

# Tuoc Phan

Department of Mathematics,  
University of Tennessee  
227 Ayres Hall, 1403 Circle Drive  
Knoxville, TN 37996  
*E-mail: tphan2@utk.edu*  
*Homepage: <http://math.utk.edu/~phan>*  
Tel: (office) 865-974-4329

## Employment and education

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- 08/2022 PROFESSOR, University of Tennessee, Knoxville, TN, USA
- 08/2018 - 07/2022 ASSOCIATE PROFESSOR, University of Tennessee, Knoxville, TN, USA
- 08/2012 - 07/2018 ASSISTANT PROFESSOR, University of Tennessee, Knoxville, TN, USA
- 08/2010 - 07/2012 POSTDOCTORAL FELLOW, University of Tennessee, Knoxville, TN, USA
- 07/2007 - 07/2010 POSTDOCTORAL FELLOW, University of British Columbia, Vancouver, BC, Canada
- 07/2007 PH.D. IN MATHEMATICS, University of Minnesota, Minneapolis, MN, USA  
Advisor: Wei-Ming Ni
- 04/2000 B.S. IN MATHEMATICS, University of Science, Vietnam National University of Ho Chi Minh City, Ho Chi Minh City, Vietnam

## Research areas and collaborators

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- RESEARCH AREAS: Partial differential equations
  - **Existence uniqueness and regularity estimates:** Linear - nonlinear elliptic, parabolic equations and system of equations; nonlinear degenerate  $p$ -Laplacian type equations; equations with singular degenerate coefficients; equations with singular drifts; Stokes systems and Navier-Stokes equations.
  - **Nonlinear dynamics for nonlinear dispersive equations:** Normal form theory, dispersive estimates, asymptotical stability of solitons in Dirac equations, Klein-Gordon equations, and Schrödinger equations.
  - **Optimal control theory and its applications:** Population (cells, chemical concentration) dynamics in heteronomy. Analysis of PDE and optimal control techniques to investigate optimal control problems in nonlinear biological PDE models.
- COLLABORATORS: Dat Cao (Minnesota State University - Mankato); Xia Chen (**UTK**); Andrew Comech (Texas A & M University); Scipio Cuccagna (University of Trieste, Italy); Kokum De Silva (University of Peradeniya, Sri Lanka); Hongjie Dong (Brown University); Duong Minh Duc (University of Science, Ho Chi Minh City - Vietnam); Heather Finotti (**UTK**); Juraĵ Foldes (University of Virginia); Stephen Gustafson (University of British Columbia - Canada); Doyoon Kim (Korea University); Luan Hoang (Texas Tech University); An Le (Senior Healthcare Economics Consultant, Landmark Health); Suzanne Lenhart (**UTK**); Masaya Maeda (Chiba University - Japan); Tadele Mengesha (**UTK**); Kenji Nakanishi (Kyoto University - Japan); Loc Nguyen (University of North Carolina - Charlotte); Truyen Nguyen (University of Akron); Dmitry Pelinovsky (McMaster University - Canada); Du Pham (University of Texas at San Antonio); Nguyen Cong Phuc (Louisiana State University); Yannick Sire (Johns Hopkins University); Atanas Stefanov (University of Kansas); Grozdena Todorova (**UTK**); Hung Vinh Tran (University of Wisconsin - Madison); Tai-Peng Tsai (University of British Columbia - Canada).

