SOUGATA DHAR

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Employment

- **Visiting Assistant Professor**, Department of Mathematics, University of Connecticut, Storrs, CT, August 2019–present
- **Assistant Professor** (fixed-term), Department of Mathematics and Statistics, University of Maine, Orono, ME, August 2017–August 2019

Education

Ph.D. in Mathematics, June 2017

- Dissertation: Lyapunov-type inequalities and applications to boundary value problems
- Supervisor: Qingkai Kong
- Northern Illinois University, DeKalb, IL

M.S. in Mathematics, August 2011

- Thesis: Zero inflated exponential distribution and its variants
- Supervisor: Santanu Chakraborty
- University of Texas Rio Grande Valley (Formerly, University of Texas- Pan American), Edinburg, TX

B.E. in Electronics and communication engineering, May 2008

- West Bengal University of Technology, Saltlake, Kolkata, West Bengal, India

Publications

18. Generalized Lyapunov-type inequalities for third-order differential equations involving ψ-laplacian. *submitted*. (with B. Behrens).

17. Lower bounds for eigenvalues of even ordered quasilinear differential equations, *Accepted in* **Proceedings of the American Mathematical Society**. (with J. S. Kelly).

16. Existence of positive solutions of a Hammerstein integral equation using the layered compression-expansion fixed point theorem, *Accepted in* **Dynamics of Continuous Discrete and Impulsive Systems Series A: Mathematical Analysis**, (with J. W. Lyons and J. T. Neugebauer).

15. Lyapunov-Type inequalities for a fractional boundary value problem with a fractional boundary condition, *Accepted in* **Nonlinear Dynamics and Systems Theory**, (with J. T. Neugebauer).

14. Existence of multiple anti-periodic solutions for a higher order nonlinear difference equation, **Mediterranean Journal of Mathematics**, 18, no. 23 (2021), 1–16, (with L. Kong).

13. Lyapunov-type Inequalities for Third Order Linear and Half-Linear Difference Equations, **Journal of Difference Equations and Applications**, 27, no. 1 (2021), 61–80. (with J. S. Kelly and Q. Kong).

12. Fractional Lyapunov-type inequalities with mixed boundary conditions on univariate and multivariate domains, **Journal of Fractional Calculus and Applications**, 11, no. 2 (2020), 148–159. (with Q. Kong)

11. A critical point approach to multiplicity results for a fractional boundary value problem, **Bulletin of the Malaysian Mathematical Sciences Society**, 43, no. 5 (2020), 3617–3633. (with L. Kong).

10. A non Green's function approach to fractional Lyapunov-type inequalities with applications to multivariate domains, **Differential Equations & Applications**, 11, no. 3 (2019), 409–425. (with J. S. Kelly).

9. An application of the layered compression-expansion fixed point theorem to a fractional boundary value problem, **Panamerican Mathematical Journal**, 29, no. 3 (2019), 35-44, (with J. W. Lyons and J. T. Neugebauer).

8. Existence of solutions to a discrete fourth order periodic boundary value problem via variational method, **Differential Equations and Dynamical Systems**, (2018), `https://doi.org/10.1007/s12591-018-0432-8`, (with L. Kong).

7. On linear and nonlinear fractional Hadamard boundary value problems, **Differential Equations & Applications**, 10, no. 3 (2018), 329–339.

6. Lyapunov-type inequalities for α-th order fractional differential equations with $2 < \alpha \leq 3$ and fractional boundary conditions, **Electronic Journal of Differential Equations**, 2017 (2017), no. 203, 1–15, (with Q. Kong).

5. Lyapunov-type inequalities for odd-order linear differential equations, **Electronic Journal of Differential Equations**, 2016 (2016), no. 243, 1–10, (with Q. Kong).

4. Fractional boundary value problems and Lyapunov-type inequalities with fractional integral boundary conditions, **Electronic Journal of Qualitative Theory of Differential Equations**, 2016, no. 43, 1–16, (with Q. Kong and M. McCabe).

3. Lyapunov-type inequalities for third-order linear differential equations, **Mathematical Inequalities & Applications**, 19, no. 1 (2016), 297–312, (with Q. Kong).

2. Lyapunov-type inequalities for higher order half-linear differential equations, **Applied Mathematics and Computation**, 273 (2016), 114–124, (with Q. Kong).

1. Liapunov-type inequalities for third-order half-linear equations and applications to boundary value problems, **Nonlinear Analysis**, 110 (2014), 170–181, (with Q. Kong).

TALKS AND SEMINARS

1. Mathematics Seminar (virtual), University of Dayton, Dayton, OH, February, 2021.

2. The Joint Mathematics Meetings (virtual), Washington, D.C., January, 2021.

3. AMS Fall Central Sectional Meeting (virtual), The University of Tennessee at Chattanooga, Chattanooga, TN, October, 2020.

