# Aditi Ghosh

Dept of Mathematics
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## Professional Experience

**Assistant Professor**, Texas A&M University, Commerce, Aug 2021

**Assistant Professor**, University of Wisconsin, Whitewater, July-2017- Aug-2021

**Post Doctorate**, University of Idaho, Moscow, Jan-2016-June-2017

**Post Doctorate**, Simon Fraser University, Vancouver, Sept-2014-Aug-2015.

**Lecturer**, Texas A&M University, College Station, Jan 2014-May 2014.

**Graduate Teaching Assistant,** Texas A&M University, College Station, Aug 2008-Dec-2013.

**Graduate Teaching Assistant,** Univ of Texas at Rio Grande Valley, Edinburg, Aug 2006-Dec-2007.

## Education

**Ph.D. Mathematics**, Texas A&M University, College Station, December 2013.
"Title of Dissertation" Fast Algorithms for Biharmonic problems and its Application to Fluid Dynamics. Advisor : Dr. Prabir Daripa.

**M.S Mathematics,** University of Texas at Rio Grande Valley, Edinburg, Aug 2006-Dec-2007.

**M.S Mathematics,** Pure Science Department, Calcutta University, Kolkata- 2003-2005.

**B.S Mathematics,** Minor Physics and Chemistry, Calcutta University, Kolkata-2000-2003.

## Certificates

Certificate of achievement for **STEM** faculty launch participation from Worcester Polytechnique University, 2017.

## Research Interests

My research interest lies in the area of Mathematical and Statistical Modeling, Computational Mathematics with application to Mathematical Biology. My research is driven by problems on public health issues, disease dynamics, epidemic spread and liver mechanism, social issues that requires mathematical formulation for its solution using modeling techniques. I am interested to develop mathematical models to understand different scenarios in areas of mathematical biology and use data to predict outcomes.

## Peer-Reviewed Publication

1. Ghosh, Samiran, Alonso Ogueda-Oliva, **Aditi Ghosh**, Malay Banerjee, and Padmanabhan Seshaiyer. "Understanding the implications of under-reporting, vaccine efficiency and social behavior on the post-pandemic spread using physics informed neural networks: A case study of China." Plos one 18, no. 11 (2023): (Impact Factor-3.7).

2. **Aditi Ghosh**, Pradyuta Padmanabhan, Anuj Mubayi, Pradyuta Padmanabhan" Influence of distinct social contexts of long-term care facilities on the dynamics of COVID-19 spreading under predefined epidemiological scenarios." Computational and Mathematical Biophysics (2023)

3. Olcay Akman, Leon Arriola, Ryan Schroeder, and **Aditi Ghosh**. "Quantum Mechanics for Population Dynamics: A New Approach to Population Dynamics, A Study of Immigration, Emigration and Fission via Quantum Mechanics." Letters in Biomathematics 10 (1), 105–115 (2023): (Impact Factor-0.89)

4. Subrata Dey, Malay Banerjee **Aditi Ghosh** " A mathematical modeling technique to understand the role of decoy receptors in ligand-receptor interaction." Scientific Reports 13, no. 1 (2023): 6523.(Impact Factor-4.99)

5. Olcay Akman, Sudipa Chauhan, **Aditi Ghosh**, Sara Liesman, Edwin Michael, Anuj Mubayi, Rebecca Perlin, Padmanabhan Seshaiyer, and Jai Prakash Tripathi. "The Hard Lessons and Shifting Modeling Trends of COVID-19 Dynamics: Multiresolution Modeling Approach." Bulletin of Mathematical Biology 84, no. 1 (2022): 1-30. (Impact Factor-1.939 )

6. Anuj Mubayi, Abhishek Pandey, Christine Brasic, Anamika Mubayi, Parijat Ghosh, and **Aditi Ghosh**. "Analytical estimation of data-motivated time-dependent disease transmission rate: An application to ebola and selected public health problems." Tropical Medicine and Infectious Disease 6, no. 3 (2021): 141.,(Impact Factor-3.11)

7. Domenica N.Garzon, Yair Castillo, M. Gabriela Navas-Zuloaga, Leah Darwin, Abigail Hardin, Nora Culik, Anji Yang, **Aditi Ghosh** et al. "Dynamics of prion proliferation under combined treatment of pharmacological chaperones and interferons." Journal of Theoretical Biology 527 (2021): 110797 (Impact Factor-2.87)

8. **Aditi Ghosh**, Claire Onsager, Andrew Mason, Leon Arriola, William Lee, and Anuj Mubayi. "The role of oxygen intake and liver enzyme on the dynamics of damaged hepatocytes: Implications to ischaemic liver injury via a mathematical model." PloS one 16, no. 4 (2021): e0230833.(Impact Factor-3.7)

9. **Aditi Ghosh**, Isaac Berger, Christopher H. Remien, and Anuj Mubayi. "The role of alcohol consumption on acetaminophen induced liver injury: Implications from a mathematical model." Journal of Theoretical Biology 519 (2021): 110559. (Impact Factor-2.87)

10. Jeff Sullivan, Jason Shafrin, Oliver Diaz, **Aditi Ghosh**, Anamika Mubayi, Olcay Akman, and Phani Veeranki. "Battling Epidemics & Disparity with Modeling." Letters in Biomathematics 7, no. 1 (2020): 105-110.(Impact Factor-1.2)

11. Ram Singh, Naveen Sharma, and **Aditi Ghosh**. "Modeling assumptions, mathematical analysis and mitigation through intervention." Letters in Biomathematics 6, no. 2 (2019): 1-19.(Impact Factor-1.2)

12. Prajukti Bhattacharyya, Catherine WM Chan, Rocio R. Duchesne, **Aditi Ghosh**, Steven N. Girard, and Jonah J. Ralston. "Course-based research: a vehicle for broadening access to undergraduate research in the twenty-first century." Scholarship and Practice of Undergraduate Research 3, no. 3 (2020): 14-27.