## Publications

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44. H. Dong, **T. Phan**, and H. V. Tran, *Degenerate linear parabolic equations in divergence form on the upper half space* (2021), arXiv:2107.08033, submitted.
43. **T. Phan** and H. Dong, *Weighted mixed-norm  $L_p$  estimates for equations in non-divergence form with singular coefficients: the Dirichlet problem*, submitted (2021), arXiv:2103.08033.
42. **T. Phan**, *On trace theorems for weighted mixed norm Sobolev spaces and applications*, Advances in Analysis and Geometry (special issue in memory of David Adams), accepted (2022), arXiv:2205.04941.
41. **T. Phan** and Dario A. Valdebenito, *A Boundary layer problem in non-flat domains with measurable viscous coefficients*, Studies in Applied Mathematics, 2022, DOI:10.1111/sapm.12531.
40. H. Dong and **T. Phan**, *On parabolic and elliptic equations with singular or degenerate coefficients*, Indiana University Mathematics Journal, accepted, arXiv:2007.04385.
39. H. Dong, D. Kim and **T. Phan**, *Boundary Lebesgue mixed-norm estimates for non-stationary Stokes systems with VMO coefficients*, Communications in Partial Differential Equations, <https://doi.org/10.1080/03605302.2022.2084627>, arXiv:1910.00380.
38. J. Földes and **T. Phan**, *On higher integrability estimates for elliptic equations with singular coefficients*, Funkcialaj Ekvacioj, accepted (2021), arXiv:1804.03180.
37. H. Dong and **T. Phan**, *Parabolic and elliptic equations with singular or degenerate coefficients: the Dirichlet problem*, Transactions of the American Mathematical Society, 374 (2021), 6611-6647.
36. **T. Phan** and T. Roberston, *On Masuda uniqueness theorem for Leray-Hopf weak solutions in mixed-norm spaces*, European Journal of Mechanics / B Fluids, 90 (2021) 18-28.
35. H. Dong and **T. Phan**, *Regularity theory for parabolic equations with singular degenerate coefficients*, Calculus of Variations and Partial Differential Equations, 60, Article number: 44 (2021).
34. H. Dong and **T. Phan**, *Weighted mixed-norm  $L_p$ -estimates for elliptic and parabolic equations in non-divergence form with singular degenerate coefficients*, Revista Matemática Iberoamericana, DOI: 10.4171/rmi/1233.
33. **T. Phan**, G. Todorova and B. Yordanov, *Existence uniqueness and regularity theory for elliptic equations with complex-valued potentials*, Discrete and Continuous Dynamical Systems - Series A, 2021, 41(3): 1071-1099.
32. H. Dong and **T. Phan**, *Mixed-norm  $L_p$ -estimates for non-stationary Stokes systems with singular VMO coefficients and applications*, Journal of differential equations, Volume 276, 5 (2021), p. 342-367.
31. **T. Phan**, *Liouville type theorems for 3D stationary Navier-Stokes equations in weighted mixed-norm Lebesgue spaces*, Dynamics of Partial Differential Equations, Vol 17, no. 3 (2020), 229-243.
30. **T. Phan** and Y. Sire, *On well-posedness of 2D dissipative quasi-geostrophic equation in critical mixed norm Lebesgue spaces*, Analysis in Theory and Applications, 36, No. 2 (2020), 111-127.
29. **T. Phan**, *Well-posedness for the Navier-Stokes equations in critical mixed-norm Lebesgue spaces*, Journal of Evolution Equations, 20 (2020), 553-576.
28. **T. Phan**, *Weighted Calderón-Zygmund estimates for weak solutions of quasi-linear degenerate elliptic equations*, Potential Analysis (2020), 52(3), 393-425.
27. D. Cao, T. Mengesha and **T. Phan**, *Gradient estimates for weak solutions of linear elliptic systems with singular-degenerate coefficients*, AMS Contemporary Mathematics, Nonlinear Dispersive Waves and Fluids, Volume 725, 2019, 13-33.

26. **T. Phan**, *Lorentz estimates for weak solutions of quasi-linear parabolic equations with singular divergence-free drifts*, Canadian Journal of Mathematics, Canad. J. Math. Vol. 71 (4), 2019, 937-982.
25. X. Chen and **T. Phan**, *Free energy in a mean field of Brownian particles*, Discrete and Continuous Dynamical Systems - Series A, 39 (2019), no. 2, 747-769.
24. T. Mengesha and **T. Phan**, *Weighted  $W^{1,p}$ -estimates for weak solutions of degenerate elliptic equations with coefficients degenerate in one variable*, Nonlinear Analysis, 179 (2019), 184 - 236.
23. **T. Phan**, *Regularity estimates for BMO-weak solutions of quasi-linear equations with inhomogeneous boundary conditions*, Nonlinear Differential Equations and Applications NoDEA, (2018) 25: 8, <https://doi.org/10.1007/s00030-018-0501-2>.
22. **T. Phan**, *Interior gradient estimates for weak solutions of quasi-linear  $p$ -Laplacian type equations*, Pacific Journal of Mathematics, 297(2018), no. 1, 195–224.
21. D. Cao, T. Mengesha and **T. Phan**, *Weighted  $W^{1,p}$ -estimates for weak solutions of degenerate and singular elliptic equations*, Indiana University Mathematics Journal, Vol. 67, No. 6 (2018), 2225-2277.
20. **T. Phan**, *Regularity gradient estimates for weak solutions of singular quasi-linear parabolic equations*, Journal of Differential Equations, Volume 263, Issue 12, 2017.
19. **T. Phan**, *Local  $W^{1,p}$ -regularity estimates for weak solutions of parabolic equations with singular divergence-free drifts*, Electronic Journal of Differential Equations, Vol. 2017 (2017), No. 75, 1-22.
18. K. De Silva, S. Lenhart and **T. Phan**, *Advection control in parabolic PDE systems for competitive populations*, Discrete and Continuous Dynamical Systems - Series B, Vol. 22, Issue 3 (2017), 1049 – 1072.
17. A. Comech, **T. Phan** and A. Stefanov, *Asymptotic stability of solitary waves in generalized Gross–Neveu model*, Annales de l'Institut Henri Poincaré (C) Non Linear Analysis, Vol. 34, Issue 1 (2017), 157-196.
16. S. Cuccagna, M. Maeda and **T. Phan**, *On small energy stabilization in the NLKG with a trapping potential*, Nonlinear Analysis, Vol 146 (2016), 32-58.
15. T. Nguyen and **T. Phan**, *Interior gradient estimates for quasilinear elliptic equations*, Calculus of Variations and Partial Differential Equations, (2016) 55: 59. doi:10.1007/s00526-016-0996-5.
14. L. Hoang, T. Nguyen and **T. Phan**, *Local gradient estimates for degenerate elliptic equations*, Advanced Nonlinear Studies, Vol. 16, Issue 3 (2016), 479-489.
13. L. Hoang, T. Nguyen and **T. Phan**, *Gradient estimates and global existence of smooth solutions for a system of cross-diffusion equations*, SIAM Journal of Mathematical Analysis, Vol. 47, Issue 3 (2015), 2122–2177.
12. L. Hoang, T. Kieu and **T. Phan**, *Properties of generalized Forchheimer flows in porous media*, Problemy Matematicheskogo Analiza 76, 2014, 133–194, English translation in "Journal of Mathematical Sciences", vol. 202 (2014), no. 2, 259 - 332.
11. **T. Phan** and N. C. Phuc, *Stationary Navier-Stokes equations with critically singular external forces: existence and stability results*, Adv. Math. 241 (2013), 137–161.
10. D. E. Pelinovsky and **T. Phan**, *Normal form for the symmetry-breaking bifurcation in the nonlinear Schrödinger equation*, Journal of Differential Equations, Vol. 253, Issue 10 (2012), 2796–2824.
9. K. Nakanishi, **T. Phan** and T.-P. Tsai, *Small solutions of nonlinear Schrödinger equations near first excited states*, Journal of Functional Analysis, Vol. 263, Issue 3 (2012), 703–781.
8. H. Finotti, S. Lenhart and **T. Phan**, *Optimal control of advection direction on reaction - diffusion population models*, Evolution Equations and Control Theory, Vol. 1, no. 1 (2012), 81–107.

