ISANKA GARLI HEVAGE

Department of Mathematics and Computer Sciences
Central State University
1400 Brush Row Road, Wilberforce, OH 45384

EDUCATION

- **Doctor of Philosophy in Mathematics** 08/2023
  Dept. Math. & Stat., Texas Tech University
  Dissertation Title :*The Einstein Paradigm for Nonlinear Flows in Porous Media*
- **Master of Science in Mathematics** 05/2020
  Dept. Math. & Stat.,Texas Tech University
- **Bachelor of Science (Special) in Mathematics** 12/2015
  Dept. Math., University of Sri Jayewardenepura, Sri Lanka
  Minors in Computer Science and Physics
  Dissertation : *Mathematical Visualization with Sweeping-Tangent Method*

PROFESSIONAL EXPERIENCE

- **Tenure-track Assistant Professor** 01/2025-Present
  Dept. Math. & Comp. Sciences, Central State University, Ohio
- **Visiting Assistant Professor** 08/2023-12/2025
  Dept. Math. & Stat., Sam Houston State University, Texas
- **Graduate Instructor/Teaching Assistant** 08/2018-07/2023
  Dept. Math. & Stat., Texas Tech University, Texas
- **Lecturer** 02/2017-07/2018
  Dept. Math., University of Moratuwa, Sri Lanka
- **Teaching Assistant** 01/2016-12/2016
  Dept. Math., University of Sri Jayewardenepura, Sri Lanka

RESEARCH INTERESTS

- Partial Differential Equations
- Nonlinear Dynamical Systems with Distributed Parameters
- Einstein's Paradigm of Brownian Motion
- Stochastic Processes and Industrial Mathematics

PUBLICATIONS

- Hevage, I. G., Ibraguimov, A., & Sobol, Z. *An Iterative Energy Estimate for Degenerate Einstein Model of Brownian Motion* (pp. 1–26). Preprint : https ://arxiv.org/pdf/2206.15411
- Hevage, I. G., Ibraguimov, A., & Sobol, Z. (2024). *Stability Analysis of Degenerate Einstein Model of Brownian Motion*. American Journal of Applied Mathematics, 12(5), 118–132. https ://doi.org/10.11648/j.ajam.20241205.12
- Ibragimov, A., Sobol, Z., & Hevage, I. G. (2023). *Einstein's Model of the Movement of Small Particles in a Stationary Liquid Revisited : Finite Propagation Speed*. Turkish Journal of Mathematics, 47(3), 934–948. https://doi.org/10.55730/1300-0098.3404
- Christov, I. C., Hevage, I. G., Ibragimov, A., & Islam, R. (2023). *Nonlinear Einstein Paradigm of Brownian Motion and Localization Property of Solutions*. Mathematical Methods in the Applied Sciences, Advance online publication, 1–19. https://doi.org/10.1002/mma.9220

- Islam, R., Ibragimov, A., & Hevage, I. G. (2022).*Einstein's Degenerate Brownian Motion Model for the Chemo-Tactic System : Traveling Band and Localization Property.* In Proceedings of The 8th International Conference on Control and Optimization with Industrial Applications (Vol. 1, pp. 240–242).http://coia-conf.org/upload/editor/files/COIA2022_V1.pdf
- Hevage, I. G., & Ibragimov, A. (2022). *Finite Speed of Propagation in Degenerate Einstein-Brownian Motion Model.* Journal of the Korean Society for Industrial and Applied Mathematics, 26(2), 108–120. https://doi.org/10.12941/jksiam.2022.26.108