13. **Aditi Ghosh**, and Prabir Daripa. "The FFTRR-based fast decomposition methods for solving complex biharmonic problems and incompressible flows." IMA Journal of Numerical Analysis 36, no. 2 (2016): 824-850. (Impact Factor-3.24)

14. Prabir Daripa, and **Aditi Ghosh**."The FFTRR-based fast direct algorithms for complex inhomogeneous biharmonic problems with applications to incompressible flows." Numer. Algorithms 75, no. 4 (2017): 937-971. (Impact Factor-3.05)

15. **Aditi Ghosh** "Fast Algorithms for Biharmonic Problems and Applications to Fluid Dynamics." PhD diss., 2013

**Publication Book Chapter(peer reviewed) and Technical Report**

1. **Aditi Ghosh**, and Anuj Mubayi. "Beyond Trends and Patterns: Importance of the Reproduction Number from Narratives to the Dynamics of Mathematical Models." In Mathematics Research for the Beginning Student, Volume 2, pp. 265-293. Birkhäuser, Cham, 2022.

2. Emily Friedman , Xin Jin, Xarissa Levine, Ixtaccihuatl Obregn, Tonantzin Real Rojas, Josean Velzquez-Molina, Mugdha Thakur, **Aditi Ghosh** et al. "Minimizing Drug Resistant Cases of Gonorrhea through Cost-Effective Treatment Plans." (MTBI-Technical Report 2019).

**Publication under Review**

1. **Aditi Ghosh**, Anuj Mubayi, Domenica Nicole Garzon "The Transmission Dynamics of COVID-19 in Close-Contact facilities: Differences in Epidemiological Characteristics of Long-term Care, Nursing Home."(2023)

**Publication in preparation**

1. Christiana Beard, Madison Utterback, Priya Kohli **Aditi Ghosh** "A Computational Modeling Approach to Understand the Outcome of Ischaemic Hepatitis" (in preparation)

2. **Aditi Ghosh**, Christine Brasic "Testing the Effect of Acetaminophen Overdose on the Liver and the Role of Biomarkers to Predict Death or Survival" (in preparation).

**Grants**

1. 2023-2024 received AMS-SIMONS grant $10,800 **AMS-Simons Research Enhancement Grant for Primarily Undergraduate Institution (PUI) Faculty.** "Assessment of Biomarkers due to Liver Damage in Ischaemic Hepatitis via Mathematical and Classification Models", March 2023-funded.

2. 2023-2024 submitted NSF grant of $145127.62 **LEAPS-MPS: Launching Early-Career Academic Pathways in the Mathematical and Physical Sciences** titled Testing the Effect of Acetaminophen Overdose on the Liver and the Role of Protein Adduct to Predict Death or Survival, Jan 2023-not funded.

3. 2022-2023 Submitted NSF grant of $31,560 on a Addressing Challenges in Access, Diversity, and Equity at the Applied Mathematics Interface (ACADEMI)-Cross-Institutional Research in Health and Data Science in Biological Ecology Education Research **BEER** Conference-2022.

4. 2021-2022 Submitted grant of $46,000 on Partnerships for Enhanced Engagement In Research **(PEER)** Opportunity For Research Partnerships In Bhutan, May 2021 as US collaborator- not funded.

5. 2020-2021 Submitted $10,000 **WYSIS -Spark Research Grant** as PI on Inclusion of biomarkers in Acetaminophen overdose liver injury, April 2021-not funded.

6. 2020-2021 Submitted grant of $10,000 on **MIDAS Models of Infectious Disease Agent Study**-Supplemental Funding as Co-PI for COVID-19 research, Jan 2021-not funded.

7. 2020-2021 Awarded travel grant of $2000 through **AWM-Association of Women in Mathematics** as PI-Not accepted due to COVID.

8. 2020-2021 Submitted Faculty Development Grant for $12,000 for the **Faculty Development Grant 2019-20** as primary investigator to promote research on suicide prevention-Grant cancelled due to Covid-19 pandemic.

9. 2020 Submitted a grant of $33,500 as PI on a multi PI project on **Fast Funding for Covid-19 Science from Emergent Ventures**- Not funded.

10. 2019-20 Submitted a NSF grant of $43,500 as PI to arrange a workshop on **Research Collaboration Conferences for Women - Women in Mathematical and Data Driven Modeling** -withdrawn due to Covid-19 pandemic.

11. 2019-20 Submitted a NSF grant of $48,500 as Co-PI to arrange an **Annual Workshop-Mathematical Modeling, Data Analytics and Professional Training with Application to Tropical Diseases (MaDAPT-TD workshop) will be held at the University of Puerto Rico at Mayagü ez (UPRM), Puerto Rico from May 19-24, 2020**-withdrawn due to Covid-19 pandemic.

12. 2019-20 Awarded $2,000 for the 2019-20 **Strategic Initiatives Grant to promote Research Across Curricula program** in UWW

13. 2019-20 Awarded $10,000 for **Faculty Initiative for Research/Scholarly/Creative Excellence (FIRE-2019-2000)** as primary investigator for arranging interdisciplinary workshop in summer 2019 at University of Wisconsin, Whitewater.

14. 2019-20 Submitted $7000 for the**Faculty Development Grant 2019-20** as primary investigator to promote research at University of Wisconsin, Whitewater-Not funded.

15. 2018-19 Awarded $2,000 for the 2018-19 **Strategic Initiatives Grant to promote Research Across Curricula program** at University of Wisconsin, Whitewater.

16. 2018-19 Awarded $1,500 for the 2018-19 **Teaching Innovation Grant** to promote research oriented projects in Ordinary Differential Equation at University of Wisconsin, Whitewater.