7. **T. Phan**, *A remark on global existence of solutions of shadow systems*, Zeitschrift für angewandte Mathematik und Physik (ZAMP), Vol. 63, Number 2 (2012), 395-400.
6. S. Gustafson and **T. Phan**, *Stable directions for degenerate excited states of nonlinear Schrödinger equations*, SIAM Journal of Mathematical Analysis, Vol. 43, Issue 4 (2011), 1716-1758.
5. **T. Phan**, *On global existence of solutions to a cross-diffusion system*, Journal of Mathematics Analysis and Applications, Volume 343 (2008), 826–834.
4. **T. Phan**, *On global existence of solutions to Shigesada-Kawasaki-Teramoto cross-diffusion systems in domains of arbitrary dimensions*, Proceedings of the American Mathematical Society, Vol. 135 (2007), no. 12, 3933–3941.
3. L. H. An, P. X. Du, D. M. Duc and **T. Phan**, *Lagrange multipliers for functions derivable along directions in a linear subspace*, Proceedings of the American Mathematical Society, Vol. 133 (2005), no. 2, 595–604.
2. D. M. Duc, N. H. Loc and **T. Phan**, *Generalized zeros of operators and applications*, Vietnam Journal of Mathematics, Vol. 32 (2004), Special Issue, 87–96.
1. D. M. Duc, N. H. Loc and **T. Phan**, *Topological degree for a class of operators and applications*, Nonlinear Analysis, Vol. 57, no. 4 (2004), 505–518.

## Awards/Grants:

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- UTK Faculty Research Assistants Funding (Spring 2021, \$1,750, UTK-Office of Undergraduate Research)
- Simons Foundation Asymptotical stability and regularity theory in nonlinear partial differential equations, August 2015 - August 2022 (PI, grant # 354889, \$35,000).
- IMA The 46<sup>th</sup> Barrett Lectures on Modeling and Analysis of Nonlinear PDEs in Spatial Ecology, 2016 (PI, \$5000).
- NSF Southeastern-Atlantic Regional Conference on Differential Equations, University of Tennessee, Knoxville, TN, 2013 (Co-PI, DMS-1338314, \$21,938.00).

## Students supervised

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- Van Le (Ph.D student, 08/2020 - present)
- Junyuan Fang (Ph.D student, 08/2020 - present)
- Timothy Eugene Robertson (Ph.D. candidate, 08/2018 - present)
- Jun Park (Undergraduate mathematics honors student, Fall 2019 - present)
- Adrian Calderon (Undergraduate mathematics honors student, Spring 2019 - present)
- Shay Phagan (Undergraduate mathematics honors student, summer 2018 - Spring 2019): *Liouville theorem for stationary Navier-Stokes equations*
- Beili Johnson (MS degree - May 2018): Math instructor, Walters State Community College, TN.
- Thuy Van Nguyen Le (Can Tho University, Vietnam, undergraduate thesis, May 2018): "Functional analysis methods in PDE and probability theory".
- Robert Adams, Christopher Oballe, and Natasha Rudy: Summer 2013 REU students, NIMBioS, [http://www.nimbios.org/reu/reu2013\\_proteins\\_proj](http://www.nimbios.org/reu/reu2013_proteins_proj)

- Elena Crosley, Arielle Nivens, and Ilan Rubin: Summer 2012 REU students, NIMBioS, [http://www.nimbios.org/reu/reu2012\\_proj\\_salmonella](http://www.nimbios.org/reu/reu2012_proj_salmonella)

## Postdoc supervised

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- Toai Luong (08/2022 - 08/2025)
- Darío A. Valdebenito (08/2019 - present)
- Dat Cao (2015 - 2016): Assistant professor at Minnesota State University-Mankato, Minnesota

## Editorship

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- Associate editor *Evolution Equations and Control Theory* (since 06/2021).
- Member of editorial board *Electronic Journal of Differential Equations* (since 07/2021).
- Book editor *Nonlinear dispersive waves and fluids*, AMS Contemporary Mathematics, Volume: 725, 2019.

