CV

Prabir Daripa
Professor of Mathematics
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Texas A&M University
College Station, TX 77843

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1 Education

Postdoc. (Comp. Math.)	Courant Inst., NYU, 06/1985-08/1987
Ph.D. (Fluid Mech.)	Brown University, 1985
M.Sc. (Appl. Math.)	Brown University, 1983
M.Sc. (Fluid Mech.)	Brown University, 1982
B.Tech. (Mech. Engg.)	I.I.T., Kharagpur, India, 1978

2 Professional Experience

1987–Present	Asst., Assoc., Full Prof. of Math., Texas A&M University
1985–1987	Postdoctoral Research Associate, Courant, NYU
1981–1985	Research Assistant, Brown University, Engineering
1980–1981	Brown University Fellow, Division of Engineering

3 Academic Visits

- ICERM, Brown University, February, 2017
- Universidad Tecnica Federico Santa Maria, Chile, August 2008, Jan 2012
- Inst. of Math. of the Romanian Academy of Sciences, Bucharest, May 2002, April 2011
- Courant Institute, NYU, Fall 1996
- ICASE, NASA, June-Aug 1993 & June 1983
- IMA, Univ. of Minnesota, March 1989

4 Professional Membership

- American Association for the Advancement of Science (AAAS) Spring 2010-Ongoing
- American Mathematical Society (AMS) Spring 2015-Fall 2021
- Society of Industrial and Applied Mathematics (SIAM) Spring 1986 Ongoing
- American Physical Society (APS) Fall 1984-Ongoing
- Society of Engineering Sciences (SES) Spring 2021-Ongoing
- InterPore (International Society of Porous Media) Spring 2015-Ongoing
- SIAG on CSE, SIAG on Geosciences, SIAG on Nonlinear Waves
- Society of Petroleum Engineers (SPE) Spring 2017-Fall 2021

5 Honors/Awards

- Invited 5 day Course on "Hydrodynamic Stability: Theory, Computation and Applications", Mathematics Department, IIT, Ropar, India, Dec. 11-16, 2017.
- Invited 5 day Course on "Computational Fluid Dynamics", under the initiative of IUCEE (Indo-US Collaboration on Engineering Education), delivered at VelTech University, Chennai, India, Aug 8 - Aug 12, 2011.
- Certificate from The Faculty Teaching Academy, Center for Teaching Excellence, TAMU, 2012

- Associated Faculty, Texas A&M Energy Institute
- Work featured on the cover of: "Book on Advances in Fluid Mechanics, Vol 29, (2001), WIT Press, Southampton."
- Editorial board member of several journals (see pages 27-28)
- Member of Sigma XI, The Scientific Research Society
- Brown University Fellow, 1980-1981
- Merit-cum-means Scholarship, IIT, India, 1973-1978
- General Proficiency Award, St. Xaviers' College, India, 1973
- National Merit Scholarship, India, 1971-73

Press Release

- Short interview on 02/06/2019 by TAMU student Mohammed Haque on my research.
- Interview on the conference held at TAMUQ in Doha, Qatar in 2013.
- Why study CFD (Computational Fluid Dynamics) - Part of a 5 day course given in Chennai, India during summer of 2011.

6 Teaching Experience

As of the end of Spring'17 semester, I have taught, since I came to TAMU, 45 graduate recitation classes of 9 graduate level courses to 883 graduate students, and 56 recitation classes of 9 undergraduate level courses to 3121 undergraduate students. These data do not include "directed studies course (MATH 685)" and "research (MATH 691)" as well as students enrolled in these. The distribution of these data over the many semesters I taught at TAMU can be found at the end of this CV.

6.1 Graduate

- Hydrodynamic Stability (MATH 672)
- Advanced Topics in Fluid Mechanics (MATH 664)
- Advanced Numerical Methods (MATH 664)
- Computational Mathematics for Fluid Mechanics (MATH 664)
- Iterative Techniques (MATH 639)
- Dynamical Systems and Chaos (MATH 614)
- Numerical Methods for Partial Differential Equations (MATH 610)
- Mathematical Fluid Dynamics (MATH 605)
- Methods and Applications of Partial Differential Equations (MATH 602)
- Methods of Applied Mathematics (MATH 601)
- Directed Studies Course (MATH 685)
- Special Topics Courses (MATH 689)
- Research (MATH 691)

6.2 Undergraduate

- Mathematical Modeling (MATH 442)
- Numerical Analysis (MATH 417)
- Theory of Partial Differential Equations (MATH 412)
- Advanced Engineering Mathematics (Perturbation Methods + Theory of PDEs) (MATH 401)
- Topics in Applied Mathematics (Linear Algebra + Vector Calculus) (MATH 311)
- Linear Algebra for Differential Equations (MATH 309)
- Ordinary Differential Equations (MATH 308)
- Linear Algebra (MATH 304)
- Engineering Mathematics I, III & III (Calculus Sequence) (MATH 151, MATH 152, MATH 251)
- Mathematical Concepts-Calculus (MATH 131)

Courses taught by semester: See last eight pages at the end of this CV.

7 Curriculum Development

- Mathematical Fluid Dynamics (MATH 605)
- Hydrodynamic Stability (MATH 672)
- Computational Mathematics for Fluid Dynamics
- Advanced Topics in Fluid Mechanics
- Advanced Numerical Methods

8 Research Grants

8.1 Pending

8.2 Awarded

- PI, "International Conference Travel Grant for travel to participate in Interpore2024 Conference Qingdao, China", 05/01/2024 - 12/31/2024, **Amount $2,000**.
  Funding Source: College of Arts and Sciences at TAMU.
- Co-PI, "Instability and Intermittency in Mountain Wave Turbulence", 03/01/2024 - 12/01/2024, CPI: Craig Epifanio, Dept of Atmospheric Sciences, **Amount $10,000**.
  Funding Source: STRP Program of the new College of Arts and Sciences at TAMU.
- PI, "New Phenomena in Non-Newtonian Flows in Porous Media: Numerical Investigation", 03/01/2024 - 12/31/2024, **Amount $5,000**.
  Funding Source: STRP Program of the new College of Arts and Sciences at TAMU.
- PI, "International Conference Travel Grant for travel to participate in Interpore2023 Conference Edinburgh, Scotland", 05/01/2023 - 12/31/2023, **Amount $2,000**.
  Funding Source: College of Arts and Sciences at TAMU.
- PI, "Resonant Instability in Realistic Mountain Wave Flows", 06/01/2022 - 05/31/2023, Co-PI: Craig Epifanio, Dept of Atmospheric Sciences, **Amount $10,000**.
  Funding Source: Seed Grant Program of the College of Arts and Sciences at TAMU.

- PI, "Data Driven Interrogation of the biogeochemical conditions in the northern Gulf of Mexico", 06/01/2022 - 05/31/2023, Co-PI: Shuang Zhang, Dept of Oceanography, **Amount $10,000**.
  Funding Source: Seed Grant Program of the College of Arts and Sciences at TAMU.
- PI, "Climate Change: Issues, Challenges, and Mitigation Strategies", 06/01/2022 - 05/31/2023, Co-PI: Ramalingam Sarvanan, Dept of Atmospheric Sciences, **Amount $2,000**.
  Funding Source: Seed Grant Program of the College of Arts and Sciences at TAMU.
- PI, "New Directions in Modeling Chemical Enhanced Oil Recovery and Hydrodynamic Instability", 01/01/2021 - 12/31/2022, Co-PIs: Dorrin Jarrahbashi (Mechanical Engineering) and Jacob McFarland (Mechanical Engineering); **Amount $32,000**.
  Funding Source: T3: Texas A&M Triads for Transformation, Project ID: 243612.
- PI, "Theory, Modeling and Computation of Chemical Enhanced Oil Recovery", 09/01/2015-08/31/2019, **Amount $144,005**.
  Funding Source: US National Science Foundation (DMS/COMP).
- PI, "Advanced Modeling of Enhanced Oil Recovery Methods," 9/1/2009-8/1/2013, **Amount $1,006,103**.
  Funding Source: Qatar National Research Fund.
- CO-I, "Institute for Applied Mathematics and Computational Science (IAMCS)," 4/1/2008-3/31/2013, **Amount $24,720,657**.
  Funding Source: KAUST Program (Saudi Arabia).
- PI, "Interdisciplinary research on complex flows of complex fluids", 01/01/2010 - 05/31/2011, **Amount $2,750**.
  Funding Source: VPR's Office (TAMU) (International Programs).
- PI, "Development and Implementation of Numerical Algorithms," 06/01/2001-05/31/2002, **Amount $800**.
  Funding Source: VPR's Office (TAMU) (International Programs).
- PI, "Advanced Scientific Computation of Nonlinear Problems with Applications," 01/1998-12/1999, **Amount $107,087**.
  Funding Source: Texas State (Texas Advanced Research Program).
- PI, "Studies in Low Dimensional Dynamics of Complicated Phenomena and Their Control," 06/01/1999-05/31/2000, **Amount $24,948**.
  Funding Source: VPR's Office (TAMU) (Interdisciplinary Research Initiatives Program).
- PI, Research Enhancement Grant, 06/1999-05/2000, **Amount $3,750**.
  Funding Source: College of Science (TAMU).
- CO-PI, "Combustion Modeling of Dense Suspensions/Sprays," 06/01/1998-05/31/2000, **Amount $25,000**.
  Funding Source: VPR's Office (TAMU) (Interdisciplinary Research Initiatives Program).
- PI, Research Enhancement Grant, 06/01/1998-05/31/1999. **Amount $3,600**.
  Funding Source: College of Science (TAMU).
- PI, "Implementation of My Fast Algorithms,", 06/01/1998-05/31/1999, **Amount $600**.
  Funding Source: VPR's Office (TAMU)(Faculty Minigrant Program).

- PI, Research Enhancement Grant, 06/01/1996-05/31/1997, **Amount $3,600**.
  Funding Source: College of Science (TAMU).
- PI, "A Study of Chaos and Fractals in Fluids," 06/01/1995-05/31/1996, **Amount $7,124**.
  Funding Source: VPR's Office (TAMU) (Scholarly and Creative Activities Program).
- PI, Research Enhancement Grant, 06/01/1994-05/31/1995, **Amount $4,000**.
  Funding Source: College of Science (TAMU).
- PI, "Direct Numerical Simulation of 3-D Chaotic Mixing of Stratified Fluids," 06/01/1994-05/31/1995, **Amount $45,000**.
  Funding Source: VPR's Office (TAMU) (Interdisciplinary Research Initiatives Program).
- PI, "Scientific Computation of Nonlinear Problems," 01/01/1993-12/31/1995, **Amount $40,000**.
  Funding Source: US National Science Foundation (DMS/COMP).
- PI, "Scientific Computation of Nonlinear Problems," 07/01/1991-12/31/1992, **Amount $18,214**.
  Funding Source: US National Science Foundation (DMS/COMP).
- PI, "An Efficient Approach to Inverse Problems in Compressible Flows," 07/01/1988-06/30/1991, **Amount $32,313**.
  Funding Source: US National Science Foundation (DMS/COMP).
- CO-PI, "Mathematical Sciences Research Equipment," 09/01/1988-, $80,000 from NSF, $80,000 matching funds from Texas A&M University, & $37,000 from Department of Mathematics for a total of **Amount $192,000**.
  Funding Source: US National Science Foundation.

9 Publications of Prabir Daripa

Software published:

1. DFEM-MMOC based EOR Code in MATLAB, GitHub repository, publisher = GitHub, (2020) (with S. Dutta)
   DFEM stands for Discontinuous Finite Element Method; MMOC stands for Modified Method of Characteristics; EOR stands for Enhanced Oil Recovery.

9.1 Refereed Research Papers

Journal Papers:

1. "New results on the motion of interfaces of multi-layer radial Hele-Shaw flows", **Physics of Fluids**, Vol. 36, Issue 10 (2024). (with Craig Gin)
2. "A Harmonized River-Ocean Coupled Database for the Northern Gulf of Mexico", **Scientific Data**, 14 pages, Sept, 2023, Submitted. (with Bailey Armos, Shuang Zhang, Tao Wen and Ellie Gellerson)
3. "Modeling shear-thinning polymer flooding using a dynamic viscosity model", **Physics of Fluids**, Vol. 35, 046606 (2023). (with Rohit Mishra)
4. "Linear instability of interfacial Hele-Shaw flows of viscoelastic fluids", **Journal of Non-Newtonian Fluid Mechanics**, Vol. 309, 104923 (2022). Preprint, (with Z. Hai)
5. "Linear instability of viscoelastic interfacial Hele-Shaw flows: a Newtonian fluid displacing an UCM fluid", **Journal of Non-Newtonian Fluid Mechanics**, Vol. 303, 104773 (2022). Preprint, (with Z. Hai)
6. "Time-dependent injection strategies for multi-layer Hele-Shaw and porous media flows", **Physical Review Fluids**, Vol. 6, No. 3, Article No. 033901 (2021) (with C. Gin)
7. "Stability Results on Radial Porous Media and Hele-Shaw Flows with Variable Viscosity between Two Moving Interfaces", **IMA J. Appl. Math.**, 86(2), pp. 74-99, April 2021. Published 18th March 2021. (with C. Gin)
8. "On the convergence analysis of a hybrid numerical method for multicomponent transport in porous media", **Appl. Num. Math.**, 146, 199-220, 2019.
   doi: 10.1016/j.apnum.2019.07.009 (with S. Dutta)
9. "Modeling and Simulation of Surfactant-Polymer Flooding using a New Hybrid Method", **J. Comp. Phys.**, 335, pp. 249-282, 2017. (with S. Dutta)
10. "The FFTRR based Fast Direct Algorithms for the Complex Inhomogeneous Biharmonic Problems with Applications to Incompressible Flows", **Numer. Algor.**, 75(4), pp. 937-971, 2017; doi:10.1007/s11075-016-0226-4 (with A. Ghosh)
11. "Studies on Dispersive Stabilization of Porous Media Flows", **Phys. Fluids**, **28**, 082105, 2016; doi:10.1063/1.4961162 (with C. Gin)
12. "The FFTRR based Fast Decomposition Methods for Solving Complex Biharmonic Problems and Incompressible Flows," **IMA Journal of Numerical Analysis**, 36(2), 824-850, 2016; doi:10.1093/imanum/drv033 (with A. Ghosh)

13. "On a three-layer Hele-Shaw model of enhanced oil recovery with a linear viscous profile", 15 pages, **ArXiv:1502.00380v1**, 2 February, 2015. (with Oscar Orellana and Rodrigo Meneses)
14. "A Study of a Non-Standard Eigenvalue Problem and its Application to Three-Layer Immiscible Porous Media and Hele-Shaw Flows with Exponential Viscous Profile," **Journal of Mathematical Fluid Mechanics**, 17(1), 155-181, 2015; doi: 10.1007/s00021-014-0196-z (with C. Gin)
15. "Stability Results for Multi-Layer Radial Hele-Shaw and Porous Media Flows," **Phys. Fluids 27**, 012101 2014; doi:10.1063/1.4904983 (with C. Gin)
16. "Selection principle of optimal profiles for immiscible multi-fluid Hele-Shaw flows and stabilization," **Transport in Porous Media**, 96(2), 353-367, 2013; doi:10.1007/s11242-012-0092-z (with Xueru Ding)
17. "Universal Stability Properties for Multi-Layer Hele-Shaw Flows and Application to Instability Control," **SIAM Journal of Applied Mathematics**, 72(5), 1667-1685, 2012; doi:10.1137/11086046X (with Xueru Ding)
18. "On Stabilization of Multi-layer Hele-Shaw and Porous Media Flows in the Presence of Gravity," **Transport in Porous Media**, 95(2), 349-371, 2012; doi:10.1007/s11242-012-0048-3
19. "Some Useful Upper Bounds for the Selection of Optimal Profiles," **Physica A**, 391(16), 4065-4069, 2012.
20. "A Numerical Study of Instability Control for the Design of an Optimal Policy of Enhanced Oil Recovery by Tertiary Displacement Processes," **Transport in Porous Media**, 93(3), 675-703, 2012; doi: 10.1007/s11242-012-9977-0 (with Xueru Ding)
21. "On an inverse problem: the recovery of non-smooth solutions to a backward heat equation," **Applied Mathematics Modeling**, 36, 4003-4019, 2012. (with Fabien Ternat and Oscar Orellana)
22. "A brief review of some application driven fast algorithms for elliptic partial differential equations", **Central European. Journal of Mathematics**, 10(1), 204-216, 2012.
23. "On estimates for short wave stability and long wave instability in 3-layer Hele-Shaw flows," **Physica A: Statistical Mechanics and its Applications**, 390(18-19), 3069-3076, 2011. 3
24. The effect of surfactant on long bubbles rising in vertical capillary tubes," **Jour. Stat. Mech.**, L02003, **2011(02)**, 14 pages, 2011. (with Gelu Pasa)
25. "Two stable methods with numerical experiments for solving the backward heat equation," **Appl. Numer. Math.**, 61(2), 266-284, 2011 (with Fabien Ternat and Oscar Orellana)
26. "On Diffusive Slowdown in Three-Layer Hele-Shaw Flows," **Quart. Appl. Math.**, LXVIII(3), 2010, 591-606, 2010; http://www.jstor.org/stable/43638946 (with G. Pasa)
27. "The effect of surfactant on the motion of long bubbles in horizontal capillary tubes," **Jour. Stat. Mech.**, Article No. L02002, 12 pages, 2010 (with G. Pasa)
28. "The thickening effect of interfacial surfactants in the drag-out coating problem," **Jour. Stat. Mech.**, Article No. L07002, 10 pages, 2009 (with G. Pasa)
29. "Hydrodynamic stability of multi-layer Hele-Shaw flows," **Jour. Stat. Mech.**, P12005, 32 pp., 2008; http://iopscience.iop.org/1742-5468/2008/12/P12005
30. "On Capillary Slowdown of Viscous Fingering in Immiscible Displacement in Porous Media," **Transport in Porous Media**, Vol. 75(1), pp. 1-16, 2008 (with G. Pasa)
31. "Studies of Stability in Three-Layer Hele-Shaw Flows," **Phys. Fluids**, **20**(11), 112101, 2008; http://dx.doi.org/10.1063/1.3021476