17. 2018-19 Awarded $2,000 for the 2018-19 **Infusing Research in Curriculum Grant** to promote research in teaching courses.

18. 2018-19 Awarded $1000 for the 2018-19 **Colloquium Grant** to bring speakers to promote Industrial Mathematics at University of Wisconsin, Whitewater.

## Research Talk and Poster Presentations

1. **Aditi Ghosh** poster presentation with Dr.Padmanabhan Seshaiyer, Andrew Jacoby, Claire Hannah, James Hutchinson, Jasmine Narehood, through Cross Institutional Undergraduate Research and Education(CURE) program 2023, Illinois State University an undergraduate research on Mathematical model of climate change lobbying, at the Biology Ecology and Educational Research Conference(BEER), Nov 11, 2023.

2. **Aditi Ghosh** talk presentation with Dr. Padmanabhan Seshaiyer on Parameter estimation of mathematical modeling problems in liver injury using physics informed neural network method, through Cross-institution Undergraduate Research Experience (CURE) June 2023.

3. **Aditi Ghosh** talk presentation with Christiana Beard, Madison Utterback, Priya Kohli "A Computational Modeling Approach to Understand the Outcome of Ischaemic Hepatitis" at Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations (SIMIODE) EXPO Feb 20th 2023.

4. **Aditi Ghosh** poster presentation with Christiana Beard, Madison Utterback, Priya Kohli "Finding a Model to Predict the Outcome of Patients With Ischemic Hepatitis" at the Biology Ecology and Educational Research Conference(BEER), Nov 11, 2022.

5. **Aditi Ghosh** talk presentation on Mathematical "Modeling in Long Term Care facilities" at SIAM Annual Meeting 2022 Mininsymposium titled "Modeling for social good" July 13, 2022.

6. **Aditi Ghosh** Faculty presentation in Cross-institution Undergraduate Research Experience(CURE) titled "Prediction of Ischaemic Liver Injury Using Data" June 7, 2022.

7. **Aditi Ghosh** Invited talk to Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations(SIMIODE) EXPO-2022 titled "It Takes Two to Tango: Building Capacity and Collaboration for Undergrad Research" Feb 12, 2022.

8. **Aditi Ghosh** Keynote speaker at INDIO-US conference titled "The Science Of Mathematical Modeling, and Decision-Making: A Changing Trajectory into the Future, From Past To Post COVID-19 Pandemic", October 28,30, 2021.

9. **Aditi Ghosh** Invited talk as an Expert for Hands on "Mathematical Models on Liver Injury and its Application in R" in Virtual International Workshop on "Pandemic and Socio-Economic Determinants: The Uses, Mathematics and Computations behind the Modeling to inform Decision Makers" February 8-12, 2021.

10. **Aditi Ghosh** with student Ms.Domenica Garzon from Yachay Tech University, talk presentation on The Transmission Dynamics of COVID-19 in Close-Contact facilities: Differences in Epidemiological Characteristics of Long-term Care at **NIMBIOS**-Annual Undergraduate Research Conferences at the Interface of Biology and Mathematics Oct-2020 online.

11. **Aditi Ghosh** with student, Ms.Christine Brasic from University of Wisconsin, Whitewater, poster presentation on Addition of a Fourth BioMarker in the Mathematical Modeling of Liver Injury Due to Acetaminophen overdose at Biology and Ecology Education and Research(**BEER** ) conference Nov 2020 online.

12. **Aditi Ghosh** with Dr.Leon Arriola and Dr.Anuj Mubayi, talk presentation on the Role of Oxygen Intake and Liver Enzyme on The Dynamics of Damaged Hepatocytes; Implication to Ischaemic Liver Injury via Mathematical Models, at Biology and Ecology Education and Research (**BEER** ) conference Oct 2019 at University of Wisconsin La Crosse.

13. **Aditi Ghosh** with Dr.Christopher Remien, talk presentation on the Effect of Alcohol and Acetaminophen Overdose at **Mathematical Association of America Section Wisconsin** conference April 2019 at Carthage College, Kenosha,WI.

14. **Aditi Ghosh** with University of Wisconsin, Whitewater students, poster presentation on Mathematical Modeling of Lake Eutrification in Yahara System.in **University of Wisconsin-Whitewater Fall Research day** March 2019.

15. **Aditi Ghosh** with University of Wisconsin-Whitewater students, poster presentation on Mathematical Modeling of Ischemic liver Injury in **UW-Whitewater Fall Research day** March 2019.

16. **Aditi Ghosh** with Dr.Christopher Remien, talk presentation on the Effect of Alcohol and Acetaminophen Overdose at Biology and Ecology Education and Research (**BEER** )conference Oct 2018 at Arizona State University.

17. **Aditi Ghosh** with Dr.Terrance Pendleton, presented a teaching talk on Predator Prey Modeling under **SIMIODE** Manhatten College, Bronx July-2018, NewYork,

18. **Aditi Ghosh** with Mathematical and Theoretical Biology Institute (**MTBI**) students, poster presentation on Dynamics of Prion Proliferation Under Combined Treatment of Pharmacological Chaperones and Interferons, in Mathematical and Theoretical Biology Institute (**MTBI**), Arizona State University July 2019.

19. **Aditi Ghosh** with Mathematical and Theoretical Biology Institute (**MTBI**) students, poster presentation on Minimizing Drug Resistant Cases of Gonorrhea through Cost-Effective Treatment Plans, at **Arizona State University** July 2019.

20. **Aditi Ghosh** with University of Wisconsin-Whitewater students, poster presentation on Motion of an underwater pendulum used as a renewable energy model in **UW-Whitewater Fall Research day** October 2018.

21. **Aditi Ghosh** with University of Wisconsin-Whitewater students, poster presentation on Tracking an Autonomous Submersible Vehicle in **University of Wisconsin-Whitewater Fall Research day** October 2018.

