Curriculum Vitae

Ramjee Sharma, Ph.D.
Associate Professor of Mathematics
University of North Georgia
Department of Mathematics
Oakwood, GA, USA

Research Interest

Partial Differential Equations, Ordinary Differential Equations, Scientific Computing, Numerical Analysis, and Fluid Dynamics

Academic Achievement

- **Ph.D. in Mathematics**, Oklahoma State University, Stillwater, OK, July 2010
  - Dissertation: Global Regularity or Finite Time Singularity: 2D Surface Quasi-Geostrophic Equations, Advisor: Prof. Jiahong Wu
- **Master of Science in Mathematics**, Oklahoma State University, Stillwater, OK, July 2005
  - Thesis: Various limits involving Kortweg-de Vries type equations
    Advisor: Prof. Jiahong Wu
- **Graduate Course work in Biostatistics**, University of Georgia, Athens, GA, 2018

Work Experience

- **Associate Professor of Mathematics**, University of North Georgia, Gainesville, GA, 8/2019-present
- **Assistant Professor of Mathematics**, University of North Georgia, Gainesville, GA, 8/2015-7/2019
- **Associate Professor of Mathematics**, DeVry University, Atlanta, GA, 5/2013-7/2015
- **Assistant Professor of Mathematics**, Georgia State University -Perimeter College, Atlanta, GA, 8/2010-5/2013

Publications

1. Shrestha, P & KC, D, & Sharma, R. Generalized KdV and Burger Equations and Various Vanishing Limits, submitted to Journal of Institute of Science and Technology, Tribhuvan University, Dec 2023, 28(2), 91-99 (2023) ISSN: 2467-9062 (print), e-ISSN: 2467-9240 https://doi.org/10.3126/jist.v28i2.54429 (https://www.nepjol.info/index.php/JIST/index)

2. Shrestha, P & KC, D, & Sharma, R. 2D Surface Quasi Geostrophic Equations and its Regularity, A Numerical Study. *The Nepali Mathematical Sciences Report*, December 2023, 40(1-2):71-80, DOI: 10.3126/nmsr.v40i1-2.61501

3. Shrestha, P & KC, D, & Sharma, R (2023). *On the Construction of Traveling Water Waves with Constant Vorticity and Infinite Boundary*. International Journal of Mathematics and Mathematical Sciences, Volume 2023, Article ID 6317674, https://doi.org/10.1155/2023/6317674
4. Nepal, K & Ghimire, K & Sharma, R & Thapa, M (2020). *Students' Self-Assessment Behavior in Mathematics Courses: A Function of Their Performance on Academic Assignments.* Journal of Excellence in College Teaching, Volume 31. Number3. pp 29-50. 2020, http://celt.miamioh.edu/ject/issue.php?v=31&n=3
5. Regmi, D & Sharma, R (2019). *Regularity Criteria on the 2D Anisotropic Magnetic Bénard Equations.* Journal of Mathematical Study, Vol 52, No 1. Pp. 60-74, 10.4208/jms.v52n1.19.06 (https://admin.global-sci.org/uploads/admin/article_pdf/20190412/d664c10bc97b2b32eb34c0f0108d6700.pdf)
6. Nepal, K & Ghimire, K & Sharma, R & Thapa, M (2019). *Self-assessment Accuracy of Undergraduate Mathematics Students' on Academic Performance*, MathAMATYC Educator, Vol 10, Number 2 (https://amatyc.site-ym.com/page/EducatorWinter2019)
7. Nepal, K & Sharma, R. & Kafle, R (2018). *Why students cannot execute their own global plans*, MathAMATYC Educator. The Journal of the American Mathematical Association of Two-Year Colleges, Volume 9, Number 2. February 2018
8. Sharma, R. (2017). *Geometric Criteria for Inviscid 2D Surface Geostrophic Equations.* Electronic Journal of Differential Equations, Conf. 24 (2017), pp. 115-121.
9. Nepal, K & Ghimire, K & Sharma, R & Thapa, M (2017). *Self-assessment Behaviors of Undergraduate Mathematics Students-A Preliminary Report.* Proceedings of the 20th Annual Conference on Research in Undergraduate Mathematics Education, pp. 1360-1366.
10. Sharma, R (2017). *On the Numerical Solutions of 2D Boussinesq Equations with Fractional Dissipation.* Neural, Parallel, and Scientific Computations, -AMNS-2016, 25 (2017), Number 3 and 4.
11. Constantin, P & Lai, M-C & Sharma, R & Tseng Y-H & Wu, J (2012). *New numerical results on the surface quasi-geostrophic equations,* Journal of Scientific Computing, 50:1-28,
12. Khanal, N & Sharma, R & Wu, J & Yuan, J-M (2009). *A dual-Petrov-Galerkin method for extended fifth-order Korteweg-de Vries type equations.* Discrete Contin. Dyn. Syst. 2009, Dynamical Systems and Differential Equations. Proceedings of the 7th AIMS International Conference, Suppl., 442-450.