32. "Nonlinear instability of Hele-Shaw flows with smooth viscous profiles," **Journal of Differential Equations**, 245(7), 1819-1837, 2008; doi:10.1016/j.jde.2008.07.012 (with Hyung Ju Hwang)
33. "Stabilizing effect of diffusion in enhanced oil recovery and three-layer Hele-Shaw flows with viscosity gradient," **Transport in Porous Media**, 70, 11-23, 2007; doi:10.1007/s11242-007-9122-7 (with G. Pasa)
34. "Higher-order Boussinesq equations for two-way propagation of shallow water waves," **Euro. J. Mech.-B/Fluids**, 25(6), 1008-1021, 2006.
35. "A simple derivation of an upper bound in the presence of viscosity gradient in three-layer Hele-Shaw flows," **J. Stat. Mech.**, P01014, 11 pages, 2006. (With G. Paşa)
36. "Trapped modes in a channel containing three layers of fluids and a submerged cylinder," **ZAMP**(Zeitschrift fur Angewandte Mathematik und Physik), 56, pp. 1084-1097, 2005. (with A. Chakrabarti and Hamsapriye)
37. "New bounds for stabilizing Hele-Shaw flows," **Appl. Math. Lett.**, 18(11), pp. 1293-1303, 2005. (with G. Paşa).
38. "On the Growth Rate for Three-Layer Hele-Shaw Flows: Variable and Constant Viscosity Cases," **Int. J. Engg. Sci.**, 43(11-12), pp. 877-884, 2005. (with G. Paşa)
39. "On Axisymmetric Creeping Flows Involving a Hybrid Droplet," **Physica A**, 346(3-4), pp. 217-249, 2005. (with D. Palaniappan)
40. "An optimal viscosity profile in enhanced oil recovery by polymer flooding," **Int. J. Engg. Sci.**, 42(19-20), pp. 2029-2039, 2004. (with G. Paşa)
41. "A Domain Embedding Method Using Optimal Distributed Control and A Fast Algorithm," **Numer. Algor.**, 36(2), pp. 95-112, 2004. (with L. Badea)
42. "Asymptotic Study of Film Thinning Process on a Spinning Annular Disk," **J. Appl. Phys.**, 94(6), pp. 4144-4151, 2003. (With B. Dandapat, and P. C. Ray)
43. "On a Fourier Method of Embedding Domains Using an Optimal Distributed Control," **Numer. Algor.**, 32(2-4), pp. 261-273, 2003. (with L. Badea)
44. "A Class of Model Equations for Bi-directional Propagation of Capillary-Gravity Waves," **Int. J. Engg. Sci.**, 41(2), 201-218, 2003. (With R. Dash)
45. "A Fast Algorithm for Two-Dimensional Elliptic Problems," **Numer. Algor.**, 30(3-4), pp. 199-239, 2002. (with L. Badea).
46. "An Inverse Problem for the Helmholtz Equation Involving Two Semi-infinite Fluids," **Inverse Problems in Engng.**, 10(3), 203-214, 2002. (with A. Chakrabarti and S. Roy)
47. "Exterior Stokes Flows with Stick-Slip Boundary Conditions," **ZAMP**, 53(2), 281-307, 2002. (with D. Palaniappan)
48. "Analytical and Numerical Studies of a Singularly Perturbed Boussinesq Equation," **Appl. Math. Comput.**, 126(1), pp. 1-30, 2002. (with R. Dash)
49. "A Numerical Study of Pulsatile Blood Flow in An Eccentric Catheterized Artery Using a Fast Algorithm," **J. Engg. Math.**, 42(1), 1-16, 2002. (with R. Dash)
50. "Generalized Circle and Sphere Theorems for Inviscid and Viscous Flows with Applications," **SIAM J. Appl. Math.**, 62(2), pp. 514-540, 2001. (with D. Palaniappan)
51. "Singularity Induced Exterior and Interior Stokes Flows," **Phys. Fluids**, 13(11), pp. 3134-3154, 2001. (with D. Palaniappan)
52. "On a Boundary Control Approach to Domain Embedding Method," **SIAM J. Cont. Opt.**, 40(2), pp. 421-449, 2001. (with L. Badea)
53. "Interior Stokes Flows with Stick-Slip Boundary Conditions," **Physica A**, 297(1-2), pp. 37-63, 2001. (with D. Palaniappan)

54. "A Fast Parallel Algorithm for the Poisson Equation on a Disk," **J. Comp. Phys.**, 169, pp. 151-192, 2001. (with L. Borges).
55. "Weakly Non-local Solitary Wave Solutions of A Singularly Perturbed Boussinesq Equation," **Math. Comput. Sim.**, 55(4-6), pp. 395-407, 2001. (with R. Dash)
56. "Compound Droplet in Extensional and Paraboloidal Flows," **Phys. Fluids**, 12(10), pp. 2377–2385, 2000. (with D. Palaniappan)
57. "The Fastest Smooth Taylor Bubble," **Appl. Num. Math.**, 34(4), pp. 373-379, 2000.
58. "A Parallel Version of A Fast Algorithm For Singular Integral Transforms," **Numer. Algor.**, 23(1), pp. 71-96, 2000. (with L. Borges)
59. "A Computational Study of the Rising Plane Taylor Bubble," **J. Comp. Phys.**, 157(1), pp. 120-142, 2000.
60. "A Numerical Study of an Ill-posed Boussinesq Equation Arising in Water Waves and Nonlinear Lattices: Filtering and Regularization Techniques," **Appl. Math. Comp.**, 101(2), pp. 159-207, 1999. (with Wei Hua)
61. "An Efficient and Novel Numerical Method for Quasiconformal Mappings of Doubly Connected Domains," **Numer. Algor.**, 18, pp. 159-178, 1998. (with D. Mashat)
62. "Singular Integral Transforms and Fast Numerical Algorithms," **Numer. Algor.**, 18, pp. 133-157, 1998. (with D. Mashat)
63. "Some Useful Filtering Techniques For Illposed Problems," **J. Comp. Appl. Math.**, 100, pp. 161-171, 1998.
64. "Pointed Taylor Bubble Revisited," **J. Comp. Phys.**, 123(1), pp. 226–230, 1996.
65. "An Investigation of Some Pattern Selection Issues in the Rising Plane Taylor-Bubble Problem," **J. Comp. Phys.**, 121(1), pp. 129–141, 1995.
66. "The Singularity at the Tip of the Rising Plane Bubble: The Case of Non-Zero Surface Tension," **Phys. Fluids**, 6(4), pp. 1615–1617, 1994.
67. "A Fast Algorithm to Solve the Beltrami Equation with Applications to Quasiconformal Mappings," **J. Comp. Phys.**, 106(2), pp. 355–365, 1993.
68. "Iterative Schemes and Algorithms for Adaptive Grid Generation in One Dimension," **J. Comp. Phys.**, 100(2), pp. 284–293, 1992.
69. "A Fast Algorithm to Solve Non-Homogeneous Cauchy-Riemann Equations in the Complex Plane," **SIAM J. Sci. Stat. Comput.**, 13(6), pp. 1418–1432, 1992.
70. "A New Theory for One-Dimensional Adaptive Grid Generation and its Applications," **SIAM J. Numer. Anal.**, 29(6), pp. 1635–1660, 1991.
71. "Using the Grid Spacing Ratio As a Continuous Variable in One Dimensional Adaptive Grid Generation," **Appl. Math. Lett.**, 4(1), pp. 91–94, 1991.
72. "On a Numerical Method for Quasi-conformal Grid Generation," **J. Comp. Phys.**, 96(2), pp. 229–236, 1991.
73. "Solvability Condition and its Application to Fast Numerical Solution of Overposed Problems in Compressible Flows," **J. Comp. Phys.**, 95(1), pp. 436–449, 1991.
74. "On Applications of a Complex Variable Method in Compressible Flows," **J. Comp. Phys.**, 88(2), pp. 337–361, 1990.
75. "An Exact Inverse Method For Subsonic Flows," **Quart. Appl. Math.**, XLVI(3), pp. 505–526, 1988.
76. "Polymer Floods: A Case Study of Nonlinear Wave Analysis And of Instability Control In Tertiary Oil Recovery," **SIAM J. Appl. Math.**, **48**, 353–373, 1988; doi:10.1137/0148018 (with J. Glimm, B. Lindquist, O. McBryan)

77. "An Inverse Method for Subcritical Flows," **J. Comp. Phys.**, 63(2), pp. 311–328, 1986. (with Lawrence Sirovich)
78. "Exact and Approximate Gas Dynamics Using the Tangent Gas," **J. Comp. Phys.**, 62(2), pp. 400–413, 1986. (with Lawrence Sirovich)
79. "Note on Finite Difference Approximations to Burgers' Equation," **SIAM J. Sci. Stat. Comput.**, 5(4), pp. 856–864, 1984. (with H. Aref)

Theses:

80. "Direct and Inverse Problems in Gas Dynamics," Ph.D. Thesis, Brown University, (1985).
81. "A Study of Burgers' Equation," M.S. Thesis, Brown University, (1982).

Book Chapters (Refereed):

82. "Fast Algorithms and Scientific Computation," Chapter 15, *In Computational Mathematics, Modeling And Algorithms*, (Edited by J. C. Mishra), Narosha Publishing Inc., Delhi, pp. 467-517, 2003.
83. "Creeping Flows In and Around a Compound Multiphase Droplet," *In Advances in Fluid Mechanics, Vol 29*, (Edited by Brebbia et. al.), WIT Transactions on Engineering Science, Vol. 30, pp. 99-109, 2001. (with D. Palaniappan)
84. "Studies of Capillary Ripples in a Sixth-Order Boussinesq Equation Arising in Water Waves," *In Mathematical and numerical aspects of wave propagation (Santiago de Compostela, 2000)*, (*Proceedings of WAVES2000 - International Conference on Nonlinear Waves*, Madrid, Spain, July 2000.) SIAM, Philadelphia, PA, pp. 285–291, 2000. (with R. Dash).
85. "Turbulent Combustion Modeling of Coal: Biomass Blends in a Swirl Burner I: Preliminary Results," Energy Week, IV, ETCE, ASME, pp. 415-423, 1997. (with S. Dhanapalan & K. Annamalai)
86. "On The Simulation of Heterogeneous Petroleum Reservoirs," *In Numerical Simulation in Oil Recovery, IMA Vol. Math. Appl., 11*, (edited by M. Wheeler et. al.), Springer, New York, 89-103, 1988; OSTI Identifier:6568167. (with J. Glimm, B. Lindquist, M. Maesumi, O. McBryan)

Proceedings (Refereed):

87. "Fluid Dynamical and Modeling Issues of Chemical Flooding for Enhanced Oil Recovery", Proceedings of the 32nd ASME International Conference on Ocean, Offshore and Arctic Engineering, Nantes, France, June 09-14, 2013. Article Number: V006T11A025;
88. "Mathematical problems arising in chemical enhance oil recovery," Proceedings of 2011 HUIC – Hawaii University International Conferences On Mathematics and Engineering, June 13 – 15, 2011, Ala Moana Hotel, Honolulu Hawaii, USA Publication ISSN # 2160-2581 (CD-ROM), ISSN # 2160-2573 (Online).
89. "Stability enhanced models of chemical enhanced oil recovery processes," Article #1245, Proceedings of 16th US National Congress of Theoretical and Applied Mechanics, June 27 - July 2, 2010, State College, PA, US.

90. "Thin films and fingering problems in complex flows," Article #1204, Proceedings of 16th US National Congress of Theoretical and Applied Mechanics, June 27 - July 2, 2010, State College, PA, US.
91. "Fast Algorithms for PDEs in Simple and Complex Geometries," PAMM (Proc. Appl. Math. Mech.) 7, pp. 2020065-–2020066 (2007). DOI 10.1002/pamm.200700443
92. "Nonlinear Stability of Hele-Shaw Flows with Smooth Viscous Profiles," Proceedings of FICAMC (Fourth International Conference of Applied Mathematics and Computation), Plovdiv, Bulgaria, August, 2007.
93. "Solving Partial Differential Equations in Complex Domains," Proceedings of SICAM (Second International Conference of Applied Mathematics), Plovdiv, Bulgaria, August 11-18, 2005.
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123. Prabir Daripa, "Mathematical and computational challenges for multi-phase porous media flows in chemical EOR," **Online book of abstracts**, ICIAM-2019, Valencia, Spain, July 15-19, 2019.

124. Prabir Daripa (with Rohit Mishra), "A study of the effect of shear thinning in EOR by surfactant-polymer Flooding," **Bull. Amer. Phys. Soc.**, 64(13), 2019.

125. Prabir Daripa, "A Hybrid Numerical Method for Modeling Shear Thinning Effect in Non-Newtonian Porous Media Flow," **Online book of abstracts**, SIAM 2020 Virtual Annual Meeting, Toronto, Canada, July 6-10, 2020.

126. Prabir Daripa (with Zhiying Hai), "Studies on hydrodynamic stability of viscoelastic flows in a Hele-Shaw cell," **Bull. Amer. Phys. Soc.**, 66(1), 2021.

127. Prabir Daripa, "Linear instability of viscoelastic interfacial Hele-Shaw flows: Newtonian fluid displacing an upper-convected Maxwell fluid," **Bull. Amer. Phys. Soc.**, 66(17), 2021.

128. Prabir Daripa (with Zhiying Hai), "Linear instability of viscoelastic interfacial Hele-Shaw flows: Upper convected Maxwell (UCM) fluid displacing another UCM fluid," **Bull. Amer. Phys. Soc.**, 66(17), 2021.

129. Prabir Daripa, "Dispersive effects in constituent transport during multiphase flows through porous media," **Bull. Amer. Phys. Soc.**, 67(1), 2022.

130. Prabir Daripa, "A numerical approach to incorporating shear thinning effects of polymer in a chemical EOR Code," **Online Book of Abstracts, Page 57**, Interpore 2022, 14th Annual Meeting, Abu Dhabi, UAE (May 28-Jun 2, 2022).