22. **Aditi Ghosh** with University of Wisconsin-Whitewater students, poster presentation on Predicting Stock Prices in **University of Wisconsin-Whitewater Fall Research day** October 2018.

23. **Aditi Ghosh** with University of Wisconsin-Whitewater students, poster presentation on Predicting the Profit of a Movie After its Box Office Release in **UW-Whitewater Fall Research day** October 2018.

24. **Aditi Ghosh** with University of Wisconsin-Whitewater students, poster presentation on Northwood forest ecosystem and food chain in **University of Wisconsin-Whitewater Spring Research day** March 2018.

25. **Aditi Ghosh** with Dr.Prabir Daripa, poster presentation on Developing Fast Algorithms for a Variable Coefficient Diffusion Equation at **SIAM Annual Meeting** 2014 .

26. **Aditi Ghosh** with Dr.Prabir Daripa, poster presentation in **Banff International Research Station(BIRS) conference in Integral Equations Methods**: Fast Algorithms and Applications, December 2013.

27. **Aditi Ghosh** with Dr.Prabir Daripa, poster presentation on Conductivity Problem and a Fast Method for solution in **SIAM conference on Mathematical and Computational Issues in GeoSciences.** in 2013.

28. **Aditi Ghosh** with Dr.Prabir Daripa, poster presentation on Fast Algorithm to Solve the Biharmonic Problems at **SIAM Annual Meeting 2012**.

29. **Aditi Ghosh** with Dr.Prabir Daripa, poster presentation on Biharmonic Problems and a Fast method to solve in a Unit disc at **Institue of Mathematical Applications(IMA), Career workshop for Women in Mathematics**-2013.

30. **Aditi Ghosh** with Dr.Prabir Daripa, an invited talk on Numerical Solution of Singular Integrals in Complex plane at **SIAM Sectional Meeting** 2016 at Little Rock, Arkansas.

31. **Aditi Ghosh** with Dr.Prabir Daripa, presented a talk on developing Fast Algorithms for a Variable Coefficient Diffusion Equation at **SIAM Annual Meeting** 2014.

32. **Aditi Ghosh** with Dr.Prabir Daripa, Co-organizer and speaker of a minisymposium in the **SIAM conference on Computational Science and Engineering** Feb-2013.

33. **Aditi Ghosh** with Dr.Prabir Daripa, presenting a talk on Singular Integrals at the **Graduate Student Seminar GSO** of Texas A&M University Nov 2012.

34. **Aditi Ghosh** with Dr.Kamal Sarkar, presented a talk on Mathematical Model for Electro Spinning Process at the **87th Annual Texas Section Meeting Mathematical Association of America,** April 12-14 2007.

35. **Aditi Ghosh** with Dr.Mircea Voeisei, presented a talk on Characterization of Compact Spaces at the **87th Annual Texas Section Meeting Mathematical Association of America**, April 12-14 2007.

36. **Aditi Ghosh** with Dr.Lokenath Debnath, presentation of Master thesis at student presentation at University of Texas at RioGrande Valley.

37. **Aditi Ghosh** with Dr.Debnath, poster presentation on wavelets at **Hispanic Engineering, Science, and Technology (HESTEC), The University of Texas Rio Grande Valley(UTRGV) 2007**.

**Student Research Project Mentor**

**Andrew Jacoby, Claire Hannah, James Hutchinson, Jasmine Narehood,**(Cross Institutional Undergraduate Research and Education(CURE) program 2023, Illinois State University) undergraduate research- Mathematical model of climate change lobbying, 2023.

Mentor of **Christiana Beard, Madison Utterback**(Cross Institutional Undergraduate Research and Education(CURE) program 2022, Illinois State University)undergraduate research- Analysing statistical models for real patient data with Ischaemic Hepatitis, 2022, 2023.

Mentor of **Domenica Nicole Garzon**, (Yachay Tech University) undergraduate research-A COVID-19 Epidemic Model with Distinct Social Contexts: An application to long-term care facilities,2021,2022.

Mentor of **Caitlin Siebel**,(University of Wisconsin-Whitewater) undergraduate research for Science Undergraduate Research Fellowship(SURF)-Modeling the effect of COVID-19 in long term care faciitiies, 2020.

Mentor of **Christine Brasic**,(University of Wisconsin-Whitewater) undergraduate research-Modeling the effect of Protein Adduct formation and Assessing Liver Injury due to Acetaminophen Overdose-Summer 2019, SURF Scholarship, FIRE Scholarship and independent research, presented in Wisconsin Section MAA April 2019.

Mentor of **Claire Onsager, Andrew Mason** at University of Wisconsin-Whitewater on undergraduate research-Understanding the role of oxygen intake and modeling Ischaemic Liver Injury-presented in Wisconsin Section Mathematical Association of America(MAA) April 2019.

Mentor of **Matthew Club, Evan Seghers** University of Wisconsin-Whitewater on undergraduate research-Modeling of Lake Eutrophication in the Yahara System-presented in Wisconsin Section Mathematical Association of America(MAA) April 2019 under FIRE Scholarship Summer 2019, SURF Scholarship 2020.

Mentor of **Student Group** Lead a research group of five students in Minimizing Drug Resistant Cases of Gonorrhea through Cost-Effective Treatment Plans at Mathematical Theoretical Biology Institute (MTBI)-2019 (REU program in Applied Mathematics)

Co-Mentor of **Student Group** of five students in Dynamics of Prion Proliferation Under Combined Treatment of Pharmacological Chaperones and Interferons, at Mathematical Theoretical Biology Institute (MTBI)-2019 (REU in Applied Mathematics)

Mentor of **Morgan Butler, Conner Yass** (University of Wisconsin-Whitewater) undergraduate research on Predator-Prey Population Dynamics first Adirondack State Park-which won the first prize in University of Wisconsin-Whitewater research day-March-2018.

