TANUJ GUPTA

tanujgupta17@gmail.com | tanujmath.github.io

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 C^n: The Andersén–Lempert Theory
Advisor: Prof. Sushil Gorai

Research Interests

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

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.
   Link: `https://www.iumj.indiana.edu/IUMJ/FULLTEXT/2025/74/60462`
   arXiv: `https://arxiv.org/abs/2308.14807`

Awards and Recognition

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

All India Rank 27, **Joint CSIR–UGC NET (JRF/LS)**, 2015

INSPIRE Scholarship for Higher Education, DST, India, 2012–2017

Teaching Experience

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

Selected Talks

Restriction Operator between Bergman Spaces Feb 01, 2024
Complex Analysis and Operator Theory Seminar, University of Toledo

Restriction Operator between Bergman Spaces Jan 06, 2024
AMS Special Session on Geometric Analysis in Several Complex Variables, JMM

Modifications of the Levi Core Nov 04, 2023
SIAM TX-LA Sectional Meeting, University of Louisiana

Core of a distribution Oct 12, 2023
Mathematics Graduate Student Organization Seminar, Texas A&M University

Restriction map between Bergman spaces Jan 24, Jan 31, Feb 7, Feb 14, 2023
Several Complex Variables Seminar, Texas A&M University

A Glimpse into the Complex World Sept 22, 2022
Mathematics Graduate Student Organization Seminar, Texas A&M University

Introduction to Bergman Kernel Apr 23, 2022
AMS GIG'EM Conference, Texas A&M University

Hörmander's theorem for the CR operator: the one-variable case Feb 23, 2018
Analysis and Geometry Seminar, Central Michigan University

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

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
Email: e-straube@tamu.edu | https://people.tamu.edu/~e-straube/

Harold P. Boas, Regents Professor Emeritus, Texas A&M University
Email: boas@tamu.edu | https://haroldpboas.gitlab.io

Debraj Chakrabarti, Professor, Central Michigan University
Email: chakr2d@cmich.edu | http://people.cst.cmich.edu/chakr2d

Gian Maria Dall'Ara, Ricercatore INDAM, Scuola Normale Superiore (Pisa)
Email: dallara@altamatematica.it | https://gdallaramath.wordpress.com/

David Manuel, Instructional Associate Professor, Texas A&M University
Email: dmanuel@tamu.edu | https://people.tamu.edu/~dmanuel/