10 Research Talks

1. Contributed (13 minutes) Upcoming: "Modeling non-uniform mixing of polymers in flows of shear-thinning polymers and surfactants in porous media", Session on "Porous Media Flows: Immiscible Displacements", 77th Annual Meeting of the Division of Fluid Dynamics, APS, Salt Lake City, UT. November 24-26, 2024. Talk given on Nov. 24th, 2024 from 9:05 am - 9:18 am.
2. **Invited** (1 hour): "FFTRR based algorithms: fast computation of solutions of elliptic equations in real and complex plane, numerical analysis, applications, and much more", First year graduate student seminar, Department of Mathematics, Texas A&M University, (Oct. 10, 2024).
3. Contributed (15 minutes): "A numerical study of the surfactant-polymer flooding using a recently developed FEM-MMOC based code", 2024 Texas A&M Conference on Energy, College Station, Texas, Sept. 11-13, 2024. Talk given on Sept 12th, 2024 from 4:15 pm - 4:30 pm, Co-authors: CS undergraduate student Carlos Acosta and Chemical Engineering undergraduate student Bhargav Akula Ramesh Kumar. Talk given by Bhargav Akula Ramesh Kumar. He also received a Best Oral Presentation Award certificate.
4. Departmental Seminar (50 minutes) "Fundamental interfacial problems arising in applied mathematical context", Applied Mathematics Seminar, Mathematics Department, TAMU College Station, Auguts 28, 11:00 - 11:50 PM, 2024.
5. **Invited** (60 minutes): "Modeling flows of shear-thinning polymers and surfactants in porous media", Applied Math Seminar in Chemical Engineering Department, University of Calgary, Calgary, 07/22/2024.
6. **Invited** (30 minutes): "Some aspects of modeling chemical enhanced oil recovery and fracturing instability in complex fluids", The Banff International Research Station for Mathematical Innovation and Discovery (BIRS) Workshop, The Banff Centre in Alberta, Canada (July 14-19, 2024). Talk on Thursday, July 18, 11:00-11:30 AM, 2024.
7. **Contributed** (15 minutes): "Fast iterative methods for variable coefficient diffusion equations on a disk", SIAM 2024 Annual Meeting, Spokane, WA. (July 8-12, 2024). Talk given by my graduate student Try Nguyen Tran during 9:20-9:35 am on Monday, July 8 during morning session CP2, 8:00-9:35 am.
8. **Invited** (30 minutes): "Mathematical and computational challenges in chemical enhanced oil recovery", Seventh Annual Texas A&M Research Computing Symposium 2024, TAMU ILCB Building, College Station, Texas, (20-24 May 2024). Talk given in room ILCB 224 during 10:00-10:30 AM, on May 23, 2024.
9. **Invited** (15 minutes): "Modeling of Dispersive Shear Thinning Polymer-Surfactant Flooding", in Minisymposium titled "Mathematical and numerical methods for multiscale multi-physics, nonlinear coupled processes", InterPore 2024, 16th Annual Meeting, Qingdao, China (13-16 May 2024). Minisymposium organizers: Jakub Both, Eric Chung, Ben Mansour Dia, Cunqi Jia, Nadja Ray, and Peng Xu. Online Presentation. "Video of my talk"

10. Contributed (13 minutes): "Modeling non-uniform mixing of polymer in Enhanced Oil Recovery by polymer flooding", Session "RR03: V:DFD II", Talk on Friday, March 8, 12:18 PM-12:30 PM, 2024 Annual March Meeting of American Physical Society, Minneapolis, Minnesota. (March 3-8, 2024).
11. **Invited** (one hour) "Introduction to modeling of population dynamics", Applied Mathematics Undergraduate Seminar (AMUSE), Department of Mathematics, Texas A&M University, (Feb 29, 2024).
12. Contributed (13 minutes): "Fracturing instability in interfacial Hele-Shaw flows involving complex fluids", Session on "Non-Newtonian Flows: Turbulence & Instabilities", 76th Annual Meeting of the Division of Fluid Dynamics, APS, Washington, DC. November 19-21, 2023. Talk given on Nov. 21st, 2023 from 8:39 pm - 8:52 am.
13. Contributed (15 minutes): "Physics-informed Neural Networks (HD-PiNN) for High Dimensional Partial Differential Equations", Session on Data Science & Statistical Learning, 2023 Texas A&M Conference on Energy, College Station, Texas, Sept. 27-29, 2023. Talk given on Sept 28th, 2023 from 3:15 pm - 3:30 pm, Co-author and speaker: undergraduate student David Sanchez
14. Contributed (15 minutes): "Effect of surfactant on polymer flooding with and without shear-thinning polymer in chemical enhanced oil recovery", Session on Energy Savings, 2023 Texas A&M Conference on Energy, College Station, Texas, Sept. 27-29, 2023. Talk given on Sept 28th, 2023 from 3:45 pm - 4:00 pm, Co-author and speaker: Undergraduate student Carlos Acosta
15. **Invited** (25 minutes): "A stability solver for nonlinear mountain waves", in Minisymposium titled "Numerical methods for emerging flow problems in geosciences", ICIAM 2023, Tokyo, Japan. (August 20-25, 2023); Co-authors: Craig Epifanio and Kevin Viner; (Speaker: Craig Epifanio). Talk presented on Monday, August 21.
16. **Invited** (25 minutes): "A machine learning approach to phytoplankton productivity across the Gulf of Mexico", in Minisymposium titled "Numerical methods for emerging flow problems in geosciences", ICIAM 2023, Tokyo, Japan. (August 20-25, 2023); Co-authors: Bailey Armos and Shuang Zhang; (Speaker: Bailey Armos) Talk presented on Monday, August 21.
17. **Invited** (25 minutes): "A hybrid numerical method for dispersive multiphase porous media flows", in Minisymposium titled "Numerical methods for emerging flow problems in geosciences", ICIAM 2023, Tokyo, Japan. (August 20-25, 2023) Talk presented on Monday, August 21.
18. **Invited** (15 minutes): "Singularities and surprises in Hele-Shaw and porous media models of immiscible two-phase displacement flows involving non-Newtonian fluids", in Minisymposium titled "Mathematical Modelling, Analysis and Simulation of Processes Involving Moving Interfaces", SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS23), Bergen, Norway, (June 19-22, 2023). Minisymposium organizers: Tufan Ghosh, Rainer Helmig, and Iuliu Sorin Pop. Talk presented on Monday, June 19.
19. **Invited** (15 minutes): "Singularities and surprises in porous media models of interfacial non-Newtonian flows", in Minisymposium titled "Interfacial phenomena across scales", Interpore 2023, 15th Annual Meeting, Edinburgh, UK (22-25 May 2023). Minisymposium organizers: Ran Holtzman, Kamaljit Singh, Oshri Borgman, Subhadeep Roy, Nathaly Lopes Archilha, Eduardo Abreu. Talk presented on Monday, May 22 during afternoon session 5:00-6:00 pm.
20. Special session (13 minutes): "Singularities in two phase viscoelastic displacement flows in a rectilinear Hele-Shaw cell", Session "Fluids X", Talk on Thu. March 9, 9:36

a.m.–9:48 a.m. PST, 2023 Annual March Meeting of American Physical Society, Las Vegas, Nevada. (March 5-10, 2023).

21. Special session (13 minutes): "Traveling Viscosity Waves and Mild Viscous Fingering: the Unexpected Role of Shear Thinning Revealed by Data Driven Modeling of Shear-Thinning Polymer Flooding", Special Session on "Porous Media Flows: Application", 75th Annual Meeting of the Division of Fluid Dynamics, APS, Indianapolis, Indiana. (Nov. 22, 2022)
22. **Invited** (30 minutes): "Data driven modelling of shear-thinning polymer flooding", in Minisymposium titled "Physics-based and Data-driven models for Engineering Applications", 5th Annual Meeting of the SIAM TX-LA Section, University of Houston. (Nov. 4-6, 2022)
23. **Invited** (20 minutes): "Resonant instability in subcritical mountain wave flows", in Minisymposium titled "Hydrodynamic Stability: Theory, Experiments and Numerics", SES (Society of Engineering Science) 2022 Annual Meeting, College Station. (Oct 16-19, 2022); Co-author and speaker: Craig Epifanio
24. **Keynote** (30 minutes): "Data Driven Modeling of Multiphase Multicomponent Porous Media Flows of Complex Fluids", in Minisymposium titled "Hydrodynamic Stability: Theory, Experiments and Numerics", SES (Society of Engineering Science) 2022 Annual Meeting, College Station. (Oct 16-19, 2022)
25. **Invited** (20 minutes): "Some Recent Useful Results On Stability of Viscoelastic Hele-Shaw Flows", in Minisymposium titled "Hydrodynamic Stability: Theory, Experiments and Numerics", SES (Society of Engineering Science) 2022 Annual Meeting, College Station. (Oct 16-19, 2022)
26. **Invited** (30 minutes): "On Hydrodynamic Stability of Viscoelastic Hele-Shaw Flows", in Minisymposium titled "Stability and Modeling in Non-Newtonian Flows", SIAM 2022 Annual Meeting, Pittsburgh. (July 11-15, 2022)
27. **Invited** (40 minutes): "Data Driven Modeling of Enhanced Oil Recovery by Polymer Flooding", in Minisymposium titled "Hydrodynamic Stability and Simulation of Complex Fluid Flows in Porous Media", USNC/TAM 2022, Austin. (June 19-22, 2022)
28. **Invited** (20 minutes): "Modeling of Dispersive Effects in Multiphase Multicomponent Porous Media Flows", in Minisymposium titled "Hydrodynamic Stability and Simulation of Complex Fluid Flows in Porous Media", USNC/TAM 2022, Austin. (June 19-22, 2022)
29. **Invited** (20 minutes): "Linear Stability Results When a Newtonian Fluid Displaces an Oldroyd-B fluid in a Hele-Shaw Cell", in Minisymposium titled "Hydrodynamic Stability and Simulation of Complex Fluid Flows in Porous Media", USNC/TAM 2022, Austin. (June 19-22, 2022); Co-author and speaker: Zhiying Hai
30. **Invited** (15 minutes) "A numerical approach to incorporating shear thinning effects of polymer in polymer flooding", in Minisymposium titled "Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes", Interpore 2022, 14th Annual Meeting, Abu Dhabi, UAE (May 28-Jun 2, 2022).
31. Special session (13 minutes): "Dispersive effects in constituent transport during multiphase flows through porous media", Special Session on "Granular Porous Media and Multiphase Flows II", APS March Meeting, Chicago, (March 14-18, 2022).
32. "B. R. Seth Memorial (Plenary) Lecture" (one hour): "Aspects of Modeling and Linear Instability of Viscoelastic Hele-Shaw Flows", 66th Congress of ISTAM (an International Conference), Virtual Mode at VIT-AP University, Amaravati, Andra Pradesh, India, (Dec. 03-05, 2021).

33. Special session (15 minutes): "Linear instability of viscoelastic interfacial Hele-Shaw flows: Newtonian fluid displacing an upper-convected Maxwell fluid", Special Session on "Flow Instability: Elastic and Complex Fluids and Multiphase Flows", 74th Annual Meeting of the Division of Fluid Dynamics, APS, Phoenix, Arizona, (Nov. 21-23, 2021).
34. Special session (15 minutes): "Linear instability of viscoelastic interfacial Hele-Shaw flows: Upper convected Maxwell (UCM) fluid displacing another UCM fluid", Special Session on "Flow Instability: Elastic and Complex Fluids and Multiphase Flows", 74th Annual Meeting of the Division of Fluid Dynamics, APS, Phoenix, Arizona, (Nov. 21-23, 2021); Co-author and speaker: Zhiying Hai
35. Special session (15 minutes): "Studies on hydrodynamic stability of viscoelastic flows in a Hele-Shaw cell", Special Session on "Flow of Complex Fluids", APS March Meeting, ONLINE, (March 15-19, 2021).
36. Contributed (15 minutes): "A hybrid numerical method for modeling shear thinning effect in non-Newtonian porous media flow", SIAM 2020 Virtual Annual Meeting, Toronto, Canada. (July 6-10, 2020).
"video"
37. Special session (15 minutes): "A study of the effect of shear thinning in EOR by surfactant-polymer flooding", Special Session on "Porous Media Flow", 72nd Annual Meeting of the Division of Fluid Dynamics, APS, Seattle, WA, (Nov. 23-26, 2019). Co-author and speaker: Rohit Mishra
38. Contributed (15 minutes): "A study of the non-Newtonian effects in chemical EOR using Polymer", 2019 Texas A&M Conference on Energy, (Sept. 23-25, 2019); Co-author and speaker: Rohit Mishra
39. Invited (1 hour): "Algorithms, Modeling, and Beauty in Fluid Mechanics", Aug 1, Texas A&M - Beihang Summer Program, (July 30-August 2, 2019).
40. Contributed (20 minutes): "Mathematical and computational challenges for multi-phase porous media flows in chemical EOR", Special Session on "Applied Mathematics for Industry and Engineering I", ICIAM-2019, Valencia, Spain, (July 15-19, 2019).
41. **Invited** (25 minutes): "Recent Results and Perspectives on Multi-phase Multi-component Porous Media Flows in Chemical EOR", in Minisymposium titled "Novel Computational Methods and Stabilization of Fingering Instabilities for Porous Media Flows in Chemical EOR", SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS19), Houston, USA, (March 11-14, 2019). video of my talk
42. **Invited** (25 minutes): "Results on the Stabilization of Fingering Instabilities in Porous Media Flows", in Minisymposium titled "Novel Computational Methods and Stabilization of Fingering Instabilities for Porous Media Flows in Chemical EOR", SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS19), Houston, USA, (March 11-14, 2019); Co-author and speaker: Craig Gin
43. **Invited** (25 minutes): "On the Immiscible Displacement of Viscoelastic Fluids in a Hele-Shaw Cell", in Minisymposium titled "Novel Computational Methods and Stabilization of Fingering Instabilities for Porous Media Flows in Chemical EOR", SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS19), Houston, USA, (March 11-14, 2019); Co-author and speaker: Zhiying Hai
44. Contributed (15 minutes): "Enhanced time dependent injection rate for multilayer stable Hele-Shaw flows", 71st Annual Meeting of the Division of Fluid Dynamics, APS, Atlanta, GA, (Nov. 18-20, 2018).

45. **Invited** (15 minutes) "An overview of mathematical, physical and computational challenges in chemical enhanced oil recovery", in the Minisymposium "Mathematical, physical and computational aspects of chemical enhanced oil recovery", Interpore 10th Annual Meeting, New Orleans, USA (May 14-17th, 2018).
46. **Invited** (half hour) "Challenges in mathematical modeling and computation of porous media flows for chemical enhanced oil recovery", UTRGV Symposium on Mathematics and its Applications, Department of Mathematics, The University of Texas-Rio Grande Valley– Edinburg Campus, TX, (April 7, 2018).
47. **Invited** (one hour): "A brief digression of my research in applied and computational mathematics", MGSO Seminar Series, Mathematics Department, Texas A&M University, College Station, TX-77843, (April 8, 2018).
48. **Invited** (one hour) "Stability, modeling and DFEM-MMOC based hybrid method for the simulation of multiphase multi-component porous media flows", Department of Mathematics, IIT Delhi, India, (Dec. 18, 2017).
49. **Invited** (one hour) "Stability, modeling and DFEM-MMOC based hybrid method for the simulation of multiphase multi-component porous media flows", Department of Mathematics, IIT Ropar, India, (Dec. 13, 2017).
50. **Invited** (week long: 4 hours per day) "Hydrodynamic Stability". Department of Mathematics, IIT Roper, India, (Dec. 11-15, 2017).
51. Contributed (15 minutes): "Viscous fingering and channeling in chemical enhanced oil recovery", 70th Annual Meeting of the Division of Fluid Dynamics, APS, Denver, Colorado, (Nov. 19-21, 2017).
52. Contributed (15 minutes): "Dispersive effects on multicomponent transport through porous media", 70th Annual Meeting of the Division of Fluid Dynamics, APS, Denver, Colorado, (Nov. 19-21, 2017); Co-author and speaker: Sourav Dutta
53. Contributed (15 minutes): "The Stability and Interfacial Motion of Multi-layer Radial Porous Media and Hele-Shaw Flows", 70th Annual Meeting of the Division of Fluid Dynamics, APS, Denver, Colorado, (Nov. 19-21, 2017); Co-author and speaker: Craig Gin
54. **Invited** (one hour) "Mathematics of Stability Theory and Chaos Theory", Applied Mathematics Undergraduate Seminar (AMUSE), Department of Mathematics, Texas A&M University, (Oct 18, 2017).
55. **Colloquium** (one hour) "Some recent results on the stability and modeling of multiphase porous media flows", Department of Mathematics, Texas A&M University, (Sept 21, 2017).
56. **Invited** (20 minutes): "Chemical enhanced oil recovery driven models and methods for multiphase multicomponent Newtonian and non-Newtonian/viscoelastic porous media flows", in Minisymposium titled "Standard and nonstandard models and numerical methods for complex porous media flows with applications", SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS17), Erlangen, Germany, (Sept 11-14, 2017).
57. Contributed (15 minutes): "On the Modeling of Displacement of Non-Newtonian Fluids in Porous Media Flows", SIAM 2017 Annual Meeting, Pittsburgh, PA. (July 10-14, 2017).
58. Contributed (15 minutes): "Complete Stabilization of Multi-Layer Radial Hele-Shaw Flows Using a Time-Dependent Injection Rate and the Associated Interface Motion", SIAM 2017 Annual Meeting, Pittsburgh, PA. (July 10-14, 2017). Co-author and speaker: Craig Gin.

59. Contributed (15 minutes): "Modeling and Simulation of Multicomponent, Multiphase Porous Media Flows Using a New Hybrid Method", SIAM 2017 Annual Meeting, Pittsburgh, PA. (July 10-14, 2017). Co-author and speaker: Sourav Dutta.
60. **Invited** (one hour): "An Overview of Chemical Enhanced Oil Recovery and Recent Advances", Southwest Research Institute, San Antonio, TX, (April 10, 2017).
61. **Invited** (one hour) "Mathematics of Oil Recovery", Applied Mathematics Undergraduate Seminar (AMUSE), Department of Mathematics, Texas A&M University, (April 05, 2017).
62. Contributed (25 minutes): "On stability of viscoelastic fluid flow in porous media", 2017 Texas PDE Conference, College Station, TX, (Mar. 4-5, 2017).
63. Contributed (25 minutes): "A modern hybrid method for multiphase, multicomponent flow and transport in porous media", 2017 Texas PDE Conference, College Station, TX, (Mar. 4-5, 2017); Co-author and speaker: Sourav Dutta.
64. Contributed (30 minutes): "A numerical study of immiscible two-phase multicomponent flows in highly heterogeneous porous media", 2017 Joint Mathematics Meetings, Atlanta, GA, (Jan. 4-7, 2017); Co-author and speaker: Sourav Dutta
65. Contributed (15 minutes): "Dispersive effects on the multi-layer porous media flows with permeable and impermeable interfaces", 69th Annual Meeting of the Division of Fluid Dynamics, APS, Portland, OR, (Nov. 20-22, 2016).
66. Contributed (30 minutes): "Modeling and simulation of multicomponent, multiphase porous media flows using a new hybrid method", 2016 Texas A&M Conference on Energy, (Sept. 26-28, 2016); Co-author and speaker: Sourav Dutta
67. **Invited Colloquium** (one hour): "Mathematical and Computational Aspects of Multiphase Multi-component Porous Media Flows", Department of Mathematics, Indian Institute of Technology, Kharagpur, India, (August 17, 2016).
68. **Invited** (25 minutes): "Physical and Mathematical Modeling of Chemical Enhanced Oil Recovery", in Minisymposium titled "Fluid Physics and Advanced Numerical Methods for Chemical Enhanced Oil Recovery", SIAM 2016 Annual Meeting, Boston, MA. (July 11-15, 2016).
69. **Invited** (one hour) "Introduction to Asymptotics", Applied Mathematics Undergraduate Seminar (AMUSE), Department of Mathematics, Texas A&M University, (April 20, 2016).
70. **Invited** (one hour): "Modeling and simulation of multiphase multicomponent porous media flows in the context of chemical enhanced oil recovery," Computational Sciences Seminar Series, Department of Mathematics, University of Texas at Dallas, (April 14, 2016).
71. **Invited** (50 minutes): "Topics in Applied Mathematics", First year graduate student seminar, Department of Mathematics, Texas A&M University, (Jan 27, 2016).
72. Contributed (15 minutes): "Modeling and simulation of multiphase multicomponent multi-physics porous media flows in the context of chemical enhanced oil recovery", 68th Annual Meeting of the Division of Fluid Dynamics, APS, Boston, MA, (Nov. 22-24, 2015); Co-author: Sourav Dutta.
73. Contributed (15 minutes): "On the stabilizing role of species diffusion in chemical enhanced oil recovery", 68th Annual Meeting of the Division of Fluid Dynamics, APS, Boston, MA, (Nov. 22-24, 2015); Co-author: Craig Gin.
74. **Invited** (50 minutes): "Topics in Applied Mathematics", First year graduate student seminar, Department of Mathematics, Texas A&M University, (March 04, 2015).