## Committee and Thesis Mentor

Thesis Mentor of **Collins Ofori**(Texas A&M University-Commerce) graduate research-Understanding time distribution in a SEIR Mathematical model for Covid-19 in Texas, 2023.

Committee member of **Emmanuel Acquah**(Texas A &M University-Commerce) graduate research-Generation of DNA codes from abelian groups, 2023.

Committee member **Megdam Chowdhury**(Texas A &M University-Commerce) Generation of DNA codes from Dihedral groups, 2023.

Committee member of **Atikatu Akilu**(Texas A &M University-Commerce)graduate research- Modeling Covid -19 Mortality data using the zero inflated Poisson(ZIP) and zero Inflated Binomial(ZIB), 2022.

## Selected Conference and Workshop

**SIMIODE EXPO** Systemic Initiative for Modeling Investigations and Opportunities in Differential Equations 2021,2022.

**JMM** Joint Mathematics Meeting 2020.

**BEER** International Symposium on Biomathematics and Ecology Education and Research Oct-2019 2020,2021, 2022,2023.

**MTBI** The Mathematical and Theoretical Biology Institute (MTBI) -Summer REU Workshop mentoring June-July 2019.

**CURE** Cross-Institutional Undergraduate Research Experience workshop-May 2019

**BEER** International Symposium on Biomathematics and Ecology Education and Research Oct-2018.

**MINDE** Model Instructors in Differential Equations Workshop in Manhatten College,Bronx July-2018.

**MMBC** Midwest Mathematical Biology Conference, May-2018.

**Section NEXT MAA** Mathematical Association of America meeting Nov-5-2017.

SIAM Society of Industrial and Applied Mathematics-Sectional Meeting Oct-2016.

WPI Worcester Polytechnic Institute Stem Faculty Launch program Sept-2016.

SIAM Society of Industrial and Applied Mathematics- Annual Meeting July-2014.

SIAM Society of Industrial and Applied Mathematics-Conference on Computational Science and Engineering Feb-2013.

JMM Joint Mathematics Meetings, 2013.

SIAM Society of Industrial and Applied Mathematics Annual Meeting 2012, Minneapolis, July 2012.

Mathematical Modeling in Industry workshop, Canada, June 2012.

Linux Workshop at Texas A& M University, June 2012.

Large-scale Inverse Problems and Quantification of Uncertainty at Institute of Mathematical Association (IMA), June 6-10 2011.

SACNAS National Conference, October 2010.

Applied Probability Workshop at Texas A&M University,Summer 2010.

Career workshop for underrepresented Groups in Mathematical Sciences, March 25-27 2010.

International Symposium on Pure and Applied Mathematics (ISPAM),Calcutta Mathematical Society India, December 2004.

## Honors and Awards

1. Awarded **AWM-Association of Mathematics** Travel Grant-2021.

2. MathAlliance Mentor, **The National Alliance for Doctoral Studies in the Mathematical Sciences**, Purdue University, W. Lafayette-2019-`https://mathalliance.org/mentor/aditit-ghosh/`

3. Faculty Mentor of the Presidential Award Winning Program **MTBI The Mathematical and Theoretical Biology Institute** -Summer **REU** Workshop mentoring June-July 2020.

4. Awarded summer undergraduate research fellowship (**SURF**) from UW-Whitewater for summer 2020 for two undergraduate students Ms. Caitlin Siebel, Mr. Matthew Clubb.

5. Faculty Mentor of the Presidential Award Winning Program **MTBI The Mathematical and Theoretical Biology Institute** -Summer **REU** Workshop mentoring June-July 2019.

6. Awarded Faculty Initiative for Research/Scholarly/Creative Excellence (**FIRE-2019-2000**) grant 2019.

7. Awarded summer undergraduate research fellowship (**SURF**) from UW-Whitewater for summer 2019 for an undergraduate student Ms. Christine Brasic.

8. Coached students to win the top prize in undergraduate **STEM** research day in UWW, March 2018.

9. Got selected for **ACUE** Course in Effective Teaching Practices from UWW, March 2018.

10. Awarded **AWM** travel award for the SIAM Annual Meeting, July 2014 and won a runner up award in Poster Competition from AWM.

11. Awarded **SIAM** (Society of Industrial and Applied Mathematics)student travel award, Spring 2013.

12. Awarded **AWM** (Association of Women in Mathematics)travel award for the Joint Math Meeting, Jan 2013.

13. Awarded **SIAM** (Society of Industrial and Applied Mathematics)student travel award, Summer 2012.

14. Awarded **International Scholarship** at Texas A&M University, Summer 2011.

15. Awarded **Teaching Assistant** at Texas A&M University, Aug 2008-2013.

16. Awarded **Teaching Assistant and Research Assistant** at University of Texas at Pan America Aug 2006-Dec 2008.

17. Awarded **Teaching Assistant** at Southern Illinois University Fall 2008.

18. Awarded **The General Proficiency Medal** : Best Academic Performance in Mathematics in Undergraduate Program at Bethune College, May 2003.

19. Awarded a medal for obtaining highest in Bengali **ICSE** in Asansol 1999.

**Professional Service**

## Reviewer

Reviewed Abstracts from **Models of infectious disease agent study (MIDAS)** Network Annual Meeting 2023.

Reviewed manuscript "Modelling the impact of limited hospitalisation on the transmission of Ebola virus disease" for **Mathematical Methods in the Applied Sciences** 2023.