## Workshops, conferences, and special sessions organized

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- Organizer (member): *AMS special Session on Nonstandard Elliptic and Parabolic Regularity Theory with Applications*, AMS Fall Southeastern Sectional Meeting, University of Tennessee at Chattanooga, Chattanooga, TN October 15-16, 2022.
- Organizer (member): *Mathematical Conference: Summer Meeting*, virtual, <https://seminartoanhoc.wordpress.com/>, July 30 - 31, 2022.
- Organizer (member): *Workshop on PDE and related topics*, VIASM, <https://viasm.edu.vn/en/hdkh/pde2022>, July 25 - July 28, 2022.
- Organizer (member): *Mathematical Conference: Summer Meeting*, virtual, <https://seminartoanhoc.wordpress.com/>, July 24 - 25, 2021.
- Organizer (member and founder): *Conference on Analysis and Applied Mathematics*, Sai Gon University (Hybrid), December 18 - 19, 2020, Ho Chi Minh City, Vietnam.
- Organizer (member and founder): *Conference on Analysis and Applied Mathematics*, Ho Chi Minh City University of Technology (Hutech), January 3 - 4, 2019, Ho Chi Minh City, Vietnam (<http://www.math.utk.edu/~phan/caam.html>).
- Organizer (member): *AMS Special Session on Spectral Calculus & Quasilinear Partial Differential Equations*, AMS 2017 joint meeting, Atlanta, January 2017.
- Organizer (member): *Mathematical Conference: Summer Meeting*, Hochiminh City, July 23 - 24, 2016.
- Organizer (chair): *The 46<sup>th</sup> Barrett Lectures on Modeling and Analysis of Nonlinear PDEs in Spatial Ecology*, Department of Mathematics, University of Tennessee, Knoxville, May 16 - 18, 2016.
- Organizer (member): Special session on *Analysis on Nonlinear Integral and Partial Differential Equations* AMS Southeastern Sectional Meeting University of Alabama in Huntsville, Huntsville, AL, March 27-29, 2015.
- Organizer (member): Special session on *Recent Advances in Evolution Equations*, The 10<sup>th</sup> AIMS Conference on Dynamical Systems, Differential Equations and Applications, July 07 - 11, 2014 Madrid, Spain.

- Organizer (member) Special session on *Harmonic Analysis and Nonlinear Partial Differential Equations*, AMS Southeastern Spring Sectional Meeting, University of Tennessee, Knoxville, TN March 21-23, 2014.
- Organizer (member): *Southeastern-Atlantic Regional Conference on Differential Equations*, University of Tennessee, Knoxville, TN, Sept 21- 23, 2013.
- Organizer (member): Minisymposium on *Current Trends and Phenomena in the Analysis of Nonlinear Partial Differential Equations*, 37<sup>th</sup> Annual SIAM Southeastern Atlantic Section Conference, Knoxville, TN.
- Organizer (member): Special session on *Dynamics, Nonlinear PDES and Applications*, The 9<sup>th</sup> AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL, USA, July 1 - 5, 2012.

### Short term invited visits

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- 11/2019 Department of Mathematics, Johns Hopkins University, Baltimore, MD 21218
- 10/2019 Division of Applied Mathematics, Brown University, Providence, RI 02912
- 09/2019 Institute for Mathematics and its Applications, Minneapolis, Minnesota
- 07/2018 Center of Advanced Study in Theoretical Sciences, National Taiwan University, Taipei, Taiwan
- 06/2017 School of Mathematics, Jilin University, Changchun, Jilin, China  
Host: Prof. Lianzhang Bao
- 06/2017 School of Mathematics and Statistics, Wuhan University, Wuhan, Hubei, China  
Host: Prof. Wei-Wei Ao and Prof. Juncheng Wei
- 10/2015 Department of Mathematics, University of British Columbia, BC, Canada  
Host: Prof. Juncheng Wei and Prof. Tai-Peng Tsai
- 06/2014 Department of Mathematics, École Polytechnique Fédérale de Lausanne, Switzerland  
Host: Prof. Hoai Minh Nguyen
- 11/2011 Department of Mathematics, University of Kansas, Lawrence, KS, USA  
Host: Prof. Milena Stanislavova
- 11/2011 Department of Mathematics, Vanderbilt University, Nashville, TN, USA  
Host: Prof. Juraj Foldes
- 05/2011 Hausdorff Center for Mathematics, University of Bonn, Bonn, Germany  
Host: Prof. Antoine Choffrut
- 05/2011 Département de Mathématiques, Université Paris-Sud, Orsay, France  
Host: Prof. Nalini Anantharaman
- 04/2010 Department of Mathematics, Texas A & M University, College Station, TX, USA  
Host: Prof. Andrew Comech
- 02/2010 Department of Mathematics & Statistics, McMaster University, Hamilton, ON, Canada  
Host: Prof. Dmitry Pelinovsky
- 12/2009 Department of Mathematics, Kyoto University, Kyoto, Japan  
Host: Prof. Kenji Nakanishi and Prof. Yoshio Tsutsumi