75. Contributed (15 minutes): "A New Saffman-Taylor Growth Rate Formula", 67th Annual Meeting of the Division of Fluid Dynamics, APS, San Francisco, CA, (Nov. 23-25, 2014).
76. Contributed (15 minutes): "Stability Results on Multi-Layer Radial Porous Media and Hele-Shaw Flows with Variable Viscosity", 67th Annual Meeting of the Division of Fluid Dynamics, APS, San Francisco, CA, (Nov. 23-25, 2014); Co-author: Craig Gin.
77. Invited (25 minutes): "Fast Iterative Methods for The Variable Diffusion Coefficient Equation in a Disk", in Minisymposium titled "Boundary Integral Equations and Their Applications - Part IV of IV", SIAM 2014 Annual Meeting, Chicago, Ill (July 7-11, 2014). Talk given by Aditi Ghosh on July 11, Co-authors: Joungdong Kim and Prabir Daripa
78. Contributed (15 minutes): "Instability of displacement of an Oldroyd-B fluid by air in a Hele-Shaw cell", APS March Meeting, Denver, CO, (March 03-07, 2014).
79. Contributed (15 minutes): "Stability Results on Multi-Layer Radial Hele-Shaw Flows", 66th Annual Meeting of the Division of Fluid Dynamics, APS, Pittsburg, PA, (Nov. 24-26, 2013); Co-author: Craig Gin.
80. Contributed (15 minutes): "Saffman-Taylor Instability for a non-Newtonian fluid", 66th Annual Meeting of the Division of Fluid Dynamics, APS, Pittsburg, PA, (Nov. 24-26, 2013).
81. **Invited** (one hour): "Mathematical and Computational Aspects of Chemical Enhanced Oil Recovery Process", in International Workshop on Enhanced Oil Recovery and Porous Media Flows", TAMUQ, Doha, Qatar, July 29- (August 1, 2013). Related Video
82. Contributed (15 minutes): "Application of FFT-recursive-relation based hybrid fast algorithms to computing interfacial flows", SIAM 2013 Annual Meeting, San Diego, CA. (July 8-12, 2013); Co-Author: Joung Dong Kim.
83. Contributed (15 minutes): "Numerical Evidence of Extreme Diffusive Stabilization in Immiscible Models of Chemical Enhanced Oil Recovery", SIAM Ammual Meeting, San Diego, CA, (July 8-12, 2013).
84. **Invited** (30 minutes): "Theoretical and Computational Perspectives on Chemical Enhanced Oil Recovery Processes", in Minisymposium titled "Theory and computation of porous media flows in oil reservoirs", SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS13), Padova, Italy, (June 17-20, 2013).
85. **Invited** (25 minutes): "An Efficient Numerical Method for ASP Flooding in Tertiary Oil Recovery", in Minisymposium titled "Theory and computation of porous media flows in oil reservoirs", SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS13), Padova, Italy, (June 17-20, 2013): Co-author: Sourav Dutta.
86. Poster Session: "Application of a fast algorithm to solving the pressure equation efficiently for Darcy's flow in porous media", SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS13), Padova, Italy, (June 17-20, 2013).
87. **Invited** (20 minutes): "Fluid dynamical and modeling issues of chemical flooding for enhanced oil recovery", in Petroleum Technology Minisymposium on "Multi-scale Reservoir Characterization for Effective Enhanced Oil and Gas Recovery", Organized within "Petroleum Technology Symposium" in OMAE2013 conference, Nantes, France, (June 9-14, 2013).
88. Contributed talk (15 minutes): "Universality Results for Multi-phase Hele-Shaw Flows", APS March Meeting, Baltimore, MD, (March 18-22, 2013).

89. **Invited** (25 minutes): "A Fast Algorithm for Biharmonic Equation and Applications", in the minisymposium titled "Fast Algorithms for Integral Equations Methods and Their Applications" at SIAM Conference on Computational Science and Engineering, Boston, USA. (Feb 25 - March 01, 2013).
90. **Invited** (60 minutes): "Introduction of some application driven problems and fast algorithms", First year graduate student seminar, Mathematics Department, Texas A&M University, College Station, TX-77843, (Feb. 14, 2013).
91. Contributed (15 minutes): "Relevance of Linear Stability Results to Enhanced Oil Recovery", 65th Annual Meeting of the Division of Fluid Dynamics, APS, San Diego, CA, (Nov. 18-20, 2012); Co-author: Xueru Ding
92. Contributed (15 minutes): "Universality Results for Multi-Layer Hele-Shaw and Porous Media Flows", 65th Annual Meeting of the Division of Fluid Dynamics, APS, San Diego, CA, (Nov. 18-20, 2012).
93. **Invited** Colloquium (one hour) "Fluid dynamical and modeling issues of chemical flooding for enhanced oil recovery", Petroleum Engineering Seminar, Louisiana State University, Baton Rouge, (Sept 28, 2012).
94. Contributed (15 minutes): "Numerical Studies of EOR by ASP-flooding", 2012 SIAM Annual Meeting, Minneapolis, Minnesota, (July 9-13, 2012); Co-author: Xueru Ding.
95. Contributed (15 minutes): "An efficient numerical method for solving coupled systems of elliptic interface and hyperbolic partial differential equations with applications to enhanced oil recovery", 2012 SIAM Annual Meeting, Minneapolis, Minnesota, (July 9-13, 2012); Co-author: Liqun Wang.
96. Contributed (15 minutes): "Universal Stability Properties for Multi-Layer Hele-Shaw Flows and its Application to Instability Control", Minneapolis, Minnesota, 2012 SIAM Annual Meeting, (July 9-13, 2012).
97. Poster Presentation: "A Fast Algorithm to Solve Slow Incompressible Steady Flows", 2012 SIAM Annual Meeting, Minneapolis, Minnesota, (July 9-13, 2012); Co-author: Aditi Ghosh.
98. **Invited** (one hour) "Introducing some applied problems from fluid mechanics", Applied Mathematics Undergraduate Seminar (AMUSE), Department of Mathematics, Texas A&M University, (April 11, 2012).
99. **Invited** (one hour) "On stability results on multi-layer Hele-Shaw flows arising in the context of Enhanced Oil Recovery", Integrability and Applied Mathematics Seminar, Department of Mathematics, University of Central Florida, (March 16th., 2012).
100. **Invited** (one hour): "On three-layer flows and the eigenvalue problem", Department of Mathematics, Universidad Tecnica Federico Santa Maria, Valparaiso-Chile, (Jan 18, 2012).
101. Contributed (15 minutes): "Optimal constant time injection policy for enhanced oil recovery and characterization of optimal viscous profiles", 64th Annual Meeting of the Division of Fluid Dynamics, APS, Baltimore, Maryland, (Nov. 20-22, 2011).
102. **Invited** Lecture Series (5 days, 6 hours per day): 5 day Course on Computational Fluid Dynamics, under the initiative of IUCEE (Indo-US Collaboration on Engineering Education), delivered at VelTech University, Chennai, India, (Aug 8 - Aug 12, 2011).
    Video of an one-hour lecture given as part of this lecture series. The Video shows the one specifically delivered for motivating undergrads to study CFD. It was on FLI link since 2012 but posted on youtube just recently (around 1/26/2016).

103. **Invited** Seminar (one hour): "Some theoretical and numerical results on enhanced oil recovery by ASP flooding in Porous media", Applied Mechanics Seminar, Department of Applied Mechanics, IIT, Chennai, India, (Aug. 11, 2011).
104. **Invited** (25 minutes): "Modeling of complex flows involving interfaces", in Minisymposium on "Coupling of interface methods with PDEs and their applications - Part IV", ICIAM-2011 Meeting, Vancouver, Canada, (July 18-22, 2011).
105. Contributed (20 minutes): "Effect of Variable Viscosity on Stabilization in Hele-Shaw Flows", ICIAM-2011 Meeting, Vancouver, Canada, (July 18-22, 2011).
106. **Invited** (one hour): "Instability control in enhanced oil recovery by ASP-flooding using Hele-Shaw model", Hawaii University International Conferences On Mathematics and Engineering, Honolulu, Hawaii, (June 13–15, 2011).
107. **Invited** (30 minutes): "Mathematical problems arising in chemical enhances oil recovery", Hawaii University International Conferences On Mathematics and Engineering, Honolulu, Hawaii, (June 13–15, 2011).
108. **Invited** (one hour): "A survey of some problems from chemical enhanced oil recovery", Simion Stoilow Institute of Mathematics of the Romanian Academy, Bucharest, Romania, (April 13, 2011).
109. Contributed (15 minutes): "Generalized Saffman-Taylor formula for multi-layer Hele-Shaw flows", APS March Meeting, Dallas, Texas (March 21-25, 2011).
110. **Invited** Colloquium (one hour): "Generalized Saffman-Taylor formula for multi-layer Hele-Shaw and porous media flows", Applied Mathematics Seminar, Department of Applied Mathematics, Institute of Technology, Benaras Hindu University (BHU), Varanasi, India, (Jan 03, 2011).
111. **Plenary** (one hour) "Application driven development of some useful fast algorithms for PDEs", International Conference on Mathematics of Date, Allahabad, India, (Dec 31, 2010 - Jan 04, 2011).
112. **Plenary** (one hour) "Generalized Saffman-Taylor formula for multi-layer Hele-Shaw and porous media flows", Jan 01, 2011, International Conference on Mathematics of Date, Allahabad, India, (Dec 31, 2010 - Jan 04, 2011).
113. Contributed (15 minutes): "Singularity Formation in a Model of Shallow Water Wave Equations", 63rd Annual Meeting of the Division of Fluid Dynamics, APS, Los Angeles (Nov. 21-23, 2010).
114. Contributed (15 minutes): "Effect of Variable Viscosity on Stabilization in Hele-Shaw Flows", 63rd Annual Meeting of the Division of Fluid Dynamics, APS, Los Angeles (Nov. 21-23, 2010).
115. **Invited** Colloquium (one hour): "Thin film problems in Fluid Mechanics", Applied Mathematics Seminar, Mathematics Department, Indian Institute of Technology, Kharagpur, India, (August 13, 2010).
116. **Invited** Colloquium (one hour): "On porous media flows involving chemical EOR", Distinguished Lecture Series, Indian School of Mines, **Dhanbad**, India, (August 10, 2010).
117. **Invited** Colloquium (one hour): "Thin film problems in Fluid Mechanics", Invited one-hour colloquium talk, Mathematics and Physics Unit, Indian Statistical Institute, **Kolkata**, India, (July 29, 2010).
118. Contributed (15 minutes): "Stability Results on Multi-Layer Hele-Shaw Flows", 2010 SIAM Annual Meeting (AN10), Pittsburgh, Pennsylvania, (July 12-16, 2010).
119. Contributed (15 minutes): "Modeling Complex Fluid Flows in Porous Media", 2010 SIAM Annual Meeting (AN10), Pittsburgh, Pennsylvania, (July 12-16, 2010),

120. Contributed (25 minutes): "Stability enhanced models of chemical enhanced oil recovery processes", US National Congress on Theoretical and Applied Mechanics, at 4:35-5:00 pm on July 1, Penn State University, College Park, (June 27-July 2, 2010).
121. Contributed (25 minutes): "Thin films and fingering problems in complex flows", US National Congress on Theoretical and Applied Mechanics, 3:20-3:45 pm on July 1, Penn State University, College Park, (June 27-July 2, 2010).
122. **Plenary** (one hour): "Physical and computational issues in modeling chemical enhanced oil recovery by ASP-flooding", Seventh Panamerican Workshop in Applied and Computational Mathematics/ Computational Science and Engineering, Choroni, Venezuela, (June 6-11, 2010).
123. **Invited** colloquium (one hour): "Some Fundamental Research Motivated by EOR (Enhanced Oil Recovery) Technology", Engineering, Texas A&M University at Qatar, Doha, (May 27, 2010).
124. **Invited** colloquium (one hour): "Some Application Driven Fast Algorithms for PDEs", College of Science, Texas A&M University at Qatar, Doha, (May 20, 2010).
125. **Invited** colloquium (one hour): "Stabilization of hydrodynamic instabilities in Hele-Shaw flows", Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA, (April 29, 2010).
126. **Invited** colloquium talk (one hour): "Effect of surfactant on the thin-film in Landau-Levich (in Coating theory) and Bretherton problems (bubbles in capillary tube)", Mechanical Engineering Seminar, NJIT, New Jersey, NJ, (April 28, 2010).
127. **Invited** colloquium talk (one hour): "Some recent results on multi-layered Hele-Shaw flows", Applied Mathematics Seminar, NJIT, New Jersey, NJ, (April 26, 2010).
128. **Invited** colloquium talk (one hour): "Mathematical and Computational Modeling of Complex Fluid Flows in Porous Media for Enhanced Oil Recovery", Applied Mathematics Seminar, UNAM, Mexico City, Mexico, (April 22, 2010).
129. **Invited** (35 minutes): "Issues and directions of ASP-flooding in Enhanced Oil Recovery", BIT's 1st Annual Congress: Well Simulation and EOR 2010, Chengdu, China, (April 12-14, 2010).
130. **Invited** Math-Physics Seminar (one hour): "Some Results on Multi-Layer Hele-Shaw Flows", in Mathematical Physics Seminar Series, Department of Mathematics, Texas A&M University, (March 12, 2010).
131. Contributed (15 minutes): "Surfactant effects on the motion of long bubbles in a capillary tube", 62th Annual Meeting of the Division of Fluid Dynamics, APS, Minneapolis, Minnesota, (Nov. 22-24, 2009).
132. **Invited** (30 minutes): "Some topics in computational and applied mathematics", Graduate Seminar Series, Mathematics Department, Texas A&M University, College Station, TX-77843, (Oct. 8, 2009).
133. **Invited** (one hour): "Some personal case studies of the interplay between Mathematics and Fluid Mechanics", MGSO Seminar Series, Mathematics Department, Texas A&M University, College Station, TX-77843, (April 15, 2009).
134. **Invited** (30 minutes): "An Overview of Some Recent and New Fast Algorithms for Solving PDEs based on Green's Function Approach", at 9:30 am on 03/02/09, invited minisymposium talk at SIAM 2009 CSE Meeting, Miami, Fl, (March 2-6, 2009).
135. Contributed (15 minutes): "Hydrodynamic Stability in Hele-Shaw and Porous Media Flows", at 10:30 am, 24th Nov, 61st Annual Meeting of the Division of Fluid Dynamics, APS, San Antonio, TX, (Nov. 23-25, 2008).

