. Debraj Chakrabarti

**B.S.–M.S. Dual Degree in Mathematics**, IISER Kolkata, 2017

*Thesis:* Automorphisms of  $\mathbb{C}^n$ : The Andersén–Lempert Theory

Advisor: Prof. Sushil Gorai

## Research Interests

Several Complex Variables,  $\bar{\partial}$ -Neumann Problem, Bergman Kernel, CR Geometry

## Publications and Preprints

1. *Diederich–Fornæss index and global regularity of the complex Green operator: Domains with comparable Levi eigenvalues* (with E. Straube), submitted.  
arXiv: <https://arxiv.org/abs/2512.11698>
2. *Modifications of the Levi core* (with Emil J. Straube, and John N. Treuer), Indiana University Mathematics Journal **74** (2025), no. 5, 1207–1224.  
DOI: <http://dx.doi.org/10.1512/iumj.2025.74.60462>  
arXiv: <https://arxiv.org/abs/2308.14807>

## Awards and Recognition

**Outstanding Teaching Assistant Award**, Houston A&M Mother’s Club, 2022

**Joint CSIR–UGC NET (JRF/LS)**, 2015

**DST-INSPIRE Scholarship**, 2012–2017

## Service, Professional Activities, and Outreach

Co-organizer, GIGEM Conference, Texas A&M University, 2024

Mentor, Directed Reading Program, Texas A&M University, 2021–2023

Instructor and Facilitator, Texas A&M Math Circle, 2021–2023

Mentor, AWM Peer Mentoring Program, 2021–2025

Student Officer, AMS Graduate Student Chapter at Texas A&M University, 2023–2024

Student Officer, Diversity Committee, Texas A&M Mathematics Department, 2022–2023

## Teaching Experience

### Instructor

*Delivered lectures; designed and graded assignments and examinations; held office hours.*

System Modelling Techniques - II, Guru Gobind Singh Indraprastha University, Spring 2026

System Modelling Techniques Lab, Guru Gobind Singh Indraprastha University, Spring 2026

MATH 140: Mathematics for Business and Social Sciences, Texas A&M University, Fall 2020

MTH 105: Intermediate Algebra, Central Michigan University, Fall 2018, Spring 2019

### Recitation/Lab TA

*Led weekly calculus recitation sessions and facilitated Python-based labs*

MATH 150: Functions, Trigonometry and Linear Systems, Texas A&M University, Fall 2022

MATH 151: Engineering Mathematics I, Texas A&M University, Fall 2021

MATH 152: Engineering Mathematics II, Texas A&M University, Spring 2024, 2022, 2021

### Grader

*Graded weekly assignments for graduate and undergraduate courses*

MATH 617: Complex Variables I, Texas A&M University, Fall 2024

MATH 618: Complex Variables II, Texas A&M University, Spring 2023, 2025

MATH 308: (Honors) Differential Equations, Texas A&M University, Spring 2020

MATH 311: Topics in Applied Mathematics I, Texas A&M University, Summer 2020

MATH 407: Complex Variables, Texas A&M University, Fall 2019

### Help Session Tutor

*Office hours for various undergraduate courses*

MATH 308: (Honors) Differential Equations, Texas A&M University, Spring 2020

MATH 409: (Honors) Advanced Calculus I, Texas A&M University, Summer 2021

### Miscellaneous

Mentored four undergraduate students from the physics, statistics, and engineering departments through the Directed Reading Program, Texas A&M University.

Served as an instructor and facilitator for the Texas A&M Math Circle, 2021–2023.

TA for Ph.D. Qualifying Exam preparation in Complex Analysis, Summer 2021.

Assisted in training incoming Ph.D. students at Texas A&M University for their teaching assistant responsibilities, Summer 2022.

## Invited and Seminar Talks

<b>DF index and global regularity of the complex Green operator</b> <i>Research Talk, Kerela School of Mathematics</i>	May 12, 2026
<b>DF index and global regularity of the complex Green operator</b> <i>Analysis seminar, IIT Bombay</i>	May 06, 2026
<b>Restriction Operator between Bergman Spaces</b> <i>Complex Analysis and Operator Theory Seminar, University of Toledo</i>	Feb 01, 2024
<b>Restriction Operator between Bergman Spaces</b> <i>AMS Special Session on Geometric Analysis in Several Complex Variables, JMM</i>	Jan 06, 2024
<b>Modifications of the Levi Core</b> <i>SIAM TX-LA Sectional Meeting, University of Louisiana</i>	Nov 04, 2023
<b>Core of a distribution</b> <i>Mathematics Graduate Student Organization Seminar, Texas A&amp;M University</i>	Oct 12, 2023
<b>Restriction map between Bergman spaces</b> <i>Several Complex Variables Seminar, Texas A&amp;M University</i>	Jan 24, Jan 31, Feb 7, Feb 14, 2023
<b>A Glimpse into the Complex World</b> <i>Mathematics Graduate Student Organization Seminar, Texas A&amp;M University</i>	Sept 22, 2022
<b>Introduction to Bergman Kernel</b> <i>AMS GIG'EM Conference, Texas A&amp;M University</i>	Apr 23, 2022
<b>Hörmander's theorem for the CR operator: the one-variable case</b> <i>Analysis and Geometry Seminar, Central Michigan University</i>	Feb 23, 2018

## Conference and Workshop Participation

Joint Mathematics Meetings 2024, Jan 05–06, 2024, San Francisco, CA  
SIAM TX-LA Sectional Meeting, Nov 04, 2023, University of Louisiana  
Joint Mathematics Meetings 2023, Jan 06–07, 2023, Boston, MA  
Midwest Several Complex Variables, Apr 29–May 01, 2022, University of Notre Dame  
Bergman Projections and Related Topics, June 03–06, 2021, INDAM (online)  
Current Topics in SCV and PDE, Jan 04–07, 2021, University of Vienna (online)  
Texas Geometry and Topology Conference, Nov 08–10, 2019, Texas A&M University  
Cauchy-Riemann Equations in Higher Dimensions, July 15–Aug 02, 2019, ICTS, Bangalore  
The  $\bar{\partial}$ -Problem in the Twenty-First Century, June 11–22, 2018, MSRI (now SLMath), CA  
AMS Sectional Meeting, Mar 16–18, 2018, The Ohio State University  
Conference on Complex Geometry and SCV, Mar 9–11, 2018, University of Notre Dame  
AMS Sectional Meeting, Sept 16–17, 2017, University at Buffalo  
Advanced Training in Mathematics Workshop, July 24–29, 2017, IISER Pune

## References

Emil J. Straube, Professor Emeritus, Texas A&M University

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Harold P. Boas, Regents Professor Emeritus, Texas A&M University

Email: [boas@tamu.edu](mailto:boas@tamu.edu) | <https://haroldpboas.gitlab.io>

Debraj Chakrabarti, Professor, Central Michigan University

Email: [chakr2d@cmich.edu](mailto:chakr2d@cmich.edu) | <http://people.cst.cmich.edu/chakr2d>

Gian Maria Dall'Ara, Ricercatore INDAM, Scuola Normale Superiore (Pisa)

Email: [dallara@altamatematica.it](mailto:dallara@altamatematica.it) | <https://gdallaramath.wordpress.com/>

David Manuel, Instructional Associate Professor, Texas A&M University

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