- 10/2009 Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX, USA  
Host: Prof. Luan Thach Hoang

## Conference and seminar talks

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- 08/2022 Invited speaker: VIASM Annual Meeting 2022, Vietnam Institute for Advanced Study in Mathematics, Ha Noi, Vietnam
- 03/2022 Invited speaker: Colloquium, Department of Mathematics, University of Alabama at Birmingham, Birmingham, AL
- 11/2021 Speaker: Junior Colloquium, Department of Mathematics, University of Tennessee, TN
- 10/2021 Invited sessional speaker: The 44th SIAM Southeastern Atlantic Section Conference, September 18-19, 2021 Auburn University, AL
- 04/2021 Invited speaker: Colloquium, Department of Mathematics, State University of New York at Geneseo (SUNY Geneseo), Geneseo, NY
- 03/2021 Invited speaker: Analysis Seminar, Department of Mathematics, Kansas State University, Manhattan, KS
- 03/2021 Invited speaker: Analysis Seminar, Department of Mathematics, The University of Kansas, Lawrence, KS
- 02/2021 Invited speaker: Applied Analysis Seminar, Department of Mathematics, Louisiana State University, Baton Rouge, LA
- 02/2021 Invited speaker: Analysis Seminar, Department of Mathematics, University of Alabama, Tuscaloosa, AL
- 10/2020 Invited speaker: Pure Mathematics Colloquium - Current Advances in Mathematics, Department of Mathematics and Statistics, Texas Tech University
- 10/2019 Invited speaker: PDE seminar, University of Science - Vietnam National University, Ho Chi Minh City, Vietnam
- 12/2019 Invited speaker: Junior Colloquium, Department of Mathematics, International University - Vietnam National University, Ho Chi Minh City, Vietnam
- 11/2019 Invited sessional speaker: AMS Fall Southeastern Sectional Meeting, University of Florida, Gainesville, FL
- 11/2019 Invited speaker: PDE seminar, Division of Applied Mathematics, Brown University, Providence, Rhode Island
- 11/2019 Invited speaker: Colloquium, Department of Mathematical Sciences, George Mason University, Fairfax, VA 22030
- 11/2018 Invited sessional speaker: AMS Fall Southeastern Sectional Meeting, University of Arkansas, Fayetteville, AR
- 10/2018 Invited sessional speaker: AMS Fall Central Sectional Meeting, University of Michigan, Ann Arbor, Ann Arbor, MI
- 10/2018 Invited speaker: Analysis Seminar, Department of Mathematics, University of Alabama, Tuscaloosa, AL
- 07/2018 Plenary speaker: 2018 summer meeting, University of Science, Ho Chi Minh City, Vietnam

- 06/2018 Invited sessional speaker (two sessions): Canadian Mathematical Society 2018 Summer Meeting, University of New Brunswick, Fredericton, New Brunswick
- 04/2018 Invited sessional speaker: AMS Spring Southeastern Sectional Meeting, Vanderbilt University, Nashville, TN
- 03/2018 Invited speaker: Harmonic Analysis and PDE seminar, Department of Mathematics, University of Virginia, Charlottesville, VA
- 03/2018 Invited sessional speaker: AMS Spring Central Sectional Meeting, Ohio State University, Columbus, OH
- 09/2017 Invited speaker: PDE seminar, Department of Mathematics, University of Wisconsin - Madison, Wisconsin
- 06/2017 Invited speaker: PDE seminar, School of Mathematics, Jilin University, Changchun, Jilin, China
- 06/2017 Invited speaker: PDE seminar, School of Mathematics and Statistics, Wuhan University, Wuhan, Hubei, China
- 04/2017 Invited speaker: PDE seminar, Division of Applied Mathematics, Brown University, Providence, Rhode Island
- 04/2017 Invited speaker: Department Colloquium, Department of Mathematical Sciences, Georgia Southern University, Statesboro, Georgia
- 03/2017 Invited speaker: PDE Seminar, School of Mathematics, University of Minnesota, Minneapolis, MN
- 03/2017 Invited sessional speaker: AMS Spring Southeastern Sectional Meeting, College of Charleston, Charleston, SC
- 02/2017 Invited speaker: PDE and Math. Physics Seminar, Department of Mathematics and Statistics, UNC Charlotte, Charlotte, NC
- 10/2016 Invited sessional speaker: AMS Fall Central Sectional Meeting, University of St. Thomas, Minneapolis, MN
- 09/2016 Invited sessional speaker: Forty-Fourth Annual Conference Differential Equations and Dynamical Systems, Miami University, Oxford, OH
- 12/2015 Invited sessional speaker: Siam Conference on Analysis of PDEs, Scottsdale, AZ (invited talk in Dynamics of PDEs session)
- 11/2015 Invited speaker: Applied Math seminar, Department of Mathematics, Texas A& M University, College Station, TX
- 10/2015 Invited speaker: Differential Geometry - Mathematical Physics - PDE Seminar, Department of Mathematics, University of British Columbia, BC, Canada
- 09/2015 Invited speaker: PDE seminar, Department of Mathematics, Indiana University, Bloomington, IN
- 09/2015 Invited sessional speaker: Workshop in nonlinear PDEs, Brussels, 2015, (invited talk in Parabolic PDEs session)
- 07/2014 Invited speaker: PDE seminar, Fac. of Math & Computer Science, University of Science, Ho Chi Minh City, Vietnam
- 07/2014 Invited speaker: Summer Program on "PDEs and Applied Mathematics", Vietnam Institute for Advanced Study in Mathematics, Ha Noi, Vietnam