136. **Invited** (one hour): "Hydrodynamic Instability in Hele-Shaw and Porous Media Flows," Department of Mathematics, Universidad Tecnica Federico Santa Maria, Valparaiso-Chile, (Sept 8, 2008).
137. **Plenary** talk (one hour): "Some results on the Saffman-Taylor Instability in Hele-Shaw Flows: Nonlinearity and Effect of Many Layers and Diffusion," Fifth World Congress of Nonlinear Analysis, Orlando, Florida (July 2-9, 2008).
138. Contributed (20 minutes): "Diffusive Slowdown of Instabilities in Three-Layer Hele-Shaw Flows," Texas PDE Conference, Houston, Texas, (April 5-6, 2008).
139. Contributed (15 minutes): "Thickening effect of surfactants in the drag-out coating problem," 60 Annual Meeting of the Division of Fluid Dynamics, APS, Salt Lake City, Utah, (Nov. 18-20, 2007).
140. Contributed (15 minutes): "Stability Results on Multi-Layer Hele-Shaw Flows," 60 Annual Meeting of the Division of Fluid Dynamics, APS, Salt Lake City, Utah, (Nov. 18-20, 2007).
141. **Invited** (one hour): "Stability of multi-layer Hele-Shaw flows with and without diffusion," Department of Mathematics, SMU, Dallas, (Nov. 7, 2007).
142. **Invited** (one hour): "Multi-phase flow and enhanced oil recovery", College of Engineering, PVAMU, Prairie View, Texas, (Nov. 6, 2007).
143. **Invited** (20 minutes): "Role of Multi-Scale in Unstable Multi-Layer Hele-Shaw Flows," in Minisymposium on "High Speed Flows", 4:50 - 5:15 pm, 23rd Oct, 44th Annual Technical Meeting of the Society of Engg. Sciences, College Station, Texas. (Oct. 21-24, 2007).
144. Contributed (20 minutes): "Diffusive Slowdown of Instabilities in Three-Layer Hele-Shaw Flows," General Sessions, 11:15 - 11:40 am, 24th Oct, 44th Annual Technical Meeting of the Society of Engg. Sciences, College Station, Texas. (Oct. 21-24, 2007).
145. **Invited** (one hour): "On Stability of multi-layer Hele-Shaw flows," Invited one-hour colloquium talk, Mathematics and Physics Unit, Indian Statistical Institute, **Kolkata**, India, (August 16, 2007).
146. **Invited** (one hour): "On Fast Algorithms for PDEs in simple and complex geometries," Invited one-hour colloquium talk, Mathematics Department, Indian Institute of Technology, **Kharagpur**, India, (August 14, 2007).
147. **Invited** (one hour): "On Stability of multi-layer Hele-Shaw flows," Invited one-hour colloquium talk, Mathematics Department, Indian Institute of Technology, **Kharagpur**, India, (August 13, 2007).
148. Contributed (20 minutes): "Fast Algorithms for PDEs in simple and complex geometries," 6th International Congress on Industrial and Applied Mathematics, Zurich, Switzerland, (July 16-20, 2007).
149. Contributed (15 minutes): "Fast and Accurate Methods with Domain Embedding", 2007 SIAM Conf. on Comp. Sci. & Engg., Costa Mesa, CA, (Feb 19-23, 2007).
150. Contributed (15 minutes): "On Multi-Phase Flows", 2007 SIAM Conf. on Comp. Sci. & Engg., Costa Mesa, CA, (Feb 19-23, 2007).
151. Contributed (15 minutes): "Studies on Three-Layer Hele-Shaw Flows," 59th Annual Meeting of the Division of Fluid Dynamics, APS, Tampa, Florida, (Nov. 19-21, 2006).
152. **Invited** (30 minutes): "Solving Partial Differential Equations in Complex Domains," SICAM (Second International Conference of Applied Mathematics), Plovdiv, Bulgaria, (August 11-18, 2005).
153. **Invited** (30 minutes): "Stability Analysis in Three-layer Hele-Shaw Problem," SICAM (Second International Conference of Applied Mathematics), Plovdiv, Bulgaria, (August 11-18, 2005).

154. Contributed (15 minutes): "Computing in Irregular Domains," SIAM04 Annual Meeting, Portland, Oregon, (July 11-15, 2004).
155. Contributed (15 minutes): "Instability in Three-Layer Hele-Shaw Model Induced by Mild Heterogeneity," SIAM04 Annual Meeting, Portland, Oregon, (July 11-15, 2004).
156. **Keynote** (45 minutes): "Fast Methods for Nonlinear PDEs in Complex Domains," WCNA04 (World Congress on Nonlinear Analysis), Orlando, Florida, (June 30 - July 7, 2004).
157. **Invited** (one hour): "Some Recent Results in Porous Media Flows," Applied-Math-Seminar talk, Mathematics Department, Texas A&M University, College Station, TX-77843, (May 3, 2004).
158. Contributed (15 minutes): "Scale-Up and Enhanced Oil Recovery," SIAM Conference on Mathematical and Computational Issues in the Geosciences(GS03), Austin, Texas, (March 17-20, 2003).
159. **Invited** (25 minutes): "Applications of Some Fast Algorithms for Elliptic PDEs," invited minisymposium talk at SIAM03 CSE Meeting, Philadelphia, PA, (Feb. 2003).
160. **Invited** (25 minutes): "An Overview of Some Fast Algorithms for Elliptic PDEs," Invited minisymposium talk at SIAM03 CSE Meeting, Philadelphia, PA, (Feb. 2003).
161. **Invited** (one hour): "Some Fast Algorithms and Their Applications," Invited one-hour colloquium talk, Mathematics Department, Indian Institute of Technology, **Kanpur**, India, (Jan. 2, 2003).
162. **Invited** (one hour): "Some Modern Trends in Simulation of Porous Media Flows," Invited one-hour colloquium talk, Physics and Applied Mathematics Division, Indian Statistical Institute, Calcuatta, India, (December 31, 2002).
163. **Plenary** (one hour): "Role of Classical Methods for Application Driven Algorithms," Invited university-wide one-hour colloquium talk at "National Symposium on Mathematical Methods and Applications" (On the occasion of Srinivas Ramanujan's birthday), Indian Institute of Technology, **Chennai**, India, (December 20-22, 2002).
164. Contributed (15 minutes): "Simulation of Hemodynamic Flows in Catheterized Artery," in session on "Biological Models," SIAM50 Annual Meeting, Philadelphia, PA, (July 2002).
165. **Invited** (one hour): "Modeling, Simulation, and Algorithms in Porous Media Flows," invited talk in minisymposium on "Forward and Inverse Problems in Multiphase Flow Through Porous Media", SIAM50 Annual Meeting, Philadelphia, PA, (July 2002).
166. **Invited** (one hour): "An overview of some fast algorithms: recent and ongoing works and some open problems," invited one-hour colloquium talk at the Institute of Mathematics, Romanian Academy of Sciences, Bucharest, Romania, (May 27, 2002).
167. **Invited** (30 minutes): "Evolving interfaces and the algorithms for their computations," invited one-hour colloquium talk at the Institute of Mathematics, Romanian Academy of Sciences, Bucharest, Romania, (May 30, 2002).
168. Contributed (15 minutes): "Fluid Flows Involving a Compound Multiphase Droplet," Fourth International Conference on Multiphase Flow, New Orleans, Louisiana, (June 2001).
169. Contributed (15 minutes): "Computation of Viscous Flows in Two and Three-Dimensions," First SIAM Conference on Computational Science and Engineering, Washington D.C., (Sep. 2000).
170. Contributed (15 minutes): "Implementations of Some Recently Developed Fast Algorithms," First SIAM Conference on Computational Science and Engineering, Washington D.C., (Sep. 2000).

171. **Invited** (30 minutes): "Sur une méthode spectrale de domaines fictifs utili sant un contrôle optimal distribué," ("On Spectral Domain Embedding Method Using Distributed Optimal Control"), 5th France-Romanian Conference of Applied Mathematics, Constanta, Romania, (talk given by Co-author), (August 2000).
172. **Keynote** (30 minutes): "Recent Advances in Fast Algorithms for Partial Differential Equations," IMACS Intl. Conf. on Scientific Computing and Mathematical Modeling, Milwaukee, Wisconsin, (May 2000).
173. Contributed (15 minutes): "Relevance of the Sixth-Order Boussinesq Equation for Water Waves," IMACS Intl. Conf. on Scientific Computing and Mathematical Modeling, Milwaukee, Wisconsin, (May 2000).
174. Contributed (15 minutes): "A New Class of Model Equations for Two-way Propagation of Capillary-Gravity Water Waves," Annual Meeting of the American Physical Society, Fluid Dynamics Division, New Orleans, Louisiana, (Nov. 1999).
175. Contributed (15 minutes): "A New Class of Models and Their Study for Bi-directional Propagation of Capillary-Gravity Water Waves," 36th Annual Technical Meeting, Society of Engineering Sciences, Austin, Texas, (Oct. 1999).
176. Contributed (20 minutes): "Rapid Design of Subcritical Airfoils," 30th AIAA Fluid Dynamics Conference, Norfolk, Virginia, (June 1999).
177. Contributed (15 minutes): "A Parallel Version of A Fast Algorithm for Singular Integral Transforms," IMACS-International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'99), Las Vegas, Nevada, (June 1999).
178. Contributed (15 minutes): "Local and Nonlocal Solitary Waves of Boussinesq Equations," 13th ASCE Engg. Mech. Specialty Conference, Johns Hopkins University, Baltimore, Maryland, (May 1999).
179. **Invited** (30 minutes): "Local and Nonlocal Solitary Waves of Boussinesq Equations," SIAM Conference on Applications of Dynamical Systems, Snow Bird, Utah, (May 1999).
180. Contributed (15 minutes): "Nonlinear Evolution, Filtering, Regularization and Control of Short Wave Instabilities," SIAM Conference on Applications of Dynamical Systems, Snow Bird, Utah, (May 1999).
181. Contributed (15 minutes): "A Fast Parallel Algorithm for Singular Integral Transforms," SIAM Annual Meeting, Atlanta, Georgia, (talk given by Co-author), (May 1999).
182. Contributed (15 minutes): "Numerical and Theoretical Studies of Some Model Equations for Bi-Directional Propagation of Nonlinear Dispersive Long Waves," SIAM Annual Meeting, Atlanta, Georgia, (May 1999).
183. **Invited** (one hour): "Numerical Experiment On an Illposed Boussinesq Equation," Applied Mathematics Seminar, Department of Mathematics, Texas A&M University, College Station, Texas, (April 1999).
184. Contributed (15 minutes): "Nonlinear Waves in Fluids", IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, Georgia, (March 1999).
185. **Invited** (30 minutes): "Investigation of Some Nonlinear Wave Equations and Associated Phenomena," IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, Georgia, (March 1999).
186. **Invited** (one hour): "A Fast Integral Equation Method for Solving PDEs", Numerical Analysis Seminar, Department of Mathematics, Texas A&M University, College Station, Texas, (April 1999).

187. **Invited** (one hour): "Numerical Simulation of Enhanced Oil Recovery," Invited one-hour colloquium talk, Mathematics Department, Indian Institute of Technology, Kharagpur, India, (Jan. 1999).
188. Contributed (15 minutes): "An Efficient and Novel Numerical Method for Quasiconformal Mappings of Doubly Connected Domains," SIAM Annual Meeting, Toronto, Canada, (July 1998).
189. Contributed (15 minutes): "Rapid Design of Subcritical Airfoils," SIAM Annual Meeting, Toronto, Canada, (July 1998).
190. Contributed (15 minutes): "On the Fastest Smooth Taylor-Bubble Problem," SIAM Annual Meeting, Toronto, Canada, (July 1998).
191. **Invited** (one hour talk): "Turbulent Combustion Modeling of Coal: Biomass Blends in a Swirl Burner I: Preliminary Results," 8th Annual International Energy Week Conference and Exhibition, Houston, Texas, (talk presented by Co-author), (Jan. 1997).
192. **Invited** (one hour talk): "A Fast Numerical Method for Solving Elliptic Equations," Invited one-hour colloquium talk, Mathematics Department, New Jersey Institute of Technology, New Jersey, NJ, (December 1996).
193. **Invited** (one hour talk): "A Fast Numerical Method for Solving Elliptic Equations," Numerical Analysis Seminar, Courant Institute, New York, NY, (Nov. 1996).
194. **Invited** (30 minutes) "Recent Advances on Inverse Airfoil Design," 9th Conf. of the European Consortium for Mathematics in Industry, Copenhagen, Denmark, (June 1996).
195. Contributed (15 minutes): "A Numerical Study of an Illposed Boussinesq Equation Arising in Water Waves," SIAM Annual Meeting, Charlotte, North Carolina, (Oct. 1995).
196. Contributed (15 minutes): "Fast, Accurate and Parallel Algorithms for Solving Some Nonlinear Partial Differential Equations," SIAM Annual Meeting, Charlotte, North Carolina, (Oct. 1995).
197. Contributed (15 minutes): "A Numerical Study of An Ill-Posed Nonlinear Wave Equation," 31st Annual Meeting of the Society of Engineering Sciences, College Station, Texas, (Oct. 1994).
198. Contributed (15 minutes): "The Rising Plane Bubble Problem," Annual Meeting of the American Physical Society, Fluid Dynamics Division, Tallahassee, Florida, (Nov. 1992).
199. **Invited** (20 minutes): "Some Novel Techniques for Grid Generations and Quasiconformal Mappings," SIAM Annual Meeting, Los Angeles, (July 1992).
200. Contributed (15 minutes): "Numerical Experiments on Quasi-conformal Mapping," SIAM Annual Meeting, Los Angeles, (July 1992).
201. Contributed (15 minutes): "Theory and Computations of the Rising Plane Bubble Problem," SIAM Annual Meeting, Los Angeles, (July 1992).
202. Contributed (20 minutes): "On The Computation of The Rising Plane Bubble Problem," 7th IMACS International Conference on Computer Methods for Partial Differential Equations, Rutgers University, New Jersey, (June 1992).
203. Contributed (15 minutes): "A Fast Algorithm to Solve Non-Homogeneous Cauchy-Riemann Equations in the Complex Plane," SIAM Annual Meeting, Washington D.C., (July 1991).
204. **Invited** (one hour): "A Fast Numerical Method for Conformal and Quasiconformal Mappings," Invited one-hour colloquium talk, Mathematics Department, RPI, Troy, New York, (April 1991).

205. **Invited** (one hour): "A Fast Numerical Method for Quasiconformal Mappings," Invited one-hour colloquium talk, Mathematics Department, University of Michigan, Ann Arbor, Michigan, (April 1991).
206. Contributed (15 minutes): "Adaptive Computation of Porous Media Flow," SIAM Annual Meeting, Chicago, Illinois, (July 1990).
207. Contributed (15 minutes): "A New Method for One Dimensional Adaptive Grid Generation," SIAM Annual Meeting, Chicago, Illinois, (July 1990).
208. Contributed (15 minutes): "Solvability Condition for Overposed Inverse Problem in Compressible Flows," SIAM Annual Meeting, Chicago, Illinois, (July 1990).
209. **Invited** (30 minutes): "On Inverse Airfoil Design," AIAA 6th Applied Aerodynamics Conference, Williamsburg, Virginia, (June 1988).
210. **Invited** (one hour): "Efficient Methods For Inverse Problems," International Conference on Inverse Design Concepts and Optimization in Engineering Sciences-II (ICIDES-II), Pennsylvania State University, College Park, Pennsylvania, (Oct. 1987).
211. Contributed (20 minutes): "A Fast Approach to Designing Airfoils From Given Pressure Distribution in Compressible Flows," AIAA/AHS/ASEE Aircraft Design, Systems and Operations Meeting, St. Louis, Missouri, (Sep. 1987).
212. Contributed (20 minutes): "Instability and Its Control in Oil Recovery Problems," IMACS Conference on Partial Differential Equation, Bethlehem, Pennsylvania, (June 1987).
213. **Invited** (one hour): "On The Simulation of Heterogeneous Petroleum Reservoirs," Reservoir Simulation Conference, University of Minnesota, Minneapolis, Minnesota, (talk given by Co-author), (Jan. 1987).
214. **Invited** (one hour): "Fingering Instability in Simulation of Multilayered Flow in Porous Media and its Applications to Instability Control in Tertiary Oil Recovery," Annual Meeting of the American Physical Society, Fluid Dynamics Division, (Nov. 1986).
215. **Invited** (one hour): "Reservoir Simulation by the Method of Front Tracking," IFE/SSI seminar on Reservoir Description and Simulation with Emphasis On EOR, Oslo, Norway, (talk given by Co-author), (Sep. 1986).
216. **Invited** (one hour): "Exact and Approximate Inverse Methods for Airfoil Design," Applied Mathematics Seminar, Courant Institute, New York, (April, 1986).
217. **Invited** (one hour): "Polymer Floods: A Case Study of Nonlinear Wave Analysis And of Instability Control In Tertiary Oil Recovery," Department of Mathematics, Southern Methodist University, Dallas, Texas, (March 1986).
218. **Invited** (one hour): "Polymer Floods: A Case Study of Nonlinear Wave Analysis And of Instability Control In Tertiary Oil Recovery," Department of Mathematics, Northern Illinois University, Dekalb, Illinois, (March 1986).
219. **Invited** (one hour): "Polymer Floods: A Case Study of Nonlinear Wave Analysis And of Instability Control In Tertiary Oil Recovery," Department of Mathematics, Utah State University, Logan, Utah, (March 1986).
220. **Invited** (one hour): "Polymer Floods: A Case Study of Nonlinear Wave Analysis And of Instability Control In Tertiary Oil Recovery," Department of Mathematics, University of Wyoming, Laramie, Wyoming, (Feb. 1986).
221. **Invited** (one hour): "Polymer Floods: A Case Study of Nonlinear Wave Analysis And of Instability Control In Tertiary Oil Recovery," Department of Mathematics, University of Colorado, Denver, Colorado, (Febr. 1986).

222. **Invited** (one hour): "Polymer Floods: A Case Study of Nonlinear Wave Analysis and of Instability Control In Tertiary Oil Recovery," Department of Mathematics, Texas A&M University, College Station, Texas, (Feb. 1986).
223. Contributed (15 minutes): "The Exact Inverse Method for Subcritical Flows," Annual Meeting of the American Physical Society, Fluid Dynamics Division, (Nov. 1985).
224. Contributed (15 minutes): "Application of Tangent Gas Approximation," Annual Meeting of the American Physical Society, Fluid Dynamics Division, Providence, Rhode Island, (Nov. 1984).
225. **Invited** (one hour): "Inverse Design Methods for Aerofoils," Department of Applied Mathematics, Brown University, Providence. (April 1984).