Submitted Articles and Ongoing Projects

13. (In progress) *Mathematical Modeling, Analysis and Simulations of Mixed Convection Nanofluid Flow Problems* in collaboration with Dipendra Regmi (UNG) and Anilkumar Devarapu (UNG)
14. (In progress) "*Evolutions of active scalars interpolating the 2D SQG and 2D Euler equations"*, in collaboration Jiahong Wu, University of Notre Dame, IN, and Dipendra

Regmi, UNG

15. (In progress) "*Numerical computations of 2D Boussinesq equations with fractional dissipation"*, in collaboration with Jiahong Wu, University of Notre Dame, IN
16. (In progress) "*Euler type equations",* in collaboration with Jiahong Wu, University of Notre Dame, IN

On Manuscript

17. *Global Regularity or Finite Time Singularity: 2D Surface Quasi-Geostrophic Equations,* Ph.D. Dissertation, 2010
18. *Cauchy transform and Szego projection,* Graduate Minor Thesis
19. *Various limits involving Kortweg-de Vries type equations,* MS Creative Component

Grant, Awards, and Honors

1. Grant: Presidential Summer Incentive Award 2023-24, "*Mathematical Modeling, Analysis and Simulations of Mixed Convection Nanofluid Flow Problems*", UNG
2. Grant: Presidential Innovation Incentive Award 2020, "*Improving Students Engagement and Readiness in Math Classes Through Innovative Use of Technology: A Flipped Section Approach*" (001615), UNG
3. Grant: Erasmus+ Staff Mobility for *Teaching Between Program and Partner Countries*, (KA 107), European Union, Nicolae Balcheschu, Romania, 2019
4. NSF Grant (DMS-1833126), "*38th Southeastern-Atlantic Regional Conference on Differential Equations (SEARCDE)",* 2018-2019
5. STEM Mini-Grant "*On the use of technology in math classes*", University System of Georgia, STEM Initiative II, 2012/2013
6. Outstanding Faculty Award, DeVry University, Academic Day, March 2015
7. Outstanding Faculty Award, DeVry University, Academic Day, March 2014
8. Honored by Phi Alpha Mu as an outstanding professor, math department, Georgia Perimeter College, Spring 2011
9. Honored by Phi Theta Kappa as an outstanding professor, math department, Georgia Perimeter College, Spring 2011
10. Jeane Agnew Fellowship award, math department, Oklahoma State University, Summer 2009, Stillwater, OK
11. NSF grant DMS 0907913, Summer 2010, Oklahoma State University, Stillwater, OK
12. Graduate Teaching Assistantship award, Oklahoma State University, Stillwater, OK from 2003 to 2010
13. SC09 fund for SC-09 Parallel and Supercomputing workshop, University of Oklahoma, 2009
14. Honored by the honor society of Phi Kappa Phi Society
15. Honored by Golden Key International Honor Society

Presented Talks

1. "*How Do Students in College Mathematics Courses Justify their Self-Assessment Behaviors?*" American Mathematical Society virtual 2023 Spring Eastern Sectional Meeting, April 2, 2023
2. "*Solutions of Generalized KdV type Equations with Various Limits*", 40th Southeastern-Atlantic Regional Conference on Differential Equations, NC State University, Raleigh, NC
3. "*Pseudo Spectral Method for Nonlinear Partial Differential Equations*", UNG Math Colloquium, UNG, Gainesville, October 10, 2022
4. "*Numerical Computations of Nonlinear Partial Differential Equations*" Nepal Mathematical Society (NMS)-Association of Nepalese Mathematicians in America (ANMA) International Talk Series (Virtual), April 22, 2022.
5. "*Quantitative Data Analysis*", SOTL Academy, University of North Georgia, Feb 28, 2022
6. *"Cauchy Transform and Szego Projection*", SPECIAL DAY FOR PURE MATHEMATICS, Virtual, Georgia Southeastern University, November 2020
7. *"Developing online math course materials using html, JavaScript and sagemath",* UNG Math Colloquium, UNG, Gainesville, February 2020
8. *"Numerical Solutions of 2D Boussinesq Equations with Fractional Dissipation",* 39th Southeastern-Atlantic Conference on Differential Equations (SEARCDE), Embry-Riddle Aeronautical University, Daytona Beach, FL, October 2019
9. *"How Do Students in College Mathematics Courses Justify their Self-Assessment Behaviors?",* UNG Math Colloquium, UNG, Gainesville, October 2019
10. "*Higher order Linear Differential Equations*", Knowledge-Based Organization (KBO) International Conference, "Nicolae Bălcescu" Land Forces Academy, Sibiu, Romania, 2019
11. *"Improved Geometric Criteria for the global regularity of 2d Inviscid Surface Quasigeostrophic Equations"*, Spring Southeastern Sectional Meeting, American Mathematical Society and Mathematical Association of America, Vanderbilt University, Nashville, TN, April 2018
12. *"A Comparative Study of Online and in-class Assignments in Undergraduate Math Classes",* Spring Southeastern Sectional Meeting, American Mathematical Society and Mathematical Association of America, Vanderbilt University, Nashville, TN, April 2018
13. "*On the numerical solutions of 2D Boussinesq equations with fractional dissipation*", 37th Southeastern-Atlantic Conference on Differential Equations, Kennesaw State University, Kennesaw, GA, October 7, 2018
14. "*Effect of Instructor-Student Connections in Undergraduate Courses*", USG Teaching and Learning Conference, April 6, 2017, Athens, GA.
15. "*Quantitative Data Analysis*" SOTL Academy, Center for Teaching, Learning and