Reviewed manuscript "Physics-Informed Neural Networks for Informed Vaccine Distribution in Meta-Populations" for **Journal of Machine Learning for Modeling and Computing** 2023

Reviewed manuscript " The Science of Mathematical Modeling and Decision Making: A Changing Trajectory into the Future, From Past to Post COVID-19 Pandemic - A Review"" for **Computational and Mathematical Biophysics** 2022

Reviewed manuscript "Correlating changes in Covid-19's transmission parameter with the 'stringency index' of government measures."**PLOS ONE**, 2021

Reviewed manuscript "A mathematical model of the dynamics of lymphatic filariasis in Caraga Region, the Philippines" for **Royal Society Open Science**, 2021

Reviewed manuscript "Dynamical Analysis, Optimum Control and Pattern formation in the biological pest (EFSB) control model" for **Chaos, Solitons & Fractals**, 2020

Reviewed manuscript "Staged progression epidemic models for the transmission of invasive nontyphoidal Salmonella (iNTS) with treatment " for **Mathematical Biosciences and Engineering**, 2020

Associate Reviewer of **Letters in Biomathematics**, 2020 `https://about.illinoisstate.edu/lettersinbiomath/covid-19/covid-19-editors/`.

Reviewer for the Proceedings of the National Conferences on Undergraduate Research **(NCUR)** 2020.

Reviewed manuscript "Spatio-temporal Evolution of Visceral Leishmaniasis Disease and Its Relationship with Geographical and Social Factors in Kashi Prefecture, China" for **PLOS ONE**, 2020.

Technical reviewer for the Ignite Grant Program (formerly ARG) administered by UW System administration in collaboration with **WiSys**, 2020, 2021.

Reviewed manuscript DGEM.2019.0016 entitled "Biosurveillance of Climate Sensitive Mosquito-Borne Diseases Using Online Social Media" for **Epidemiologic Methods**, 2019 .

Reviewed manuscript "Progression Dynamics of Chikungunya, Dengue and Zika virus infections with optimum control measures." in **Letters in Bio-Mathematics**, 2019.

## Judge

Guest Editor for the Indo-US Conference -Modeling for covid-19 decision making in health policy evaluation, 2021.

Judge for **SCUDEM** Lite 2020 a part of the Intermountain Mathematical Association of America(MAA) Section meeting at Westminster College, Salt Lake City US USA, on 27-28 March 2020.

Invited Judge for graduate poster session in **AWM JMM**(Association of Mathematics in Joint Math Meeting)2019, 2020.

Judge in **The Fort Atkinson Science Fair** Feb 2019.

Triage Judge to The **Interdisciplinary Contest in Modeling (ICM)** 2019 an international modeling competition to judge student's solution paper.

Judge in **SIMIODE** Challenge Using Differential Equation Modeling **SCUDEM** April 2018 in University of Wisconsin-Whitewater.

Judge in **SIMIODE** Challenge Using Differential Equation Modeling **SCUDEM** October 2018 in University of Wisconsin-Whitewater.

Judge in **The Fort Atkinson Science Fair** Jan 2018.


## Organizer

1. Co-organized and moderated a session for 17th Annual Symposium on **Biomathematics and Ecology Education and Research (BEER 2023) on ASPIRE :Advancing Sustainable Partnerships Integrating Research and Education** speakers included Drs. Ami Radunskaya, Maria Emelianenko, Adriana Dawes, and Ritambhara Singh.

2. Co-organized and moderated a session for 15th Annual Symposium on **Biomathematics and Ecology Education and Research (BEER, e-BEER 2022) on Addressing Challenges Access,Diversity, and Equity at the Applied Mathematics Interface (ACADEMI)** - Cross-Institutional Research in Health and Data Science, speakers included Laxmi Parida, Maia Martcheva, Dr. Elebeoba May, & Marcella Torres, November 11–13, 2022 `https://about.illinoisstate.edu/beer/`

3. Co-organized and moderated a session in **Association of Women in Mathematics (AWM)** research symposium 2022 on "Adaptive Mitigation and Intervention Strategies of Emerging Infectious Diseases, Modeling, Outcomes and Learning for the Future" with speakers Drs. Joanna Wares, Zilan Feng, Asma Azizi, Jiang Yi

4. Co-organized and moderated a session for 14th Annual Symposium on **Biomathematics and Ecology Education and Research (BEER, e-BEER 2021)** on Approaches and Diversity in Applied Mathematics Interface - Health and Data Science: Lessons learned from COVID-19 Pandemic, speakers included Carmen Caiseda, Megan Powell, Teresa, Ramirez, & Suzanne Sindi, November 12–14, 2021 `https://about.illinoisstate.edu/beer/`

5. Co-organizer for **Cross Institution Undergraduate Research Experience** program 2021, 2022 `https://about.illinoisstate.edu/iba/cure/ https://sites.google.com/view/studentcure2021/organizers?authuser=0`

6. Co-organizer for **Biomathematics and Ecology Education and Research BEER** conference 2020, 2021
`https://about.illinoisstate.edu/beer/contact/`

7. Co-organizer for **Online SIMIODE(Systemic Initiative for Mathematical Modeling) EXPO** Conference in February 2021, 2022
`https://www.simiode.org/simiodexpo2021`

8. Co-organizer for a webinar series in **Battling Emerging and Re-emerging Epidemics & Mitigating Strategies**: Webinar Series-2020 `https://about.illinoisstate.edu/iba/events/webinar/` , `https://sites.google.com/view/bereedms-series/home`

9. Organizer of an invited session on Disease Modeling for **Biomathematics and Ecology Education and Research BEER-**2019.

10. Organized student group in Mathematics Department to take part in **International Competition on Modeling ICM/MCM** competition and was also a mentor to them, 2019.

11. Organizer of the Mathematical Modeling club in Mathematics Department, 2018.

12. Hosted and organised **SCUDEM**(SIMIODE Challenge Using Differential Equations Modeling) in Oct 27th 2018 at UW Whitewater- Mathematics Department.

13. Hosted **SCUDEM** (SIMIODE Challenge Using Differential Equations Modeling) at UW Whitewater-Mathematics Department and coached students to win the first place in UWW, April 2018.