- 06/2014 Invited speaker: PDE seminar, Department of Mathematics, École Polytechnique Fédérale de Lausanne, Switzerland
- 05/2014 Plenary speaker (45 minute talk): Workshop on Stability of Solitary Waves, University of Pisa, Italy
- 04/2014 Invited speaker: PDE Seminar, School of Mathematics, University of Minnesota, Minneapolis, MN
- 03/2014 Invited sessional speaker: AMS Spring Central Sectional Meeting Texas Tech University, Lubbock, TX (talked in the Special Session on Qualitative Theory for Non-linear Parabolic and Elliptic Equations)
- 10/2013 Contributed sessional speaker: The Texas Analysis and Mathematical Physics Symposium, Rice University
- 07/2012 Invited sessional speaker: The 9<sup>th</sup> AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL, USA
- 04/2012 Contributed sessional speaker: The 2nd Ohio River Analysis Meeting, University of Kentucky, Lexington, KY, USA
- 02/2012 Invited speaker: Colloquium, Department of Mathematics, West Virginia University, Morgantown, WV, USA
- 01/2012 Invited speaker: Colloquium, Department of Mathematics, University of Tennessee, Knoxville, TN, USA
- 01/2012 Invited sessional speaker: AMS 2012 Joint Mathematics Meeting, Boston, MA, USA
- 12/2011 Invited speaker: PDE Seminar, Department of Mathematics, University of Kansas, Lawrence, KS, USA
- 11/2011 Invited speaker: PDE Seminar, Department of Mathematics, Vanderbilt University, Nashville, TN, USA
- 10/2011 Invited speaker: DE and Applied Math Seminar, Department of Mathematics, University of Tennessee, Knoxville, TN, USA
- 10/2011 Invited sessional speaker: AMS Western Section Meeting, University of Utah, Salt Lake City, UT, USA
- 09/2011 Contributed sessional speaker: The 31<sup>st</sup> Southeastern Atlantic Regional Conference on Differential Equations  
Georgia Southern University, Statesboro, GA, USA
- 05/2011 Invited speaker: Applied Math Seminar, Hausdorff Center for Mathematics, University of Bonn, Bonn, Germany
- 05/2011 Invited speaker: PDE - Numerical Analysis Seminar, Département de Mathématiques, Université Paris-Sud, Orsay, France
- 04/2011 Invited sessional speaker: The Seventh IMACS International Conference on Non-linear Evolution Equations and Wave Phenomenon, University of Georgia, Athens, GA, USA
- 02/2010 Invited speaker: Colloquium, Department of Mathematics, University of Tennessee, Knoxville, TN, USA
- 02/2010 Invited speaker: PDE Seminar, Department of Mathematics & Statistics, McMaster University, Hamilton, ON, Canada

- 12/2009 Invited speaker: PDE Seminar, Department of Mathematics, Kyoto University, Kyoto, Japan
- 12/2009 Invited sessional speaker: SIAM Conference on Analysis of Partial Differential Equations 2009, Miami, FL, USA
- 12/2009 Invited speaker: Diff. Geom–Math. Phys.–PDE Seminar, University of British Columbia, Vancouver, BC, Canada
- 10/2009 Invited speaker: Applied Math Seminar, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX, USA
- 08/2009 Invited sessional speaker: Second Joint CMS–SMM Meeting, University of British Columbia, Vancouver, BC, Canada
- 06/2009 Invited sessional speaker: CMS/CSHPM Summer Meeting 2009, St. John’s, Newfoundland, NF, Canada
- 04/2009 Invited sessional speaker: AMS Western Section Meeting, San Francisco State University, San Francisco, CA, USA
- 02/2007 Invited speaker: Colloquium, Department of Mathematics, National University of Singapore, Singapore
- 11/2006 Invited speaker: Junior Colloquium, School of Mathematics, University of Minnesota, Minneapolis, MN, USA