CONFERENCE PRESENTATIONS

- Hevage, I. G., Ibragimov, A., & Sobol, Z. (2022). *Einstein's Model of the Movement of Small Particles Revisited.* 5th Annual Meeting of the SIAM Texas-Louisiana Section, University of Houston. https://www.math.uh.edu/siamtxla22/resources/booklet.pdf
- Hevage, I. G. (2022). *Stability Analyses of Nonlinear Einstein Model of Brownian Motion.* SIAM Graduate Student Research Day, Texas Tech University.
- Hevage, I. G., Ibragimov, A., & Sobol, Z. (2022). *Stability analyses of nonlinear Einstein model of Brownian motion.* International Workshop on Applications of Geometric Methods of Functional Analysis-AGMFS, University of Texas at Dallas. https://personal.utdallas.edu/~oxm130230/analysis2022/
- Islam, R., Ibragimov, A. (Presenter), & Hevage, I. G. (2022). *Einstein's Degenerate Brownian Motion Model for the Chemo-Tactic System : Traveling Band and Localization Property.* The 8th International Conference on Control and Optimization with Industrial Applications, Baku State University, Azerbaijan. http://coia-onf.org/upload/editor/files/program_COIA22.pdf
- Hevage, I. G., & Ibragimov, A. (2022). *Einstein Material Balance Equation to Model Fracture in Petroleum Engineering.* 21st Graduate Research Competition, Texas Tech University.
- Hevage, I. G., Ibragimov, A., & Sobol, Z. (2021). *On the Finite Speed of Propagation for Degenerate Einstein Equation.* 4th Annual Meeting of the SIAM Texas-Louisiana Section, University of Texas Rio Grande Valley. https://faculty.utrgv.edu/eleftherios.gkioulekas/2021-siam-txla-meeting-spi/program/abstracts.pdf
- Hevage, I. G., Ibragimov, A., & Padgett, J. L. (2021). *On Einstein-Brownian Flow Between Porous Media and Fracture with Local and Nonlocal Conditions on the Fracture.* 4th Annual Meeting of the SIAM Texas-Louisiana Section, University of Texas Rio Grande Valley. https://faculty.utrgv.edu/eleftherios.gkioulekas/2021-siam-txla-meeting-spi/program/abstracts.pdf
- Hevage, I. G., Ibragimov, A., & Padgett, J. L. (2021). *Einstein-Brownian Motion with Singularity and Fractional Laplacian on the Boundary.* Modeling in a Heterogeneous World-XVIII Red Raider Mini-symposium, Texas Tech University. https://www.math.ttu.edu/conferences/rr2021/program.html
- Hevage, I. G., Ibragimov, A., & Sobol, Z. (2021). *The Finite Speed of Propagation in Degenerate Einstein-Brownian Motion.* AMS Spring Western Sectional Meeting 1167, Special Session on Nonlinear PDEs and Fluid Dynamics - III, San Francisco State University. http://www.ams.org/amsmtgs/2282_abstracts/1167-35-187.pdf
- Hevage, I. G., & Ibragimov, A. (2020). *Localization Property of Einstein's Model with Drift and Reaction.* 3rd Annual Meeting of the SIAM Texas-Louisiana Section, Texas A & M University, Texas, United States.https://www.math.tamu.edu/conferences/SIAMTXLA/activity_schedule.html#posters_I

- Hevage, I. G., & Ibragimov, A. (2020). *Einstein-Brownian Paradigm in Porous Media with Three-Zone Filtration*. The 19th Graduate Student Research (GSR) Competition, Texas Tech University.
- Hevage, I. G., & Ibragimov, A. (2019). *Localization in Time and Space for Degenerate Einstein's Brownian Motion Model*. SIAM Conference on Analysis of Partial Differential Equations (PD19), California. https://meetings.siam.org/sess/dsp_talk.cfm?p=103703
- Hevage, I. G. (2019). *Localization in Time and Space for Degenerate Einstein-Brownian Motion Model*. The SIAM Graduate Student Research Day, Texas Tech University.
- Hevage, I. G., Ganegoda, N., & Lanel, G. H. J. (2016). *Mathematical Visualization with Mamikon's Sweeping-Tangent Method*. International Industrial Mathematics Conference (I2MC-I), University of Sri Jayewardenepura, Sri Lanka.