14. Co-Organizer along with Dr. Prabir Daripa of a Minisymposium on Fast Algorithms for Integral Equations Methods and Their Applications, **SIAM-CSE** bi-annual conference, Boston, (Feb 25 - March 1, 2013).

## Media Reports

Featured in SIAM News 2022 titled 'Addressing Challenges in Access, Diversity, and Equity at the Applied Mathematics Interface'
`https://tinyurl.com/jtfpzjcj`

Featured in SIAM News 2022 titled 'Mathematical Modeling for Social Good: COVID-19 in Long-term Care Facilities'
`https://tinyurl.com/ye26v23h`

Featured in SIAM News 2021 titled 'Leveraging Diversity and Building Capacity for Sustained Collaboration'
`https://tinyurl.com/bde3t94b`

Featured in SIAM News 2021 titled 'A Solution Tool for Clinical Challenges in the Prognosis of Liver Injury'
`https://tinyurl.com/2p8nfjmx`

Featured in UW-W newletter 2021 for undergraduate research mentorship.
`https://tinyurl.com/44v4sfzx`

Featured in Wisconsin Section of Mathematical Associatiton of America Fall 2020.
`http://sections.maa.org/wisconsin/news/MAAWINewsFall20.pdf`

Poster presentation competition in Joint Mathematics Meeting-2013 was reported in **Association for Women in Mathematics(AWM)** - Volume 43, No. 2 , MARCH-APRIl 2013.

Award of runner up in **SIAM-AWM** poster presentation for graduate students was reported in **Association for Women in Mathematics(AWM)** -Volume 44, No. 5, SEPTEMBER-OCTOBER 2014.

## Committee

Leading UW-W in **UW System Math Initiative** Summer 2021.

Committee member of the **Faculty Senate** in UW-Whitewater-2020-2021.

Committee member of the **International Learning and Education committee** in UW-Whitewater-2019,2020.

Committee member of the **Barry Goldwater scholarship** in UW-Whitewater-2019.

**Scholarship committee** member in UW-Whitewater, Mathematics department.

**Colloquium committee** member in UW-Whitewater, Mathematics department.

Organizer of **Math Modeling club** and research based course in the UW-Whitewater, Mathematics department 2018.

Organizer of the **Graduate Student Organization** at Texas A&M University, where my job was to arrange speakers for the seminar and maintain the calendar.

**Teaching Interest**

I am currently teaching in Univ of Wisconsin, Whitewater as an Assistant Professor. I teach various levels of Calculus courses and Applied Mathematics courses like Mathematical Modeling and Simulations, Ordinary Differential Equations. I have worked as a lecturer in Texas A&M University and also taught as an instructor at Simon Fraser University, Vancouver.

**Teaching Assistant and Grading Experience**

| Courses | Semester | Level | University |
|---|---|---|---|
| Differential Equation(601) | Grader in Fall 2008 | Undergraduate | Texas A& M Univ |
| PreCalculus Math(150) | T.A in Spring 2009 | Undergraduate | Texas A& M Univ |
| Web based Linear Algebra | T.A in fall 2009 | Undergraduate | Texas A& M Univ |
| Calculus (151) | T.A in Spring 2010 | Undergraduate | Texas A& M Univ |
| Numerical Analysis(609) | T.A in Fall 2010 | Graduate | Texas A& M Univ |
| Numerical Analysis(609) | T.A in Spring 2011 | Graduate | Texas A& M Univ |
| Numerical Analysis(417) | T.A in Fall 2011 | Undergraduate | Texas A& M Univ |
| Advanced Calculus(152) | T.A in Spring 2012 | Undergraduate | Texas A& M Univ |
| Numerical Analysis(610) | T.A in Fall 2012 | Graduate | Texas A& M Univ |
| Partial Differential Equation(602) | Grader in Fall 2013 | Undergraduate | Texas A& M Univ |

**Teaching Experience**

**Assistant Professor in Texas A&M Commerce.**

Math 2320, **Differential Equations**, Instructor in Fall 2021, Spring 2022, Texas A & M Commerce.

Ordinary differential equations, including linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods,and boundary value problems; application of differential equations to real-world problems.

Math 317, **Numerical Analysis**, Instructor in Fall 2021,Texas A & M Commerce.

Computer algebra systems will be introduced. Topics include methods for approximate solutions of equations in one variable, polynomial approximation methods, numerical calculus, numerical solutions to ordinary differential equations, linear systems of equations, and difference equations.

Math 2413, **Calculus-1**, Instructor in Fall 2021,2022, Texas A & M Commerce.

Limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas.

Math 1314, **College Algebra**Instructor in Fall 2022, Texas A & M Commerce.

Applications of quadratics, polynomial, rational, exponential and logarithmic functions, and systems of equations, arithmetic and geometric progressions; sequences and series; and matrices and determinants.

MATH 1332 **Contemporary Mathematics**Instructor in Fall 2022, Texas A & M Commerce.

Introductory treatments of sets and logic, financial mathematics, probability and statistics with appropriate applications. Number sense, proportional reasoning, estimation, technology, and communication should be embedded throughout the course.

 **Assistant Professor in University of Wisconsin-Whitewater.**

Math 143 **Business Math**, Instructor in Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019, Univ of Wisconsin, Whitewater.

Mathematical preparation for the understanding of quantitative methods in management and social sciences. Topics include sets, relations, linear functions, interest, annuities, matrices, solution of linear systems by graphical, algebraic, Gauss-Jordan, and inverse methods, linear programming by graphical and simplex methods, counting and probability. College of Business and Economics majors must take this course on a conventional grade basis.

Math 381, **Mathematical Modeling**, Instructor in Spring 2018, Spring 2019, Spring 2020, Sprig 2021, Univ of Wisconsin,Whitewater.