### Conferences and workshops (Invited participant only)

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- 07/2019 Advances in Dispersive Equations: Challenges & Perspectives, Banff International Research Station
- 11/2017 Partial Order in Materials: at the Triple Point of Mathematics, Physics and Applications, Banff International Research Station
- 04/2017 Rivière-Fabes Symposium 2017, School of Mathematics, University of Minnesota, Minneapolis, MN
- 06/2011 IMA New Directions Short Course: Invariant Objects in Dynamical Systems and their Applications, Minneapolis, MN, USA
- 01/2009 8<sup>th</sup> Pacific Northwest PDE Meeting, University of British Columbia, BC, Canada
- 08/2008 Asymptotics and Singularities in Nonlinear and Geometric Dispersive Equations, BIRS, AB, Canada
- 05/2008 Workshop on Singularities, Hamiltonian and gradient flows, C.R.M., Montreal, QC, Canada
- 04/2008 The Eleventh Rivière-Fabes Symposium on Analysis and PDE, School of Mathematics, University of Minnesota, MN, USA
- 03/2008 Recent Developments in Elliptic and Degenerate Elliptic Partial Differential Equations, Systems and Geometric Measure Theory, BIRS, AB, Canada
- 12/2007 CBMS/NSF Regional Conference, San Antonio, TX, USA
- 01/2007 AMS 2007 Joint Mathematics Meeting, New Orleans, LS, USA
- 06/2004 Summer PDE Conference, Purdue University, IN, USA
- 11/2003 52<sup>nd</sup> Midwest PDE Conference, University of Minnesota, MN, USA

- 06-07/2002 Summer School on Harmonic Analysis, IAS/Park City Mathematics Institute (PCMI), UT, USA

## Training

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- 04/2009 *Instructional Skill Workshop*(Certificate conferred), Teaching and Academic Growth, University of British Columbia, Canada
- 09/2007 *Instructor orientation*, Department of Mathematics, University of British Columbia, Canada
- Fall/2002 *International teaching assistant workshop (one month)*, University of Minnesota, Minneapolis, MN, USA

## Teaching Experience

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- Courses taught at the University of Tennessee, Knoxville, TN, USA
  - Spring 2022* Math 536 - Partial Differential Equations II
  - Fall 2021* Math 423 - Probability  
Math 535 - Partial Differential Equations I
  - Spring 2021* Math 448 - Analysis II (honor)
  - Fall 2020* Math 142 - Calculus II (large lecture)  
Math 447 - Analysis I (honor)
  - Spring 2019* Math 536 - Partial Differential Equations II (7 students)
  - Fall 2018* Math 323 - Introduction to Probability and Statistics (18 students)  
Math 535 - Partial Differential Equations I (6 students)
  - Spring 2018* Math 448 - Analysis II (honor, 17 students)
  - Fall 2017* Math 307 - Introduction to Abstract Mathematics (honor, 12 students)  
Math 447 - Analysis I (honor, 17 students)  
Math 539 - PDE/DE seminar
  - Spring 2017* Math 307 - Introduction to Abstract Mathematics (honor), 22 students
  - Fall 2016* Math 142 - Calculus II (large session, 231 students)
  - Spring 2016* Math 142 - Calculus II (large session, 141 students)  
Math 307 - Introduction to Abstract Mathematics (honor), 12 students
  - Spring 2015* Math 446 - Advanced Calculus
  - Fall 2014* Math 635 - Topics in Partial Differential Equations  
Math 445 - Advanced Calculus  
Math 539 - PDE/DE Seminar
  - Spring 2014* Math 536 - Partial Differential Equations  
Math 539 - PDE/DE Seminar
  - Fall 2013* Math 535 - Partial Differential Equations  
Math 231 - Differential Equations  
Math 539 - PDE/DE Seminar
  - Spring 2013* Math 446 - Advanced Calculus II
  - Fall 2012* Math 445 - Advanced Calculus I  
Math 435 - Partial Differential Equations
  - Summer 2012* Math 231 - Differential Equations I

- Spring 2012*      Math 435 - Partial Differential Equations  
                       Math 231 - Differential Equations I
- Fall 2011*        Math 231 - Differential Equations I
- Summer 2011*    Math 431 - Differential Equations II
- Spring 2011*    Math 231 - Differential Equations I  
                       Math 446 - Advanced Calculus II  
                       Math 636 - Advanced Partial Differential Equations II
- Fall 2010*        Math 231 - Differential Equations I  
                       Math 445 - Advanced Calculus I
- Courses taught at the University of British Columbia, BC, Canada
- Spring 2010*      MATH 267 - Mathematical Methods for EE and CS Students (large session, up to 150 students)
- Fall 2009*        MATH 267 - Mathematical Methods for EE and CS Students (large session, up to 150 students)
- Summer 2009*    MATH 200/253 - Multivariable Calculus (large session, up to 150 students)
- Fall 2008*        MATH 215/255 - Elementary Differential Equations (large session, up to 150 students)
- Spring 2008*     MATH 105 - Integral Calculus with Applications to Commerce and Social Sciences (large session, up to 150 students)
- Fall 2007*        MATH 215/255 - Elementary Differential Equations (large session, up to 150 students)
- Recitation sections at the University of Minnesota, MN, USA
- Fall 2006*        MATH 2263 - Multivariable Calculus (two weekly sections)
- Spring 2006*     MATH 2263 - Multivariable Calculus (two weekly sections)
- Fall 2005*        MATH 1038 - College Algebra and Probability (two weekly sections)
- Spring 2005*     MATH 1271 - Calculus I (two weekly sections)
- Fall 2004*        MATH 1271 - Calculus I (two weekly sections)
- Fall 2003*        MATH 1151 - Pre-Calculus II (two weekly sections)