11 Invited Participant in Various Research Workshops and Conferences

- Research Conference celebrating the 90th birthday of James Glimm at ICERM, Brown University, Providence, Sept 7-8, 2024.
- IPAM Workshop on the Occasion of 60th birthday celebration of IPAM Director: Russel Caflisch, IPAM, UCLA, Los Angeles, April 24- 28th, 2014
- NSF Workshop on Collaboration in Mathematical Geosciences, Crystal City-Washington, September 16-17, 2011

12 Mentoring and long-term visitors

Doctoral students advising and/or advised:

Tom Wincleman	Jan 2023 - May 2023 at TAMU
Try Tran	Jan 2023 - Dec 2023 at TAMU
Zhiying Hai	Sept 2012 - August 2022 at TAMU
Sourav Dutta	Sept 2010 - August 2017 at TAMU
Craig Gin	Sept 2009 - August 2015 at TAMU
Aditi Ghosh	Sept 2008 - August 2013 at TAMU
Daoud Mashat	Sept 1992 - August 1997 at TAMU

Masters students advising and/or advised:

Jeb Belcher	Sept 2002 - August 2004 at TAMU
M. A. Sattar	Sept 2002 - August 2004 at TAMU
Wei Hua	Sept 1993 - August 1996 at TAMU
Greg Lindstrom	Sept 1991 - August 1993 at TAMU
Alex Sopaskis	Sept 1991 - August 1993 at TAMU

Undergraduate students advising and/or advised:

Oliver Stalker	Jan 2023 - Current
Carlos Acosta	Jan 2023 - Current
David R. Sanchez	Jan 2023 - Current
Cory Ho	Jan 2023 - Current
Elizabeth C. Yoon	Jan 2023 - Current
Neel Pochareddy	Jan 2021 - Dec 2021
John Couvillion	Sept 2017 - May 2019

Postdoctoral fellows:

Tapan Hota	February 2018 - August 2018 at TAMU
Craig Gin	Sept 2015 - May 2017 at TAMU
JoungDong Kim	Oct 2012 - Sept 2013 at TAMU
Hamad Hazim	Jun 2013 - Aug 2013 at TAMUQ
Fabien Ternat	Jan 2012 - July 2012 at TAMU
Xueru Ding	March 2010 - Aug 2012 at TAMUQ
Liqun Wang	Sept 2011 - July 31 2012 at TAMU
Abhijit Samanta	Feb 2011-Aug 2011 at TAMUQ
Ranjan Dash	Sept 1998 - June 2000 at TAMU
Leonardo Borges	Feb 1999 - Dec 1999 at TAMU
Ersin Ozugurlu	Feb 1999 - May 1999 at TAMU

Long-term visitors:

Gelu Pasa	(From IMAR, Bucharest, Romania) - one semester
Lori Badea	(From IMAR, Bucharest, Romania) - one year
D. Palaniappan	(From India, now in USA) - one year

13 Service

13.1 Extra-University Professional Activities

Organizing Workshops, Annual Meetings, Conferneces:

- Member of the Scientific Program Committee, International Conference on Recent Advances in Mathematical Fluid Dynamics ICRAMFD 2022, Department of Mathematics, Malaviya National Institute of Technology, Jaipur (Rajasthan), India, (December 2-4, 2022).
- Co-organizer, The 1st Annual Meeting of SIAM Texas-Louisiana Section, LSU, Baton Rouge, LA, (October 5 - October 7, 2018).
- Organizer, International Workshop on EOR and Porous Media Flows, TAMUQ, Doha, Qatar, (31st July - August 1, 2013). Press release
- Member of the Scientific Program Committee, The Sixth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, Georgia. (March 23-26, 2009).
- Co-organizer, 61st Annual Meeting of the Division of Fluid Dynamics of APS, San-Antonio, Texas, (Nov. 23-25, 2008).
- Member, Scientific Program Committee of The Second IMACS International Conference on "Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory" (April 2001).

Organizing Minisymposia/Chairing Special Sessions at Conferences and Annual Meetings

- Chair, Session on Non-Newtonian Flows: Turbulence & Instabilities, 8:00 - 10:35 AM, Tuesday, Nov. 21, 2023 during APS/DFD (American Physical Society/Division of Fluid Dynamics), 2023 Annual Meeting, Washington D.C. (Nov. 19-21, 2023).
- Organizer, Minisymposium on "Hydrodynamic Stability: Theory, Experiments and Numerics", SES (Society of Engineering Science) 2022 Annual Meeting, College Station, Texas. (Oct 16-19, 2022).
- Organizer, Minisymposium on Stability and Modeling in Non-Newtonian Flows, Part I of III, SIAM 2022 Annual Meeting, Pittsburgh. (July 11-15, 2022).
- Organizer, Minisymposium on Stability and Modeling in Non-Newtonian Flows, Part II of III, SIAM 2022 Annual Meeting, Pittsburgh. (July 11-15, 2022).
- Organizer, Minisymposium on Stability and Modeling in Non-Newtonian Flows, Part III of III, SIAM 2022 Annual Meeting, Pittsburgh. (July 11-15, 2022).
- Organizer, Minisymposium on "Hydrodynamic Stability and Simulation of Complex Fluid Flows in Porous Media", USNC/TAM 2022, Austin. (June 19-22, 2022).
- Chair, Special Session on Applied Mathematics for Industry and Engineering I - Part 1 of 1, Valencia, Spain, July 15-19, 2019.
- Organizer, Minisymposium on "Novel Computational Methods and Stabilization of Fingering Instabilities for Porous Media Flows in Chemical EOR", SIAM Conference on Mathematical and Computational Issues in the Geosciences, Houston, USA (March 11-14, 2019).

- Organizer, Minisymposium on "Mathematical, physical and computational aspects of chemical enhanced oil recovery", Interpore 10th Annual Meeting, New Orleans, USA (May 14-17th, 2018).
- Organizer, Minisymposium on "Standard and nonstandard models and numerical methods for complex porous media flows with applications", SIAM Conference on Mathematical and Computational Issues in the Geosciences, Erlangen, Germany (Sept 11-14, 2017).
- Organizer, Minisymposium on "Fluid Physics and Advanced Numerical Methods for Chemical Enhanced Oil Recovery", SIAM annual meeting, Boston, MA (July 11-15, 2016).
- Organizer, Three Minisymposia on "Theory and Computation of Porous Media Flows", SIAM-GEO bi-annual conference, Padova, Italy, (June 17-20, 2013).
- Organizer, Minisymposium on "Fast Algorithms for Integral Equations Methods and Their Applications", SIAM-CSE bi-annual conference, Boston, (Feb 25 - March 1, 2013).
- Chair, Session on Fluids, 4:00 - 6:00 PM, Friday, July. 13, 2012, SIAM 2012 Annual Meeting, Minneapolis, Minnesota (July 09-13, 2012).
- Chair, Session T9 on Flow Instabilities, Turbulence, and CFD, 2:30 - 5:30 PM, Wednesday, March. 23, 2011 during APS March Meeting, Dallas, Texas (March 21-25, 2011).
- Convener, Group Discussion on "Fluid Mechanics, PDEs, and Modeling", 5:30 - 6:30 PM, Jan. 01, 2011, International Conference on Mathematics of Date, Allahabad, India, (Dec 31- Jan 04, 2011).
- Chair, Session on "Geosciences", 10:30 - 12:03 PM, Jul. 15, 2010. SIAM Annual Meeting (AN10), July 12-16, 2010, Pittsburgh, Pennsylvania.
- Chair, Session on "Fluids and Flow II", 4:00 - 6:00 PM, Jul. 14, 2010 SIAM Annual Meeting (AN10), July 12-16, 2010, Pittsburgh, Pennsylvania.
- Chair, Track 4-3: "Alkaline Surfactant Polymer(ASP) Flooding and Other Water Flood Enhancements within Track 4: Chemical Enhanced Oil Recovery", April 13, 2010, Tuesday, 13:30-17:40, during BIT's 1st Annual Congress on WSEOR-2010, Chengdu, China, April 12-14, 2010s
- Organizer, Minisymposium on "Fast Algorithms and Computational Modeling," SIAM-CSE bi-annual meeting, Miami, (March 2-6, 2009).
- Chair, Session on "Bubbles: III," 4:10 - 6:43 PM, Nov. 23, 2008 during 61st Annual Meeting of the Division of Fluid Dynamics of APS, San Antonio, TX, (Nov. 23-25, 2008)
- Chair, Selection Committee for the Luncheon Speakers for the 61st Annual Meeting of the Division of Fluid Dynamics of APS, San-Antonio, Texas, (Nov. 23-25, 2008)
- Chair, Session on "Instability: Interfacial and Thin Films," 8:00-10:10 AM, Nov. 19, 2007 during 60th Annual Meeting of the Division of Fluid Dynamics of APS, Salt Lake City, UT, (Nov. 18-20, 2007)
- Co-organizer, Minisymposium on "High-Speed Flow: II," 10:00-12:05 AM, Oct. 24, 2007 during 44th Annual Technical Meeting of Society of Engineering Sciences, College Station, TX, Oct. 21-24, 2007.
- Chair, Special Session on "Numerical methods for PDEs: evolution problems", Session from 1:15 pm - 3:15 pm on July 20, 2007, 6th International Congress on Industrial and Applied Mathematics, Zurich, Switzerland, 16-20 July 2007.
- Chair, Special Session on "Multiphase Flows," SIAM07 CSE Meeting, Costa Mesa, CA, (February 19-23, 2007)

- Participant in the second Annual CVRI (Cardiovascular Research Institute) Conference, Hilton College Station and Conference Center, College Station, Texas (Oct. 19-20, 2006).
- Chair, Special Session on "Fluid Flows", SIAM04 Annual Meeting, Portland, (July 2004)
- Chair, Special Session on "Numerical Methods", SIAM04 Annual Meeting, Portland, (July 2004)
- Co-organizer, Three Minisymposiums on "Fast and Efficient Methods for PDE & Applications", SIAM03 CSE Meeting, San Diego, (Feb. 2003).
- Chair, Special Session on "Biological Models - Physiology", SIAM Annual Meeting, Philadelphia, (July 2002).

  Chair, Special Session on "Finite Element and Meshless Methods," First SIAM Conference on Computational Science and Engineering, Washington D.C., (September 2000)
- Chair, Special Session on "Solitons-I," Fifth SIAM Conference on Applications of Dynamical Systems, Snow bird, Utah, (May 1999).
- Organizer, Four Sessions on "Nonlinear Waves in Fluids I-IV," IMACS-International Conference on Nonlinear Evolution Equations and Wave Theory, Athens, Georgia, (April 1999).
- Chair, Special Session on "Optimization-I," SIAM Annual Meeting, Toronto, Canada, (July 1998).
- Chair, Special Session on "Numerical Analysis," SIAM Annual Meeting, Toronto, Canada, (July 1998).
- Chair, Special Session on "Multi-phase Porous Media Flow," SIAM Annual Meeting, Charlotte, North Carolina, (July 1995).
- Chair, Special Session on "Ill-Posed Problems," SIAM Annual Meeting, Charlotte, North Carolina, (July 1995).
- Chair, Special Session on "Moving and Graded Grids," SIAM Annual Meeting, Los Angeles, California, (July 1992).

13.2 University Activities

- Resurrected and Organised: "Applied Math Seminar," Fall 2024
- Launched a new seminar: "Mathematics in Geosciences," Spring 2023
- Chair, Departmental Awards Committee (Sept 2023 - August 2024)
- Member, Departmental Awards Committee (Sept 2022 - August 2023)
- Member, Departmental Teaching Committee (Sept 2019 - August 2020)
- Member, Departmental Awards Committee (Sept 2014 - August 2016)
- Chair, Undergraduate Academic Appeals Panel (Sept 2012-2014)
- Member, Undergraduate Academic Appeals Panel (2011-2014)
- Member, Faculty Senate Faculty Development Leave Committee (2006-2008)
- Member, Faculty Senate Faculty Development Leave Committee (2002-2005)
- Member, Faculty Senate Personnel & Welfare Committee (2004-2005)
- Member, Faculty Senate Planning Committee (2004-2005)
- Member, Faculty Senate Academic Affairs Committee (2004-2005)
- Member, Faculty Senate (2002-2005)
- Member, Faculty Senate Budget Information Committee (2003-2004)
- Member, Faculty Senate Personnel & Welfare Committee (2003-2004)

- Member, Faculty Senate Scholarship SubCommittee (2002-2003)
- Member, Faculty Senate Committee on the Status of Women (2002-2003)
- Member, Faculty Senate Budget Information Committee (2002-2003)
- Member, Faculty Senate (2000-2002)
- Member, Faculty Senate Research Committee (2000-2002)
- Member, Faculty Senate International Programs Subcommittee (2000-2002)
- Member, University Scholarship Committee (2000-2002)
- Member, Advisory Committees of Graduate Students as Graduate Council Representative (1988-2001)
- Organizer, Departmental Applied Mathematics Seminars (1998-2000)
- Chair, Department Promotion and Tenure Committee (1998-2000)
- Member of Review Panel for TAMU Energy Resource Program (1998)
- Chair, Faculty Advisory Council to the College of Science (1997-1998)
- Member, Faculty Advisory Council to the College of Science (1995-1998)
- Vice Chair, Faculty Advisory Council to the College of Science (1996-1997)
- Member, Promotion and Tenure Committee (1995-1996)
- Member, Review Panel for TAMU Interdisciplinary Research Program (1995)
- Member, Faculty Advisory Council to the College of Science (1993-1995)
- Member, Numerical Analysis Qualifying Examination Committee (1994)
- Member, Common Examination Committee (Fall-94)
- Member, Graduate Student Advising Committee (Fall 1992)

Service as graduate council representative to following students' committees

Year	Name	Degree	Deptartment	Adviser
2001	Y. Balagurnathan	Ph.D.	Electrical Eng.	E. Dougherty
1998	A. Meyers	Ph.D.	Anthropology	W. M. Bryant
1998	G. Rengarajan	Ph.D.	Mechanical Eng.	J. N. Reddy
1996	M. Loescher	Ph.D.	Chemical Eng.	M.T. Holtzapple
1995	L. Laskai	Ph.D.	Electrical Eng.	P. Enjeti
1995	B. Fee	Ph.D.	Biochemistry	D. Peterson
1994	D. Schneider	Ph.D.	Mechanical Eng.	M. Andrews

Note: Service as GCR in graduate committees was abolished by the university around 2001.

13.3 Editorial Boards and/or Advisory Editorial Member (out of 18)

- Renewable and Sustainable Energy (Since 2022)
- International Journal of Mechanics and Energy (Since 2012)
- International Journal of Modern Nonlinear Theory and Applications (Since 2012)
- International Journal of Mathematics and Mathematical Sciences (Since 2009)
- Advances in Mathematical Physics (06/2008 - 12/2023)
- International Journal of Mechanics and Solids (Since 2005)
- Advances in Numerical Analysis (2008 - 2018; ceased publication since 2018)
- Journal of Fluids (2013 - 2017; ceased publication since)
- Advanced Studies in Theoretical Physics (2006 - 2014)
- Energies (2019 - 2023)
- Fluids (Topical Advisory Panel) (2019 - 2023)

13.4 External Examiner of Ph.D. Thesis

Only some are listed below.

- *Some Approximation Based Techniques for Numerical Evaluation of Certain Operators and Solution of Differential Equations*, Mathematics Department, IIT ISM Dhanbad, India (Examined in Sept, 2023)
- *Linear and nonlinear stability analysis of double diffusive convection in a fluid layer*, Department of Applied Sciences, National Institute of Technology, Delhi, India (Examined in August 2022)
- *Modeling of Solute Dispersion Through Porous Media: An Analytical Study*, Mathematics Department, IIT ISM Dhanbad, India (Examined in 2022)
- *Interfacial instability analysis of viscous flows in a Hele-Shaw channel*, Mathematics Department, Queens University of Technology, Australia. (Examined in 2020)
- *Study of Trapped Modes in Two- and Three-Layer Fluids*, Department of Mathematics, IIT, Guwahat, India. (Examined August 2014)
- *Development of Legendre Wavelet Based Hybrid Techniques for a Few Differential Equations Arising in Engineering*, Department of Computer Science, Sastra University, Thanjapur, Tamilnadu, India. (Examined July 2014)
- *Development of Genetic Algorithms Based Hybrid Techniques for a Few Engineering Optimization Problems*, Department of Computer Science, Sastra University, Thanjapur, Tamilnadu, India. (Examined May 2013)
- *Effective Heuristics on graph Optimization Problems*, Department of Mathematics, Sastra University, Thanjapur, Tamilnadu, India. (Examined March 2012).
- *Study on two phase fluid flows involving porous medium, stagnation point and MHD*, Department of Mathematics, SRM University, SRM Nagar, Kattankulathur(Po)- 603 203 Tamilnadu, India. (Examined Jan 2011)
- *Studies on two phase fluid flow problems concerned with rotation, heat transfer and MHD*, Department of Mathematics, SRM University, SRM Nagar, Kattankulathur(Po)-603 203 Tamilnadu, India. (Examined June 2010)
- *Haar Wavelet Solutions for a Few Reaction Diffusion Problems*, Department of Mathematics, SASTRA University, India. (Examined in May 2010)
- *Thermodynamical Analysis of Heat Transfer in Free Convection and MHD Flows with Suction and Injection*, Department of Mathematics, Anna University, Chennai, India. (Examined in 2008)
- *Non-Newtonian Fluid Models For the Blood Flow Through Narrow Arteries*, Department of Mathematics, Anna University, Chennai, India. (Examined in 2004)
- *Modified Numerical Algorithms For Hyperbolic Systems With Source Terms And Applications*, Department of Computer Science, University of Durban-Westville, Durban, South Africa. (Examined in 2003)

13.5 Reviewing and Refereeing

Book Review:

- *Numerical Methods with C*, by Robert J. Schilling and Sandra L. Harris, Brooks/Cole Publishing Inc. (Reviewed in 1993).
- *Elementary Numerical Analysis*, by K. E. Atkinson and W. Han, Wiley Pub. Inc. (Reviewed in 2003).