Modeling involving formulation of deterministic, stochastic and rule-based models and computer simulation in order to make predictions. Topics may include unconstrained and constrained growth models, equilibrium and stability, force and motion, predator-prey model, enzyme kinetics, data-driven models, probability distributions, Monte Carlo simulations, random walk, diffusion, cellular automaton simulations, and high performance computing.

Math 253, **Calculus 1**, Instructor in Fall 2017,Fall 2020, Univ of Wisconsin,Whitewater.

Review of algebraic and trigonometric functions, transcendental functions, limits, study of the derivative, techniques of differentiation, continuity, applications of the derivative, L' Hopital's Rule and indeterminate forms, the Riemann integral, Fundamental Theorem of Calculus, and substitution rule.

Math 361, **Ordinary Differential Equations**, Instructor in Fall 2018, Fall 2019 Univ of Wisconsin, Whitewater.

Ordinary Differential Equations: general theory of linear equations, special methods for nonlinear equations including qualitative analysis and stability, power series and numerical methods, and systems of equations. Additional topics may include transformation methods and boundary value problems. Applications stressed throughout.

Math 152, **PreCalculus**, Instructor in Summer 2017, Spring 2019, Fall 2019, Spring 2020, Spring 2021, Univ of Wisconsin,Whitewater.

Study of polynomial, radical, rational, piecewise, exponential, logarithmic, and trigonometric functions, including basic graphs, transformations, inverses, and combining functions; solving equations and inequalities both algebraically and graphically is explored. In addition, trigonometric functions are studied through the unit circle and right triangle approaches. Also studied are vectors, trigonometric identities, trigonometric equations, and polar coordinates.

Math 150, 142 **College Algebra**, Instructor in Fall 2019, Fall 2020, Spring 2021, Univ of Wisconsin,Whitewater.

Study of polynomial, radical, rational, piecewise, exponential, logarithmic, and trigonometric functions, including basic graphs, transformations, inverses, and combining functions; solving equations and inequalities both algebraically and graphically is explored.

Math 151, **Trignometry**, Instructor in Summer 2020, Fall 20120, Univ of Wisconsin,Whitewater.

Trigonometric functions are studied through the unit circle and right triangle approaches. Also studied are vectors, trigonometric identities, trigonometric equations, and polar coordinates.

### Sessional Instructor at Simon Fraser University, Vancouver, Canada

Math X99, **FAN** course, Instructor in Fall 2014, Spring 2015, Summer 2015, Simon Fraser Univ, Vancouver, Canada.

Designed for students who need to upgrade their mathematical background in preparation for SFU Q courses. Also recommended for students who wish to refresh skills after several years away from mathematics. An in-depth look at what mathematics is; mathematical reasoning, problem solving and math study skills. Review of fundamental topics and concepts of mathematics and their real-world applications. This course aims to develop students' math study skills, confidence in their quantitative abilities, and to learn how understanding mathematics is both one of the keys to mastering other disciplines, and useful in everyday situations. Units from this course do not count towards the 120 units required for an SFU degree; however, the course grade is included in the calculation of the student's cumulative GPA.

### Lecturer at Texas A&M University, College Station, U.S.A

Math 167, **Explorations in Mathematics**, Instructor in Spring 2014 in Texas A&M University, College Station.

Application of mathematics to topics of contemporary societal importance using quantitative methods; may include elements of management science (optimal routes, planning and scheduling), statistics (sampling/polling methods, analyzing data to make decisions), cryptography (codes used by stores, credit cards, internet security), fairness (apportionment, voting) patterns (symmetry, tessellations, fractals,), world health.

### Instructor of record at University of Texas at Rio-Grande valley, U.S.A

Math 0320, **Intermediate Algebra** ,Instructor in Fall 2006, Fall 2007, Spring 2007, Sum 2007.

A course in algebra designed to prepare the student for College Algebra or the equivalent. Topics include factors of polynomials; rational expressions; radical expressions; an introduction to complex numbers, quadratic equations, rational equations, radical equations and elementary inequalities. This course may not be used to satisfy any University core curriculum requirements. Co/Prerequisites: TSI Assessment score 336-349 and with PROFICIENT in Elementary Algebra or PROFICIENT in Intermediate Algebra or MATH 0310 with minimum grade RC.

### Lecturer Sarada Devi College, Kolkata, India

**Linear Algebra**, Instructor in Spring 2005.

Topics include systems of linear equations, matrices and their algebraic properties, determinants, vectors, Euclidean n-space, linear transformations and their matrix representations, vector spaces, eigenvalues and eigenvectors, and applications to the sciences and business. Use of mathematical technology will be incorporated throughout the course.

**Affiliations**

Mentor for female students in Association of Women in Mathematics(AWM).

MathAlliance Mentor, The National Alliance for Doctoral Studies in the Mathematical Sciences. `https://mathalliance.org/mentor/aditit-ghosh/`

University of Wisconsin, Whitewater enhanced membership of Council of undergraduate research-CUR.

Member and mentor of Council of Undergraduate Research Experience(CURE), Intercollegiate BioMathematics Alliance-IBA.

Member of American Mathematical Society (AMS) since Fall 2006.

Member of Society for Industrial and Applied Mathematics (SIAM) since Fall 2009.

**Computational Skill**

Programming Languages          Matlab, R,   C

**Application**

LaTeX, TeX.

**Personal**

Nationality: Indian

Sex: Female

Language: English, Hindi, Bengali(Native language)

VISA status: H1.

**References**

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Associate Professor at University of Wisconsin, Whitewater
email: arriolal@uww.edu

Dr. Anuj Mubayi
Distinguished IBA Fellow at Illinois State University
email: amubayi@ilst.edu

Dr. Christopher Remien
Associate Professor at University of Idaho
email: cremien@uidaho.edu