DEBRAJ CHAKRABARTI
Curriculum Vitae

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EDUCATION

2006	**Ph.D. in Mathematics** University of Wisconsin, Madison, USA.
2002	**M.A. in Mathematics** University of Wisconsin, Madison, USA.
1998	**Bachelor of Technology** Major : Electronics and Electrical Communication Engineering Indian Institute of Technology, Kharagpur, India.

ACADEMIC POSITIONS

2020–	**Professor** Central Michigan University, Mt. Pleasant, Michigan, USA
2017–2020	**Associate Professor** Central Michigan University, Mt. Pleasant, Michigan, USA
2013–2017	**Assistant Professor** Central Michigan University, Mt. Pleasant, Michigan, USA
2011–2013	**Reader** Tata Institute of Fundamental Research, Bangalore, India
2010–2011	**Assistant Professor** Indian Institute of Technology, Bombay, India
2008–2010	**Visiting Assistant Professor** University of Notre Dame, Notre Dame, IN, USA
2006–2008	**Postdoctoral Fellow** University of Western Ontario, London, ON, Canada

EXTERNAL GRANTS

2022–2025	**NSF DMS Grant No. -2153907** ($223,754) Project title: "New frontiers in several complex variables" National Science Foundation.
2020–2025	**Collaboration Grant for Mathematicians** ($42,000) Simons Foundation
2016–2019	**NSF DMS Grant No. 1600371** ($102,290) Project title: "Research in Several Complex Variables" National Science Foundation.

2014–2018 **Collaboration Grant for Mathematicians** ($35,000)
Simons Foundation

PEER REVIWED PUBLICATIONS:

(31) *Power series as Fourier series* (Joint with Anirban Dawn) To appear in the **Rocky Mountain Journal of Mathematics**

(30) *A Modified Morrey-Kohn-Hörmander Identity and Applications to the $\overline{\partial}$-problem* (Joint with Phillip S. Harrington). **Journal of Geometric Analysis 31** (2021), no. 10, 9639–9676.

(29) *Exact sequences and estimates for the $\overline{\partial}$-problem* (Joint with Phillip S. Harrington) To appear in **Mathematische Zeitschrift.**

(28) *L^p-regularity of the Bergman projection on quotient domains* (Joint with Chase Bender, Luke D. Edholm, Meera G. Mainkar). **Canadian Journal of Mathematics** 74 (2022), no. 3, 732–772.

(27) *Bergman Kernels of Elementary Reinhardt Domains* (Joint with Austin Konkel, Meera Mainkar, and Evan Miller). **Pacific Journal of Mathematics** 306-1 (2020), 67–93

(26) *Automorphism Groups of nilpotent Lie algebras associated to certain graphs* (Joint with Meera Mainkar and Savannah Swiatlowski). **Communications in Algebra 48** (2020) No. 1, 263–273.

(25) *The restriction operator on Bergman spaces* (Joint with Sönmez Şahutoğlu). **Journal of Geometric Analysis 30** (2020), no. 2, 2157–2188.

(24) *Fourier representations of Bergman spaces* (Joint with Pranav Upadrashta). **Journal of Mathematical Analysis and Applications 475** (2019) No. 1, 464–489.

(23) *On an observation of Sibony.* **Proceedings of the American Mathematical Society. 147** (2019), no. 8, 3451–3454.

(22) *Duality and approximation of Bergman spaces* (Joint with Luke Edholm and Jeff McNeal). **Advances in Mathematics 341** (2019), 616-656

(21) *Curves of constant curvature and torsion in the the 3-sphere* (Joint with Rahul Sahay and Jared Willams). **Involve. 12** (2), 235–255.

(20) *On the L^2-Dolbeault cohomology of annuli* (Joint with Mei-Chi Shaw and Christine Laurent-Thiébaut). **Indiana University Mathematical Journal 67** (2018) No. 2, 831–857.

(19) *Proper holomorphic self-maps of symmetric powers of balls* (Joint with Cristopher Grow) **Archiv der Mathematik (Basel).** 110 (2018), no. 1, 45–52.