- *Introduction to Numerical Differential Equations (3 Chapters)*, by Stanoyevitch, Wiley Pub. Inc. (Reviewed in 2003).
- *Introduction to MATLAB and Numerical Preliminaries*, by Stanoyevitch, Wiley Pub. Inc. (Reviewed in 2004).
- *Diffusion processes in Biological populations*, by Ranjit Kumar Upadhyay and Satteluri R.K. Iyengar, Elsevier, (Reviewed in 2015).
- *Numerical Methods for the Unsteady Compressible Navier-Stokes Equations*, by Philipp Birken, CRC Press - Taylor & Francis Group. (Reviewed in 2019).
- *Mathematical Modeling with Excel*, by Brian Albright and William P. Fox, CRC Press - Taylor & Francis Group. (Reviewed in 2019).

Book and Special Issue Proposals Review:

- "Applied Mathematics for Petroleum and Chemical Engineers", from John Wiley & Sons. (Reviewed in Nov. 2010).
- 11 Special Issue Proposals Review for the Journal: "The International Journal of Mathematics and Mathematical Sciences".
- 21 Special Issue Proposals Review for the Journal: "Advances in Mathematical Physics".

Review Panel (& also Review Proposals):

- Proposal review for Collaborative Research of TAMUS faculty with Los Alamos National Laboratory (2023).
- Most Recent NSF Panels (several in 2011, 2012, 2013, 2014, 2015, 2016)
- Many single NSF proposals reviews on request on and off over the years.
- DOE Panel (2001)
- Interdisciplinary Research Program of the Office of Vice President for Research at Texas A&M University (1995).

Funding Proposal Reviews for:

- Sultante of Oman, Sultan Qaboos University
- American Chemical Society Research Fund
- Israel Science Foundation
- National Science Foundation (MPS/DMS/Applied Math. Program; MPS/DMS/Comp. Sci. Program; ENG/CBET/PMP Program; ENG/CBET/CDSE Program; ENG/CMMI/CDSE Program) : Over 100 proposals to-date.
- 2017: SHOTA Rustaveli National Science Foundation of Georgia through CRDF GLOBAL (Funding Agency for International Collaboration based in Arlington, VA)
- 2018: SHOTA Rustaveli National Science Foundation of Georgia through CRDF GLOBAL (Funding Agency for International Collaboration based in Arlington, VA)
- Department of Energy
- Louisiana Board of Regents: Research Competitiveness Subprogram of Louisiana State
- International Center at Bush Presidential Library Complex (for International Research Travel Assistance Grants and International Curriculum Development Grants)
- TAMU office of the Vice President for Research
- Several TAMUQ proposals
- Texas A&M University and the São Paulo Research Foundation (FAPESP) Grant Program (Spring 2018, Fall 2018)
- NYU Abu Dhabi Researh Institute (2019)

Other Proposals:

- TAMU office of the Dean of Faculties
  - Year 2007: 71 Applications for Faculty development leave
  - Year 2006: 72 Applications for Faculty development leave
  - Year 2004: 60 Applications for Faculty development leave
  - Year 2003: 53 Applications for Faculty development leave

Conference Proposal and Presentation Abstract Reviews:

- Institute of Mathematics and Applications, Minnesota 2015 (16 proposals)
- International Conference of Numerical Analysis and Applied Mathematics 2010
- ICIAM 2023 Abstracts

Journal Review (> 80 journals): I review between one and half dozen to two dozen papers per year on the average for journals including the following. The journal names are given in alphabetical order below.

- Abstract and Applied Analysis
- Advances in Numerical Analysis
- Advances in Mathematical Physics
- Advances in Mechanical Engineering
- Advances in Water Resources
- AIAA (American Institute of Aeronautics and Astronautics)
- AIMS Proceedings (American Institute of Mathematical Sciences)
- ANZIAM (Australian and Newzealand Journal of Industrial and Applied Mathematics)
- Applied and Computational Harmonic Analysis
- Applications and Applied Mathematics
- Applied Numerical Mathematics
- Applied Mathematics Letters
- Applied Mathematical Modelling
- Arabian Journal of Science and Engineering
- Archives of Mechanics
- ASME Journal of Heat Transfer
- ASME Journal of Fluids Engineering
- ASME Journal of Verification, Validation and Uncertainty Quantification
- Australian J. Multi-Disciplinary Engineering
- Bioengineered
- Biomechanics and Modeling in Mechanobiology
- Boundary Value Problem
- Chemical Engineering Science
- Computers and Mathematics
- Computers and Mathematics With Applications
- Computational and Applied Mathematics
- Computer Methods in Applied Mechanics and Engineering
- Dynamical Systems
- Discrete Dynamics in Nature and Society
- Energy and Fuels

- Energies
- European Journal of Mechanics B
- Frontiers in Applied Mathematics and Statistics
- Industrial and Engineering Chemical Research
- IMA Journal of Applied Mathematics
- Int. J. Computer Mathematics
- Int. J. Computational Mathematics
- Int. J. Comput. Meth. in Engg.
- Int. J. Comput. Meth. in Eng. Sci. Mech.
- Int. J. Engng. Sci.
- Int. J. Math. and Mathematical Sciences
- Int. J. Fluid Mechanics Research
- Int. J. Multiphase Flow
- Int. J. of Modern Nonlinear Theory and Application
- Int. J. Nonlinear Mechanics
- Int. J. of Mechanics and Energy
- Int. J. Num. Meth. Fluids
- Int. J. Comp. Meth. Engg. Sci. Mech.
- Fluid Dynamics Research
- Inverse Problems in Science and Engineering
- Journal of Astronautical Sciences
- Journal of Biomechanics
- Journal of Coatings Technology and Research
- Journal of Computational Physics
- Journal of Computational and Applied Mathematics
- Journal of Engineering Mathematics
- Journal of Fluid Mechanics
- Journal of Heat Transfer
- Journal of Inequalities and Applications
- Journal of Mathematical Analysis and Applications
- Journal of Mathematical Physics
- Journal of Non-Newtonian Fluid Mechanics
- Journal of Petroleum Science and Engineering
- Journal of Statistical Planning and Inference
- Journal of Nonlinear Analysis B: Real World Applications
- Mathematical Reviews
- Mathematical and Computer Modelling
- Mathematics and Computers in Simulation
- Mathematical Models and Methods in Applied Sciences
- Mathematical Modelling in Natural Phenomena
- Nanomaterials
- Nonlinear Dynamics
- Nonlinear Analysis Series B: Real World Applications
- Numerical Methods for Partial Differential Equations
- Ocean Engineering

- Petroleum Sciences and Engineering
- Physica Scripta
- Physical Review & Research International
- Physics of Fluids
- Physical Review Fluids
- Proceedings A of the Royal Society of Edinburgh
- Proceedings of National Academy of Sciences
- Processes
- Quarterly of Applied Mathematics
- Results in Physics
- Sensors and Actuators A: Physical
- SIAM J. Appl. Math.
- SIAM J. Sci. Comput.
- SIAM J. Num. Anal.
- Statistical Planning and Inference
- SN Applied Sciences
- Statistica Sinica
- The Open Applied Mathematics Journal
- The Open Software Engineering Journal
- Transport in Porous Media
- Water Resources Research
- Wave Motion
- ZAMP

14 UnderGraduate Students Advising and/or Advised

Duration	**Name: Project Title**	**Degree/Dept./Chair**
06/24-Curr	Oliver Stalker: "Computing PDEs using Physics Informed Neural Network"	B.S./Comp. Sci./**P. Daripa**
01/23-Curr	Carlos Acosta: "Modeling and simulation of shear-thinning polymer and surfactant flooding for enhanced oil recovery"	B.S./Comp. Sci./**P. Daripa**
01/23-Curr	David Sanchez: "Machine Learning"	B.S./Comp.Sci./**P. Daripa**
01/23-05/23	Oliver Stalker: "Random Walk Simulation of Diffusion and Reaction Diffusion Equations"	B.S./Comp. Sci./**P. Daripa**
01/23-05/23	Cory Ho: "Investigation into Development of Patterns in Multi-Layer Radial Hele-Shaw flows"	B.S./Physics/**P. Daripa**
01/21-12/21	Neel Pochareddy: "Monte Carlo Method and Radial Hele-Shaw Flows"	B.S./Mathematics/**P. Daripa**
09/17-05/19	John Couvillion: "Markov Chain Monte Carlo Method"	B.S./Mathematics/**P. Daripa**

15 Graduate Students' Committees

Year	Name: Dissertation or Project Title	Degree/Dept./Chair
(Spring 2023)	Tom Winckelman: Worked with me on Machine Learning	Ph.D./**Mathematics**/**S. Foucart**
(Spr2023-Curr)	Try Tran: Working on Fast Algorithms	Ph.D./**Mathematics**/**M. Rojas**

Year	Name: Dissertation or Project Title	Degree/Dept./Chair
Curr	Myriahm A Gonzalez: "Computational Mathematics Track"	M.S./Mathematics/P. Daripa
2024	Timothy Assel: "Advanced Analysis and Characterization of Energy-Containing and Dissipative Scales in Practical Turbulent Flows"	Ph.D./Aero. Engg./S. Girimaji
2023	Samuel Padgen: "Interaction of Mach Mode and 3d Instabilities on a Hypersonic Cooled Flared Cone"	M.S./Aero Engg./H. Reed
2023	Madeline McMillan: "Efficient Computation of Boundary-Layer Instabilities in Highly Three-Dimensional Flows"	Ph. D./Aero. Engg./H. Reed
2023	Bajrang L. Sharma: "Instability and Perturbation Evolution in High Speed Boundary Layers: Flow-Thermodynamic Interactions"	Ph.D./Aero. Engg./S. Girimaji
2022	Zhiying Hai: "Linear Instability of Interfacial Hele-Shaw Flows of Viscoelastic Fluids"	Ph.D./**Mathematics**/**P. Daripa**
2022	Ethan Bayek: "Transition Physics and Boundary Layer Stability: Computational Modeling in Compressible Flow"	Ph.D./Aero. Engg./H. Reed
2022	Jay Patel: "Boundary Layer Stability Analysis for a Yawed Cone and a Swept Slotted Airfoil"	M.S./Aero. Engg./H. Reed
2021	Namita Anil Kumar: "Scattered data interpolation using radial basis function"	M.S./Mathematics/F. Narcowich
2021	Chetan Kamble: "Advances in partially averaged Navier-Stokes turbulence closures: Near-wall modeling and three-dimensional wake simulations"	Ph.D./Ocean. Engg./S. Girimaji
2020	Daniel Heston: "The Effects of Off-Design Conditions on the Laminar-To-Turbulent Transition Location on a Slotted, Natural-Laminar-Flow Airfoil"	M.S./Aero. Engg./H. Reed
2019	Alexandre Berger: "On the role of high and low speed streaks in the fundamental mechanism of turbulent wedge spreading"	Ph.D./Aero. Engg./E. White
2019	Pedram Tazraei: "Scale-resolving simulations of turbulent boundary layers: wall-resolved and wall-modeled PANS approaches"	Ph.D./Mech. Engg./S. Girimaji
2019	Salwan Sabry: "New approaches to interface renewable energy systems to electric utility via higher frequency transformer"	Ph.D./Elec. Engg./P. Enjeti
2019	Madeline McMillan: Modeling randomly distributed roughness patches using effective surfaces	M.S./Aero. Engg./E. White

Year	Name:Dissertation or Project Title	Degree/Dept./Chair
2019	Pengze Yang: "Numerical Study of Approaches to Improve Gasoline Particulate Filter Performance"	Ph.D./Mech. Engg./A. Strzelec
2019	Xiaoyu Guo: "Short-term Freeway Traffic Prediction By Payne Whitham Model Considering Driver's Anticipation Effect: An Analytical Approach"	M.S./Civil Engg./Y. Zheng
2018	Jayaveera Muthusamy: "Numerical investigation of thermo-hydrodynamics of multiple droplet train impingement for surface cooling"	Ph.D./Mech. Engg./J. Alvarado
2018	Jean Yeh: Toward Computational Forensics for the Laptop Bombing Terrorism Case of Daallo Airlines Flight 159, February 2, 2016	Ph.D./Mathematics/G. Chen
2018	Travis Kocian: "Investigation of Hypersonic Bondary Layer Stability And The Validation And Verification Of The Parabolized Stability Equation Solver EPIC"	Ph.D./Aero. Engg./H. Reed
2018	Nicholas Minzenmayer: non-Thesis	MS./Statistics/M. Longnecker
2018	Kolton Keith: non-Thesis	MS./Mathematics/B. Popov
2017	Yun Chen: "Coupled dynamics of particles and fluid-fluid interfaces"	Ph.D./Mech. Engg./S. Lee
2017	Feng Xu: "Interfacial instabilities of suspensions in Hele-Shaw cell"	Ph.D./Mech. Engg./S. Lee
2017	Sourav Dutta: "Mathematical Models and Numerical Methods for Porous Media Flows Arising in Chemical Enhanced Oil Recovery"	Ph.D./**Mathematics**/**P. Daripa**
2017	Yi Cao: CFD Simulation of Vortex-Induced Vibration of Free-Standing Hybrid Riser	M.S./Ocean. Engg./H. Chen
2016	Qilin Xu: "Wave Interactions with Arrays of Vertical Bottom-Mounted Deformable Cylinders"	M.S./Civil. Engg./R. Mercier
2016	Jacob T. Landman: "Variance Reduction Strategies for Implicit Monte Carlo Simulations"	M.S./Nucl. Engg./R. McClarren
2016	Jing Tian: "Study of Nonlinear Analysis and chaos in vibrations and fluids"	Ph.D./Mathematics/G. Chen
2016	Ahmed Morsy: "Design Optimization & Control of High Power Density Converters Using Wide Band Gap Devices"	Ph.D./Elec. Engg./P. Enjeti
2015	M. Muddamallappa: "Two Theories for Brittle Fracture: Modeling & Direct Numerical Simulations"	Ph.D./Mathematics/J. Walton
2015	Pengze Yang: "Numerical Study of Cavitation within Orifice Flow"	M.S./Mech. Engg./R. Handler

Year	Name:Dissertation or Project Title	Degree/Dept./Chair
2015	Jason Monschke: "Most-Critical Transient Disturbances"	Ph.D./Aero. Engg./E. White
2015	Craig Gin: "Topics in Stability Analysis of Multi-Layer Hele-Shaw and Porous Media Flows"	Ph.D./**Mathematics**/**P. Daripa**
2015	Fahad Alhuwaishel: "The New Active Output Filter for Variable Speed Constant Frequency Aerospace Applications"	M.S./Elec. Engg./P. Enjeti
2015	Abhishek Sharma: "Modeling Wave-Wave Interactions and 3D Wave-Induced Circulation in the Presence of Reflection-Refraction Effects"	Ph.D./Ocean. Engg./V. Panchang
2014	Sandeep P. Kaul: "Simulation Study of Volatile Oil Reservoirs - Understnading the Reservoir Drive Mechanisms in Conventional and Liquid-Rich Unconventional Reservoirs"	Ph.D./Pet. Engg./P. Gildin
2014	Rebecca Bertsch: "Effect of Inhomogeneity and Unsteadiness on the Stability of High Speed Shear Flows"	Ph.D./Aero. Engg./S. Girimaji
2013	Aditi Ghosh: "Fast Algorithms for Biharmonic Problems and Applications to Fluid Dynamics"	Ph.D./**Mathematics**/**P. Daripa**
2013	Lisha Parambath: "A Probabilistic Approach for Identification of Submarine Landslide for Tsunami Hazard Assessment in the Gulf of Mexico"	M.S./Civil. Engg./F. Olivera
2013	Jerrod W. Hofferth: "Boundary-Layer Instability and Transition on a Flared Cone in a Mach 6 Quiet Wind Tunnel"	Ph.D./Aero. Engg./W. Saric
2013	Dasia Reyes: "Advancing the Theoretical Foundation of the PANS Approach"	Ph.D./Aero. Engg./S. Girimaji
2012	A. Sekaran: "Analysis of Flow Instabilities and their Effect on Friction Factor in Hole-Pattern Seals"	Ph.D./Mech. Engg./G. Morrison
2011	Nicholas Denissen: "Roughness Induced Transient Growth: Continuous Spectrum Receptivity and Secondary Instability Analysis"	Ph.D./Aero. Engg./E. White
2011	Markus Schwaenen: "Orthogonal Decomposition Methods for Turbulent Heat Transfer Analysis with Application to Gas Turbines"	Ph.D./Mech. Engg./A. Duggelby
2010	Rebecca Bertsch: "Rapidly Sheared Compressible Turbulence Characterization of Different Pressure Regimes and Effect of Thermodynamic Fluctuations"	M.S./Aero. Engg./S. Girimaji
2010	Ashwin L. Parambath: "Impact of Tsunamis On Near Shore Wind Power Units"	M.S./Civil. Eng./V. Panchang