SEMINAR TALKS

- Hevage, I. G. (2023). *The Einstein Paradigm for Nonlinear Flows in Porous Media*. Analysis Seminar, Department of Mathematics & Statistics, Sam Houston State University.
- Hevage, I. G. (2021). *An Iterative Energy Estimate for Degenerate Einstein Model of Brownian Motion*. Analysis Seminar, Dept. of Mathematics & Statistics, Texas Tech University.
- Hevage, I. G. (2020). *Localization Property of Einstein's Model with Drift and Reaction*. Applied Mathematics Seminar, Department of Mathematics & Statistics, Texas Tech University.
- Ibragimov, A. (Presenter), Hevage, I. G., & Islam, R. (2020). *Nondivergent Equations with Double Degeneracy in View of the Einstein Paradigm for Brownian Motion*. Applied Mathematics Seminar, Department of Mathematics & Statistics, Texas Tech University.

AWARDS/FELLOWSHIPS/SCHOLARSHIPS

- SIAM Graduate Scholarship, Texas Tech University (TTU) 2022-2023
- 5th Annual Meeting of SIAM Texas-Louisiana Travel Award, TTU 2022
- Departmental Summer Scholarship, TTU 2022
- AGMFS Conference Travel Award, TTU 2022
- College of Arts & Sciences Create Possible Scholarship Award, TTU 2022
- Graduate School Competitive Travel Award, TTU 2021
- 4th Annual Meeting of SIAM Texas-Louisiana Conference Travel Award 2021
- Shelby Hildebrand Fellowship, TTU 2021
- 19th Graduate Poster Competition 2nd Place Award (Math/Phy-Sci/Eng), TTU 2020
- PD-19 Conference Travel Award, TTU 2019

RESEARCH ASSISTANT/MENTORSHIP EXPERIENCE

Research Assistant of Research Experiences for Undergraduates (REU) program : *Mathematical, Statistical, and Computational Methods for Problems in the Life Sciences*, funded by National Science Foundation (NSF) in conjunction with Texas Tech University, 2021. https://www.math.ttu.edu/undergraduate/reu2021/

— Mentored Zac Bergeron (Kansas State University) on the project *Finite speed of propagation in one-dimensional degenerate Einstein-Brownian motion model*. https://www.math.ttu.edu/undergraduate/reu2021/Poster_3.pdf

— Utilized the generalization of Einstein's paradigm of Brownian motion when the time interval of *freejump* depends on the concentration and vanishes as concentration unboundedly increases.

— Derived system of one-dimensional degenerate nonlinear partial differential equations.

— Proved finite speed of propagation of the system, using the construction of Christov-**Hevage**-Ibragimov-Islam and the subsequent methods of Kompaneets–Zel'dovich–Barenblatt.

OTHER CONFERENCES AND WORKSHOPS ATTENDED

- 7th Annual Meeting of SIAM Central States Section, Oklahoma State University 2022
- Γ-Convergence and Applications to Phase Transitions, University of Knoxville 2022
- Quasi-linear PDEs in fluids II online workshop 2022
- Long Time Behavior and Singularity Formation in PDEs-III, SITE, NYU, Abu Dhabi 2021
- AMS Fall Central Sectional Virtual Meeting 1159 - University of Texas El Paso. 2020

TEACHING EXPERIENCE

- **Tenure-track Assistant Professor, Central State University, Ohio**
  - MTH 2500-01 Precalculus Spring 2025
  - MTH 2502-02 Calculus I Spring 2025
  - MTH 3002-01 Multivariate Calculus Spring 2025

  Fully responsible for instruction in the above sections.
- **Visiting Assistant Professor, Sam Houston State University, Texas**
  - MATH 1410-01 Elementary Functions Fall 2024
  - MATH 1410-02 Elementary Functions Fall 2024
  - MATH 1410-07 Elementary Functions Fall 2024
  - MATH 1420-12 Calculus I Spring 2024
  - MATH 1410-04 Elementary Functions Spring 2024
  - MATH N032-03 Support for College Math Spring 2024
  - MATH N032-04 Support for College Math Spring 2024
  - MATH 1410-02 Elementary Functions Fall 2023
  - MATH 1410-03 Elementary Functions Fall 2023
  - MATH 1410-04 Elementary Functions Fall 2023