(18) *Distributional boundary values of holomorphic functions on product domains* (Joint with Rasul Shafikov) **Mathematische Zeitschrift,** 286 (2017), no. 3-4, 1145–1171.

(17) *Distributional Boundary Values: Some New Perspectives* (Joint with Rasul Shafikov) *Analysis and geometry in several complex variables, 65–70*, **Contemp. Math. 681**, Amer. Math. Soc., Providence, RI, 2017.

(16) *Some non-pseudoconvex domains with explicitly computable non-Hausdorff Dolbeault cohomology* **Archiv der Mathematik (Basel)**, **105**, Issue 6 (2015), Page 571–584.

(15) *L^p Mapping Properties of the Bergman Projection on the Hartogs Triangle*(Joint with Yunus Zeytuncu) **Proceedings of the American Mathematical Society. 144** (2016), no. 4, 1643–1653.

(14) *The L^2-cohomology of a bounded smooth Stein Domain is not necessarily Hausdorff.* (Joint with Mei-Chi Shaw) **Mathematische Annalen. 363** (2015), no. 3–4, 1001–1021.

(13) *Function theory and holomorphic maps on symmetric products of planar domains* (Joint with Sushil Gorai) **Journal of Geometric Analysis. 25** (2015), no. 4, pp 2196–2225

(12) *Condition R and holomorphic maps of domains with generic corners.*(Joint with Kaushal Verma) **Illinois Journal of Mathematics. 57** (2013) 1035–1055

(11) *Condition R and proper holomorphic maps between equidimensional product domains.*(Joint with Kaushal Verma) **Advances in Mathematics 248** (2013), 820–842.

Before arriving at Central Michigan University:

(10) *Sobolev Regularity of the $\overline{\partial}$-equation on the Hartogs Triangle* (Joint with Mei-Chi Shaw) **Mathematische Annalen. 356** (2013), no. 1, 241–258.

(9) *A Class of Domains with noncompact $\bar{\partial}$-Neumann operator.* **Proceedings of the American Mathematical Society 141** (2013), no. 7, 2351–2359.

(8) *On a remarkable formula of Ramanujan.* (Joint with Gopala Krishna Srinivasan) **Archiv der Mathematik (Basel) 99** (2012), no. 2, 125–135;

(7) *L^2 Serre Duality on Domains in Complex Manifolds and Applications* (Joint with Mei-Chi Shaw) **Transactions of the American Mathematical Society. 364** (2012) no. 7, 3529–3554.;

(6) *The Cauchy-Riemann equations on product domains* (Joint with Mei-Chi Shaw) Mathematische Annalen **349** (2011), no. 4, 977–998.;

(5) *Spectrum of the Complex Laplacian on Product Domains* **Proceedings of the American Mathematical Society 138** (2010) no.9, 3187–3202.

(4) *CR functions on subanalytic hypersurfaces* (Joint with Rasul Shafikov). **Indiana University Mathematics Journal 59** (2010) No. 2, 459–494.

(3) *Sets of Approximation and Interpolation in $\mathbb{C}$ for manifold-valued maps.* **Journal of Geometric Analysis 18** (2008), no. 3, 720–739.

(2) *Holomorphic Extension of CR Functions from Quadratic Cones.* (Joint with Rasul Shafikov) **Mathematische Annalen 341** (2008), no. 3, 543–573.

(1) *Coordinate neighborhoods of arcs and the approximation of maps into (almost) complex manifolds,* **Michigan Mathematical Journal 55** (2007), no. 2, 299-333

STUDENT ADVISING AND ACHIEVEMENTS

- **2016–2022 : Ph. D thesis**

Student: Anirban Dawn
Thesis title: Laurent series as Fourier series

- **2021-2022: Master's thesis**

Student: Chase Bender
Thesis title "Generalized Polarization Identities"

Chase is now a Ph D student at Notre Dame.

- **2020: Master's thesis**

Student: Pradeep Bihani

Thesis title “String Kernel Based Binary Text Source Classification”

Pradeep now works for Intuit Inc.