Leadership, UNG Gainesville Campus, Feb 22, 2017

16. "*Numerical Computations of 2D Boussinesq equations with fractional dissipation",* AMS Special Session on PDEs for fluid flow: analysis and Computation, 2017 Joint Mathematics Meetings, AMS/MAA National Conference, Atlanta, GA, Jan 4, 2017
17. "Do *They Know What They Know or do Not Know*?", 2017 Joint Mathematics Meetings, AMS/MAA National Conference, Atlanta, GA, Jan 6, 2017
18. *"Students' Self Evaluations in Mathematics Courses"*, Symposium on Innovation, Research, and Engagement, University of North Georgia, November 11, 2016
19. "*Geometric Criteria for the Regularity of 2d SQG Equations*", Analysis and Applied Math Seminar, Kennesaw State University, Kennesaw, GA, March 18, 2016
20. "*Implementation of Anderson Acceleration to Pseudo-Spectral Method*", 2016 Joint Mathematics Meetings AMS/MAA National conference, Seattle, WA, Jan 8, 2016
21. "*2D Surface Quasi-geostrophic Equations*", Math Colloquium, University of North Georgia, Gainesville campus, October 19, 2015
22. "*Parallel Dual-Petrov-Galerkin Method for Nonlinear Partial Differential Equations*", 35th Southeast Regional Conference on Differential Equations, (SEARCDE 2015) Greensborough, NC, Oct 10-11, 2015
23. "*Parallel Pseudo-Spectral Method for nonlinear partial differential equations*", Seventh International Conference on Dynamic Systems and Applications & Fifth International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, Georgia, May 27-30, 2015
24. "*Use of technology in online and hybrid classes*", DeVry University, Academic Day, March 2015
25. "*Modeling the 2d surface quasi-geostrophic equations from the Euler equations*", 2015 Joint Mathematics Meetings (national conference) of American Mathematical Society, San Antonio, TX, January 2015
26. "Relation *between 2D Euler and 2D surface Quasi-geostrophic Equation*", Applied and Analysis Math Seminar, Kennesaw State University, Kennesaw, GA, Nov 19, 2014
27. "*Effect of grading rubrics and feedback on students' grades*", an initial result of Project Communication, DeVry University, Academic Day, March 1, 2014
28. "*Integrating Technology in Math Classes*", 26th GPC Math Conference, Georgia State University -Perimeter College, GA,Feb 2013
29. "*Use of iPad in Math and Computer Science Classrooms*", Georgia State University - Perimeter College, GA, September 2012
30. "*Surface quasi-geostrophic equations*", 2011 31st Southeast Atlantic Regional Conference on Differential Equations, Georgia Southern University, Statesboro, GA
31. "*Parallel Computations of Surface quasi-geostrophic equations*", 2011 AMS/MAA Joint Mathematics Meetings, New Orleans, LA, Jan 2011

Supervision

Ph.D. Student:

- Dr. Pawan Shrestha, Associate Professor, Tribhuvan University
  Dissertation Title: "*Regularity of 2D Surface Quasigeostrophic Equations*"
  Ph.D. completed in June 2023

Undergraduate Students:

- Scott Sims, University of North Georgia
  Research Title: "*Numerical Solutions to Non-linear PDEs"*
- Lauren Thomas, University of North Georgia
  Research Title: "*Differential Equations and Modelling COVID-19*"

Community Involvement

1. **Chair:** 38th Southeastern-Atlantic Regional Conference on Differential Equations held at the UNG Gainesville Campus on October 6-7, 2018
2. **Faculty Advisor**, Math Alliance, Purdue University since Fall 2020
3. **Reviewer,** "Communications on Pure and Applied Analysis".
4. **Steering Committee Member,** Southeastern-Atlantic Regional Conference on Differential Equations (SEARCDE) since July 2017 to now.
5. **Member**, American Mathematical Society