4. Mathematics & Statistics Seminar, The University of Tennessee at Chattanooga, Chattanooga, TN, January, 2020.

5. Mathematics & Statistics Seminar, Amherst College, Amherst, MA, February 2019.

6. The Joint Mathematics Meetings, Baltimore, MD, January, 2019.

7. AMS Spring Central Sectional Meeting, Ohio State University, Columbus, OH, March, 2018.

8. International Centre for Theoretical Sciences, Bengaluru, India, December, 2017.

9. Colloquium series of Department of Mathematics & Statistics, University of Maine, Orono, ME, October, 2017.

10. Applied Mathematics Seminar, Department of Applied and Computational Mathematics and Statistics, The University of Notre Dame , Notre Dame, IN, May, 2017.

11. SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May, 2017.

12. The Joint Mathematics Meetings, Atlanta, GA, January, 2017.

13. 36th Southeastern-Atlantic Regional Conference on Differential Equations, Florida Gulf Coast University, Fort Myers, FL, November, 2016.

14. The Joint Mathematics Meetings, Seattle, WA, January, 2016.

15. 35th Southeastern-Atlantic Regional Conference on Differential Equations, University of North Carolina at Greensboro, Greensboro, NC, October, 2015.

16. 13th Prairie Analysis Seminar, Kansas State University, Manhattan, KS, September, 2015.

17. Mississippi State Conference on Differential Equations and Computational Simulations, Mississippi State University, Starkville, MS, October, 2014.

18. 34th Southeastern-Atlantic Regional Conference on Differential Equations, The University of Memphis, Memphis, TN, October, 2014.

19. HESTEC Science Symposium, University of Texas- Pan American, Edinburg, TX, September, 2010.

20. Mathematics & Statistics Seminar, University of Texas Pan-American, Edinburg, TX, April, 2010.

WORKSHOPS
ATTENDED

1. *BIRS Stochastics and Geometry workshop (virtual)*, March 8-12, 2021.

2. *The Cahn-Hilliard Equations: Recent Advancements and Applications*, Burns, TN, May 20-24, 2019.

3. *Fractional PDEs: Theory, Algorithms and Applications*, The Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, Providence, RI, June 18-22, 2018.

4. American Mathematical Society's Mathematics Research Community (MRC) on The Mathematics of Gravity and Light, West Greenwich, RI, June 3-9, 2018.

5. *78th Midwest PDE Seminar* at Loyola University Chicago, Chicago, IL, October 15-16, 2016.

6. *AMS Fall Southeastern Sectional Meeting* at University of North Carolina at Greensboro, Greensboro, NC, November 8-9, 2014.

7. *Nonlinear Water Waves with Applications to Wave Current Interactions and Tsunamis*, NSF-CBMS Regional Conference in the Mathematical Sciences, at University of Texas Pan-American, Edinburg, TX, May 17-21, 2010.

HONORS AND
AWARDS

- **Excellence in Teaching**, awarded by the College of Liberal Arts and Sciences, University of Connecticut, Fall 2020.

- **Outstanding Graduate Student Fellowship**, awarded by the Graduate School, Northern Illinois University, Spring 2016.

- **Outstanding Graduate Student Award**, awarded by the Mathematics Department, Northern Illinois University, Spring 2016.

- **Most Valuable Professor (MVP)**, awarded by the Athletics Department, Northern Illinois University, Fall 2015.

- **Certificate of Teaching Excellence**, awarded by the Mathematics Department, Northern Illinois University, Spring 2015.

- **Most Valuable Professor (MVP)**, awarded by the Athletics Department, Northern Illinois University, Fall 2014.

- **Outstanding Student Research Award** in Mathematics at Hispanic Engineering Science and Technology (HESTEC) Science Symposium at the University of Texas Pan American, Fall 2010.

TEACHING
EXPERIENCE

Instructor of Record:

The University of Connecticut

- **MATH 3410:** Differential Equations for Applications (2 Sections)   Fall 2021
  Instructor Effectiveness: 4.4/5,   Dept. Mean: 4.1
  Instructor Effectiveness: 4.1/5,   Dept. Mean: 4.1

- **MATH 2110:** Calculus III (large lecture, 250+ students)   Fall 2021
  Instructor Effectiveness: 4.2/5,   Dept. Mean: 3.8

- **MATH 1071:** Mathematics for Business and Economics   Summer 2021
  Instructor Effectiveness: NA,   Dept. Mean: NA

- **MATH 2210:** Applied Linear Algebra   Summer 2021
  Instructor Effectiveness: NA,   Dept. Mean: NA