• **Summer 2020: Undergraduate Summer research funded by CMU undergraduate summer scholar's program** (Co-advised by Prof. Meera Mainkar of CMU)
Student: Chase Bender
Project: L^p-regularity of the Bergman projection on quotient domains.

A paper based on this work has been accepted for publication in the Canadian Journal of Mathematics.

The project was selected for presentation at the Young Mathematicians' conference at Ohio State University in August 2020 (held virtually).

• **Summer 2019: NSF funded Summer undergraduate research** (Co-advised by Prof. Meera Mainkar of CMU)
Students: Austin Konkel and Evan Miller,.
Project: Bergman kernels of some Reinhardt domains

A paper based on this project has been published in the *Pacific Journal of Mathematics*.

The project was selected for presentation at the Young Mathematicians' conference at Ohio State University in August 2019. Austin and Evan were both awarded the CMU College of Science and Engineering Dean's Scholar Award for undergraduate research.

Austin received the Barry Goldwater scholarship.

• **2018–2019 :Master's Thesis**
Student: Tanuj Gupta
Thesis title “Extrinsic Curvatures of Hypersurfaces in Hermitian space”

Tanuj is now a Ph D student at Texas A&M.

• **Summer 2018 : NSF funded summer undergraduate research**(Co-advised by Prof. Meera Mainkar of CMU)
Student: Savannah Swiatlowski
Project: Automorphisms of some Lie Algebras

A paper based on this project has been published in *Communications in Algebra.*

The project was selected for presentation at the Young Mathematicians' conference at Ohio State University in August 2018.

Savannah received the The Ron Mosier Memorial Award for the most outstanding talk at the Michigan section meeting of the MAA, and the CMU Provost's Award for Undergraduate Research and Creative Accomplishments.

• **2017–2018: Master's thesis**
Student: Pranav Upadrashta
Thesis title “Fourier representations in Bergman space”

A paper based on this thesis has appeared in *Journal of Mathematical Analysis and Applications*

Pranav is now a Ph D student at Stony Brook.

• **Summer 2017: NSF funded summer undergraduate research** Students: Rahul Sahay and Jared Williams

Topic: Curves of constant curvature and torsion in the three-sphere.

A paper based on this work has appeared in *Involve*.

The project was selected for presentation at the Young Mathematicians' conference at Ohio State University in August 2017.

Rahul Sahay was a high-school student at Mt Pleasant at the time of this research and is now an undergraduate at UC Berkeley, double-majoring in mathematics and physics. He received the Barry Goldwater scholarship in 2020

Jared is currently pursuing a Ph D at the University of Missouri in computational condensed matter physics.

- **2016–2017: Master's thesis**

Student: Christopher Grow
Thesis title: "Geometry of symmetric powers of complex domains"

The thesis received the outstanding thesis award of CMU and a paper based on it has appeared in *Archiv der Mathematik (Basel)*.

Grow is pursuing a Ph. D. at Michigan State University.

- **Fall 2015 Master's Independent Study (Plan B paper)**

Student: Andrew Bolton
Subject: Fourier series.

- **Summer 2014: NSF Research Experience for Undergraduates** Students: David Gunderman, Evan Castle and Ellen Lehet.

Topic: Mapping properties of some complex integral operators.

All three have since done Ph. D.'s: Gunderman at UC Boulder, Castle at UCLA and Lehet at Notre Dame

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RECENT TEACHING

- Lower Division: Precalculus (Fall 2018), Calculus-3 (Fall 2017, Fall 2016), Linear Algebra and Differential Equations (Spring 2016, Spring 2019);
- Upper Division: Advanced Calculus –2nd semester (Spring 2018), Point Set Topology (Spring 2015);
- Advanced undergraduate and Graduate: Real Analysis (Fall 2014, Fall 2015, Spring 2017), Complex Analysis (Spring 2015, Spring 2017, Spring 2019), Differential Geometry (Fall 2015), Several Complex Variables (Spring 2018).

OTHER INFORMATION

Civil Status: Citizen of the United States. Married with three children.
Scientific Languages: English, French.