  Fully responsible for instruction in the above sections.
- **Graduate Instructor, Texas Tech University, Texas**
  - MATH 1451-D11 Calculus I with Applications Summer 2023
  - MATH 1452-111 Calculus II with Applications Spring 2023
  - MATH 1451-116 Calculus I with Applications Fall 2022
  - MATH 1451-D11 Calculus I with Applications Summer 2022
  - MATH 1452-014 Calculus II with Applications Spring 2022
  - MATH 1451-022 Calculus I with Applications Fall 2021
  - MATH 1452-022 Calculus II with Applications Spring 2021
  - MATH 1330-117 Introductions to Mathematical Analysis I Fall 2020
  - MATH 1330-D02 Introductions to Mathematical Analysis I Fall 2020

— MATH 2360-111 Linear Algebra Spring 2020
— MATH 2360-011 Linear Algebra Fall 2019
— MATH 2360-013 Linear Algebra Fall 2019

Fully responsible for all instruction, including lectures and exams in the above sections.

- **Teaching Assistant, Texas Tech University, Texas**
  - — MATH 1320-D01 College Algebra Summer 2020
  - — MATH 1320-D02 College Algebra Summer 2020
  - — MATH 3351-002 Higher Mathematics for Engineers & Scientists II Spring 2019
  - — MATH 3350-121 Higher Mathematics for Engineers & Scientists I Spring 2019
  - — MATH 3350-121 Higher Mathematics for Engineers & Scientists I Fall 2018
  - — MATH 2360-022 Linear Algebra Fall 2018
- **Lecturer, University of Moratuwa, Sri Lanka**
  - — MATH 3023 Numerical Methods Spring 2018
  - — MATH 3023 Numerical Methods Fall 2017
  - — MATH 2033 Linear Algebra Fall 2017
  - — MATH 3023 Numerical Methods Spring 2017

  Fully responsible for all aspects of instruction in the above courses.
- **Teaching Assistant, University of Sri Jayewardenepura, Sri Lanka**
  - — MATH 482 Numerical Methods with MATLAB Fall 2016
  - — MATH 127 Calculus II Fall 2016
  - — MATH 301 Abstract Algebra Spring 2016
  - — MATH 126 Number Theory & Linear Algebra I with Maple Spring 2016
  - — MATH 103 Mathematical Tools & Computer Appl. with Maple Spring 2016
  - — MATH 101 Calculus I Spring 2016

PROFESSIONAL DEVELOPMENTS

- The College of Sci/Engr/Tech Teaching Workshop, Sam Houston State University 2023
- Advanced Mathematics for Teachers, Dept. Math. & Stat., Texas Tech University 2019
- International Teaching Assistant (ITA) Workshop, Texas Tech University 2018

PROGRAMMING/SOFTWARE EXPERIENCE

MATLAB, Java, C++, Maple, LaTeX

LEADERSHIPS/SERVICES

- Manuscript Reviewer, Journal of Safety Science and Technology 2024-Present
- Reviewer, Graduate Poster Competition, TTU 2023
- Student Activities Board volunteer, Salvation Army, TTU 2022
- Student Organization volunteer, Tech to Town, TTU 2020-2022
- Reviewer, 14th Undergraduate Research Conference, TTU 2022
- President, Sri Lankan Students Association, TTU 2020 - 2021
- Event Coordinator, TTU chapter of SIAM (TTU SIAM) 2020 - 2021

- Treasurer, Sri Lankan Students Association, TTU 2019 - 2020
- Organizing Committee, International Industrial Mathematics Conference I2MC-I 2016

AFFILIATIONS

- Member of SIAG on Analysis on Partial Differential Equations 2019 - Present
- Active Member of American Mathematical Society (AMS) 2018 - Present
- Graduate Member, Society for Industrial and Applied Mathematics (SIAM) 2019 - 2023
- Active Member, TTU SIAM 2018 - 2023
- Active Member, Sri Lankan Students Association, TTU 2018 - 2023