- **MATH 3410:** Differential Equations for Applications (2 Sections) Spring 2021
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 4.0
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 4.0

- **MATH 1131:** Calculus I (large lecture, 200+ students)   Spring 2021
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 3.8

- **MATH 3410:** Differential Equations for Applications (2 Sections)   Fall 2020
  Instructor Effectiveness: 4.1/5,   Dept. Mean: 3.9
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 3.9

- **MATH 2110:** Calculus III (large lecture, 250+ students)   Fall 2020
  Instructor Effectiveness: 4.1/5,   Dept. Mean: 3.8

- **MATH 1131:** Calculus I   Summer 2020
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 4.7

- **MATH 3435:** Partial Differential Equations (2 Sections)   Spring 2020
  Instructor Effectiveness: 4.2/5,   Dept. Mean: 4.0
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 4.2

- **MATH 2110:** Calculus III (large lecture, 250+ students)   Spring 2020
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 4.0

- **MATH 1131:** Calculus I (Large Section, 340+ Students)   Fall 2019
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 3.8

- **MATH 1011:** College Algebra and Mathematical Modeling   Fall 2019
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 3.9

The University of Maine

- **MAT 126:** Calculus I   Summer 2019
  Instructor Effectiveness: NA,   Dept. Mean: NA

- **MAT 258:** Differential Equations with Linear algebra   Spring 2019
  Instructor Effectiveness: 4.78/5,   Dept. Mean: 3.77

- **MAT 126:** Calculus I (Two Large Sections, 70+ Students in each)   Fall 2018
  Instructor Effectiveness: 4.0/5,   Dept. Mean: 4.0
  Instructor Effectiveness: 4.16/5,   Dept. Mean: 4.0

- **MAT 426:** Real Analysis II   Spring 2018
  Instructor Effectiveness: 4.8/5,   Dept. Mean: 4.11

- **MAT 258:** Differential Equations with Linear algebra   Spring 2018
  Instructor Effectiveness: 4.24/5,   Dept. Mean: 4.11

- **MAT 228:** Calculus III (Two Sections)   Fall 2017
  Instructor Effectiveness: 4.72/5,   Dept. Mean: 4.0
  Instructor Effectiveness: 4.46/5,   Dept. Mean: 4.0

Northern Illinois University

- **MATH 229:** Calculus-I   Spring 2017
  Instructor Effectiveness: 4.69/5

- **MATH 232:** Calculus-III   Fall 2016
  Instructor Effectiveness: 4.55/5

- **MATH 230:** Calculus-II   Spring 2016
  Instructor Effectiveness: 3.69/5

- **MATH 232:** Calculus-III   Fall 2015
  Instructor Effectiveness: 4.64/5

- **MATH 230:** Calculus-II   Spring 2015
  Instructor Effectiveness: 4.75/5

- **MATH 229:** Calculus-I   Fall 2014
  Instructor Effectiveness: 4.5/5

- **MATH 155:** Pre-calculus   Spring 2014
  Instructor Effectiveness: 3.95/5

- **MATH 109:** Fundamentals of Mathematics II   Fall 2013
  Instructor Effectiveness: 3.93/5

- **MATH 110:** Algebra for College Students   Spring 2013
  Instructor Effectiveness: 3.11/5

The University of Texas Rio Grande Valley

- Calculus I   Summer II 2011

- Pre-calculus   Summer I 2011

- College Algebra   Spring 2011

- Intermediate Algebra   Fall 2010

- College Algebra   Summer II 2010

- Intermediate Algebra   Summer I 2010

Thesis Supervision

- Brian Behrens, Applied Mathematics Major, Expected Graduation - May 2022.

Conferences Organized

- Special session on The Mathematics of Gravity and Light at the Joint Mathematics Meetings (JMM), Baltimore, MD, January 16-19, 2019.

Referee/Reviewer

- Advances in Difference Equations

- Applied Mathematics and Computation

- Applied Mathematics Letters

- Differential Equations and Applications (3)

- FILOMAT (2)

- Kragujevac Journal of Mathematics

- Mathematical Methods in the Applied Sciences

- Transactions of A. Razmadze Mathematical Institute (2)

PROFESSIONAL
SERVICES

- *Graduate Student Advisory Committee (GSAC)*, College of Liberal Arts and Sciences, Northern Illinois University, 2015–16.

- *Graduate Student Representative from GSAC on the University Council*, University Council and Faculty Senate, Northern Illinois University, 2015–16.

- *Graduate Colloquium Committee*, Department of Mathematics, Northern Illinois University, 2013–16.

MEMBERSHIPS

- Member of *American Mathematical Society* (AMS), since Fall 2011

- Member of *Society for Industrial and Applied Mathematics* (SIAM), since Fall 2011