## Services and committees (department and university)

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- Graduate student committees
  - Wencil                    Oral specialty exam, May 2020  
   Valega-Mackenzie
  - Timothy                 Oral specialty exam (chair), August 2019  
   Eugene Robertson
  - Vy Nguyen                Ph.D. thesis defense (member), August 2019
  - Montgomery             Ph.D. thesis defense (member), July 2019  
   Taylor
  - Mitchell Sutton         Oral specialty exam (member), May 2019
  - Mahir Demir             Ph.D. thesis defense (member), March 2019
  - Rebecca Pettit         Ph.D. thesis defense (member), May 2018
  - Beili Johnson          MS report (chair), May 2018
  - Mahir Demir             Oral specialty exam (member), July 2017
  - Stefan Schnake         Ph.D. thesis defense (member), May 2017

- Wenqiang Feng     Ph.D thesis defense (member), May 2017
- Montgomery Taylor     Oral specialty exam (member), August 2016
- Christopher Ryan Loga     Ph.D thesis defense (member), April 2016
- Kokum De Silva     Ph.D thesis defense (member), November 2015
- Rebecca Pettit     Oral specialty exam (member), August 2015
- Kevin Sonnanburg     Oral specialty exam (member), August 2015
- Wenqiang Feng     Oral specialty exam (member), August 2015
- Stefan Schnake     Oral specialty exam (member), June 2015
- Jenifer Ribbeck     MS report (member), May 2015
- Mike Kelly     Ph.D. thesis defense (member), July, 2014
- Kokum De Silva     Oral specialty exam (member), August 2013

• **Department committees**

- 2021-2022     Graduate Committee (chair)  
Undergraduate Committee (member)  
Analysis diagnostic exam committee (member)  
Math major advisor/mentor
- 2020-2021     Graduate Committee (chair)  
Undergraduate Committee (member)  
Analysis diagnostic exam committee (member in fall, and chair in spring)  
PDE prelim committee (member)  
Math major advisor/mentor
- 2018-2019     Advisory committee (member)  
Analysis diagnostic exam committee (member)  
Undergraduate advising committee (member)  
PDE postdoc hiring committee (chair)
- 2017-2018     Communication committee (member)  
Undergraduate advising committee (member)  
Analysis diagnostic exam committee (member)  
Undergraduate committee (member)
- 2016-2017     Communication committee (member)  
Analysis diagnostic exam committee (member)  
Undergraduate advising committee (member)  
Undergraduate committee (member)
- 2015-2016     Barrett lecture committee (chair)  
PDE prelim exam committee (member)  
Undergraduate advising committee (member)  
Undergraduate committee (member)  
Fermat II exam committee (member)
- 2014-2015     Undergraduate advising committee (member)  
Analysis diagnostic exam committee (chair)  
Advisory committee (member)  
Strategic planning committee (member)  
PDE prelim exam committee (chair)  
Undergraduate committee (member)  
Fermat II exam committee (member)

- 2013-2014      Colloquium Committee (chair)  
Undergraduate advising committee (member)  
Analysis diagnostic exam committee (chair)  
Fermat II exam committee (member)
- 2012-2013      Colloquium Committee (member)  
Undergraduate advising committee (member)  
Analysis diagnostic exam committee (member)  
Fermat II exam committee (member)

• **College/university committees and outreach**

- Spring 2019      Judge: UGR Summer Internship proposals for Arts & Sciences, Natural Sciences
- Spring 2016      Judge: The 51st Annual Tennessee Junior Science and Humanities Symposium
- Spring 2016      Evaluator: Cynthia B. Peterson Poster Competition
- Spring 2015      Judge: The 50th Annual Tennessee Junior Science and Humanities Symposium
- Spring 2015      Evaluator: Cynthia B. Peterson Poster Competition
- Fall 2015        Fermat II exam (write, proctor and grade the Fermat II exam for Tennessee high school students)
- Fall 2014        Fermat II exam (write, proctor and grade the Fermat II exam for Tennessee high school students)
- Fall 2013        Fermat II exam (write, proctor and grade the Fermat II exam for Tennessee high school students)
- Fall 2012        Fermat II exam (write, proctor and grade the Fermat II exam for Tennessee high school students)