Year	Name:Dissertation or Project Title	Degree/Dept./Chair
2009	Aditya Murthi: "Analysis of precipitation using satellite observations and comparisons with global climate models"	Ph.D./Atmos. Sci./K. Bowman
2009	Yunhuang Zhang: "Transmutation of Transuranics Elements in Advanced MOX And IMF Fuel Assemblies Utilizing Multi-Recycling Strategies"	M.S./Nucl. Engg./Jean Ragusa
2008	Sunil Laxmipathy: "PANS Method for Turbulence Closures: Fundamental Validity and Low Reynolds number Investigations"	Ph.D./Aero. Engg./S. Girimaji
2008	Dasia Reyes: "PANS Turbulence Modeling: Investigation of Computational and Physical Closure for Flow Past Circular Cylinder"	M.S./Aero. Engg./S. Girimaji
2008	Abhilash Kataria: "Joint Production and Economic Retention Quantity Decisions in Capacitated Production Systems Serving Multiple Market Segments"	M.S./Ind. Engg./E. Tekin
2008	Teh Hsuan Hsu: "Robust Concatenated Codes For The Slow Rayleigh Fading Channel"	M.S./Elec. Engg./K. Narayanan
2007	Qiang Li: "On Multiple Antenna Communications Signal Detection: Error Exponent and Quality of Service"	Ph.D./Elec. Engg./C. Georghiades
2007	Kapil Bhattad: "Joint Channel Source Coding for Non-ergodic Channels: The Distortion SNR Exponent Perspective"	Ph.D./Elec. Engg./K. Narayanan
2007	Carlos A. Mora: "Comparison of Computation Methods for CBM Production Performance"	Ph.D./Pet. Engg./R. Wattenbarger
2007	Kurnchul Lee: "Thermal Effects in Decaying Homogeneous Compressible Turbulence"	Ph.D./Aero, Engg/S. Girimaji
2007	Varun Misra: "A Model for Matrix Acidizing of Long Horizontal Well In Carbonate Reservoirs"	M.S./Pet. Engg./D. Zhu
2007	Sabaresan Mothi Venkatesan: "Exit Chart Based Analysis and Design of Rateless Codes for the Erasure and Gaussian Channels"	M.S./Elec. Engg./K. Narayanan
2007	Sunny Jain: "Simulation of Nonequilibrium Phenomena in Hypersonic Blunt Body Flow using BGK Method"	M.S./Aero. Engg./S. Girimaji
2007	Jing Cheng: "Development of Methodology to Correct Sampling Error Associated with FRM PM_10 Samplers"	Ph.D./BioAg. Engg./B. W. Shaw
2005	Zhaoxiang Tang: "Evaluation of an Approximate Method for Incorporating Floating Docks in Harbor wave Prediction Models"	M.S./Civil Engg./V. Panchang

Year	Name: Description of Project	Degree/Dept./Chair
2005	R. Bikkani: "Characterization of Inertial and Pressure Effects in Turbulence"	M.S./Aero. Engg./S. Girimaji
2004	Jeb Belcher: "Reducing Complexity of A Fast Algorithm Using FFT"	M.S./**Mathematics**/**P. Daripa**
2004	Famodimu Olumayowa O.: "Simulation Studies to Investigate the Effect of Crossflow on the Performance of a 5-Spot Waterflood Pattern"	M.S./Pet. Engg./R. Wattenbarger
2004	Prabha R. Acharya: "An Advanced Fuel Cell Simulation for Solid Oxide Fuel Cell Power Systems"	M.S./Elec. Engg./P. Enjeti
2004	Aditya Murthi: "Effect of Turbulent Transport Models and Grid Spacing on PANS Calculations of a Lid-Driven Cavity"	M.S./Aero. Engg./S. Girimaji
2004	Sunil Lakshmipathy: "PANS Method of Turbulence: Simulation Of High And Low Reynolds Number Flow Past A Circular Cylinder"	M.S./Aero. Engg./S. Girimaji
2004	Joshua Robert O'Neil: "Analysis of Periodically-Forced Turbulence in the Rapid Distortion Limit"	M.S./Aero. Engg./S. Girimaji
2004	Shelley Malik: Non-Thesis	M.S./Ind. Engg./G. L. Curry
2004	M. A. Sattar: Computational Mathematics Option	M.S./**Mathematics**/**P. Daripa**
2003	Mohamed H. El-Ahmady: "Coarse Scale Simulation of Tight Gas Reservoirs"	Ph.D./Pet. Engg./R. Wattenbarger
2003	Elizabeth A. Huse: "Robustness of the Detection Probabilities for the Sign Detector"	M.S./Elec. Engg./N. C. Griswald
2003	Higino Dos Santos: "Production Optimization with Injection into an Aquifer"	M.E./Pet. Engg./R. A. Wattenbarger
2002	Yianshan Feng: "Effects of Electric Field on Internal Convective Two-Phase Flow Heat Transfer and Pressure Drop"	Ph.D./Mech. Engg./J. Seyed-Yagoobi
2002	Rami M. O. Dabbousi: "A 3-phase AC to AC Matrix Converter Using the Venturini Method"	M.S./Elec. Engg./H. Toliyat
2002	Gansheng Wei: "Numerical Study of Pulverized Coal-Litter Biomass Blend Combustion and Pollutant Emissions in a Swirl Burner"	Ph.D./Mech. Engg./K. Annamalai
2002	L. Sarybaev: Non-Thesis	M.S./Physics/J. Ross
1999	Karim S. Zaki: "Route To, and Control of Chaos in Multi-Dimensional Systems"	M.S./Mech. Engg./S. Noah
1998	Faridah Noor Saad: "Topological Design of Centralized Telecommunication Networks"	Ph.D./Ind. Engg./Garl L. Hogg

Year	Name: Description of Project	Degree/Dept./Chair
1998	Antonio P. De La Garza III: "An ALL-At-ONCE Approach For Multi Disciplinary Design Optimization"	M.S./Aero. Engg./L. Carlson
1997	Daoud Mashat: "Fast Algorithms and Their Applications to Numerical Quasi-Conformal Mappings of Doubly Connected Domains onto Annuli"	Ph.D./**Mathematics**/**P. Daripa**
1997	Sriram Peddibhotla: "Rapid Simulation of Multiphase Flow in Heterogeneous Reservoirs Using 3D Streamlines"	Ph.D./Pet. Engg./A. Dattagupta
1996	Robert Cezeaux: "Applied Mathematics Option"	M.S./**Mathematics**/**P. Daripa**
1996	Wei Hua: "Computational Mathematics Option"	M.S./**Mathematics**/**P. Daripa**
1996	Padmanabhan Sundarajan: "Nonlinear Dynamics and Stability of Rotor Bearing Systems"	Ph.D./Mech. Engg./S. Noah
1995	Aqeel Siddiqui: "Subsampled DPCM System Design for Speech Transmission Over Lossy Packet Networks"	M.S./Elec. Engg./V. Vaishyampayam
1994	Mark Maxey: "'Simulation and Animation of a Slinky"	M.S./Comp. Sci./G. Williams
1993	Greg Lindstrom: "Development and Implementation of Random Walk Methods for Reaction-Diffusion Equations"	M.S./**Mathematics**/**P. Daripa**
1993	Shih-Ming Yang: "Diversity Systems for Rayleigh Fading Channels : An Application of Multiple Description Source Codes"	M.S./Elec. Engg./V. Vaishampayam
1993	Mike R. Phillips: "Parallel Solution of the Inverse Problem Associated with a Hyperbolic Partial Differential Equation"	M.S./Comp. Sci./P. Nelson
1993	Alex Sopasakis: Applied Mathematics Option	M.S./**Mathematics**/**P. Daripa**
1992	Paisan Kongkachuichay: "Techniques for Processing Composites of SiC-Al2O3 and Si3N4-Al2O3"	Ph.D./Chem. Engg./A.M. Gadalla
1992	Mahesh P. Atre: "Frequency and Amplitude Control for an Experimental Linac RF Drive"	M.S./Elec. Engg./S. Bhattacharya
1992	Kevin Klughart: "Frequency Stability Considerations in the Design of Battery-Powered VHF Transmitters"	Ph.D./Elec. Engg./E. Sanchez-Sinencio
1991	B.D. Poe: "An Efficient Semi-analytic Multi-Phase Simulator For Complex Reservoirs"	Ph.D./Pet. Engg./S. Holditch
1991	E.E. Kalu: "A Study of Fuel Cells"	Ph.D./Chem. Engg./R. White

Year	Name: Description of Project	Degree/Dept./Chair
1991	B.D. Poe: "An Efficient Semi-analytic Multi-Phase Simulator For Complex Reservoirs"	Ph.D./Pet. Engg./S. Holditch
1991	M.J. Gaeta: "A Stochastic Cellular Automata Model For Neutron Transport"	Ph.D./Nucl. Engg./B. Nassersharif
1991	Y.C. Cheong: "Analysis and Design for Robust, Low Delay Tree Coding of Speech at 9.6 kbps"	Ph.D./Elec. Engg./J.D. Gibson
1990	J. Bryan Maggard: "Effectiveness of Heating Patterns for Electrical Resistance Heating"	M.S./Pet. Engg./R.A. Wattenbarger
1999	Hitha Alex: "worked with me part-time for a semester on a project related to grid generation and quasi-conformal mapping"	M.S./Civil Engineering
1999	Olga Pattipawaez: "worked with me part-time for a semester on a project related to grid generation and quasi-conformal mapping"	M.S./Civil Engineering
1996	Senthilvelan Dhanapalan: "worked with me part-time for one-semester on a project related modeling of nonlinear wave propagation"	Ph.D./Mech. Engg.
1991	Bobby Poe: "worked with me part-time for two years on a project related to adaptive mesh refinement of flow in porous media"	Ph.D./Pet. Engg.
1991	Egwu E. Kalu: "worked with me part-time for two years on a project related to the simulation of spiral waves in excitable media"	Ph.D./Chem. Engg.

16 Courses Taught ($\geq$ 600 level courses are graduate courses)

Year	Semester	Course number	Course Title	Enrollment
2024	Fall	MATH 442-930	Mathematical Modeling	24
2024	Fall	MATH 304-511	Linear Algebra	58
2024	Fall	MATH 491	Research	1
2024	Summer	MATH 311	Topics in Applied Mathematics	55
2024	Summer	MATH 491	Research	2
2024	Spring	MATH 672	Hydrodynamic Stability	8
2024	Spring	MATH 442-930	Mathematical Modeling	23
2024	Spring	MATH 491	Research	1
2023	Fall	MATH 442-930	Mathematical Modeling	27
2023	Fall	MATH 491	Research	1
2023	Fall	MATH 691	Research	1
2023	Summer	MATH 311	Topics in Applied Mathematics	37
2023	Spring	MATH 442-930	Mathematical Modeling	26
2023	Spring	MATH 442-931	Mathematical Modeling	27
2023	Spring	MATH 491	Research	5
2022	Fall	MATH 304-513	Linear Algebra	55
2022	Summer	MATH 311	Topics in Applied Mathematics	43
2021	Fall	MATH 304-508	Linear Algebra	54
2021	Fall	MATH 304-511	Linear Algebra	54
2021	Fall	MATH 442	Mathematical Modeling	28
2021	Summer	MATH 311	Topics in Applied Mathematics	54
2021	Spring	MATH 442	Mathematical Modeling	27
2021	Spring	MATH 672	Hydrodynamic Stability	9
2020	Fall	MATH 442	Mathematical Modeling	23

Year	Semester	Course number	Course Title	Enrollment
2020	Summer	MATH 311	Topics in Applied Mathematics	55
2020	Spring	MATH 442	Mathematical Modeling	23
2020	Spring	MATH 605	Mathematical Fluid Dynamics	5
2019	Fall	MATH 442	Mathematical Modeling	25
2019	Summer	MATH 412	Theory of PDEs	16
2019	Summer	MATH 691	Research	2
2019	Spring	MATH 311-507	Topics in Applied Mathematics	45
2019	Spring	MATH 691	Research	2
2019	Spring	MATH 491	Research	1
2019	Spring	MATH 672	Hydrodynamic Stability	9
2018	Fall	MATH 309	Linear Algebra for Differential Equations	34
2018	Fall	MATH 691	Research	1
2018	Fall	MATH 685	Research	1
2018	Summer	MATH 691	Research	1
2018	Summer	MATH 685	Research	1
2018	Spring	MATH 605	Mathematical Fluid Dynamics	5
2018	Spring	MATH 311-505	Topics in Applied Mathematics	62
2018	Spring	MATH 311-506	Topics in Applied Mathematics	60
2018	Spring	MATH 691	Research	1
2018	Spring	MATH 491	Research	1
2017	Spring	MATH 672	Hydrodynamic Stability	7
2017	Spring	MATH 602	Methods and Applications of Partial Differential Equations	18
2017	Spring	MATH 691	Research	2
2016	Fall	MATH 664	Seminar in Applied Mathematics - Advanced Topics in Fluid Mechanics	12
2016	Fall	MATH 691	Research	2

Year	Semester	Course number	Course Title	Enrollment
2016	Summer	MATH 601	Methods of Applied Mathematics	40
2016	Summer	MATH 691	Research	2
2016	Spring	MATH 401	Advanced Engg. Math. (Perturbation Methods + Classical Methods for PDEs)	45
2016	Springl	MATH 691	Research	2
2015	Fall	MATH 605	Mathematical Fluid Dynamics	13
2015	Fall	MATH 601	Methods of Applied Mathematics	29
2015	Fall	MATH 685	Directed Study on Special Topics	1
2015	Fall	MATH 691	Research	3
2015	Summer	MATH 601	Methods of Applied Mathematics	37
2015	Summer	MATH 685	Directed Study on Special Topics	2
2015	Summer	MATH 691	Research	3
2015	Spring	MATH 401	Advanced Engg. Math. (Perturbation Methods + Classical Methods for PDEs)	37
2015	Spring	MATH 672	Hydrodynamic Stability	11
2015	Spring	MATH 685	Study on Special Topics	1
2015	Spring	MATH 691	Research	4
2014	Fall	MATH 601	Methods of Applied Mathematics	51
2014	Fall	MATH 685	Study on Special Topics	4
2014	Fall	MATH 691	Research	4
2014	Summer	MATH 601	Methods of Applied Mathematics	35
2014	Summer	MATH 685	Directed Study on Special Topics	2
2014	Summer	MATH 691	Research	5
2014	Spring	MATH 401	Advanced Engg. Math. (Perturbation Methods + Classical Methods for PDEs)	33
2014	Spring	MATH 664	Seminar in Applied Math. - Advanced Numerical Methods	11
2014	Spring	MATH 685	Study on Special Topics	2
2014	Spring	MATH 691	Research	3

Year	Semester	Course number	Course Title	Enrollment
2013	Fall	MATH 605	Mathematical Fluid Dynamics	14
2013	Fall	MATH 685	Directed Study on Special Topics	1
2013	Fall	MATH 691	Research	3
2013	Summer	MATH 685	Study on Special Topics	2
2013	Summer	MATH 691	Research	1
2013	Spring	MATH 672	Hydrodynamic Stability	10
2013	Spring	MATH 685	Directed Study on Special Topics	2
2013	Spring	MATH 691	Research	2
2012	Fall	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	50
2012	Fall	MATH 685	Study on Special Topics	2
2012	Fall	MATH 691	Research	2
2012	Summer	MATH 601	Methods of Applied Mathematics	12
2012	Summer	MATH 685	Study on Special Topics	1
2012	Summer	MATH 691	Research	2
2012	Spring	MATH 601	Methods of Applied Mathematics	33
2012	Spring	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	49
2012	Spring	MATH 685	Study on Special Topics	3
2012	Spring	MATH 691	Research	1
2011	Fall	MATH 605	Mathematical Fluid Dynamics	10
2011	Fall	MATH 685	Study on Special Topics	2
2011	Summer	MATH 685	Study on Special Topics	2
2011	Summer	MATH 691	Research	1
2011	Spring	MATH 672	Hydrodynamic Stability	9
2011	Spring	MATH 308	Ordinary Differential Equations	48
2011	Spring	MATH 691	Research	1

Year	Semester	Course number	Course Title	Enrollment
2010	Fall	MATH 691	Research	1
2010	Summer I	MATH 311	Topics in Applied Mathematics	19
2010	Spring	MATH 685	Directed Studies (Statistical Methods)	1
2009	Fall	MATH 605	Mathematical Fluid Dynamics	11
2009	Fall	MATH 251	Engineering Mathematics-I (Calculus III)	96
2009	Fall	MATH 685	Directed Studies (Dynamical Systems)	1
2009	Summer II	MATH 412	Theory of PDEs	21
2009	Summer I	MATH 251	Engineering Mathematics-III (Calculus III)	47
2009	Spring	MATH 602	Methods and Applications of PDES	35
2009	Spring	MATH 151	Engineering Mathematics I (Calculus-I)	46
2008	Summer II	MATH 602	Methods and Applications of PDES	30
2008	Summer I	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	20
2008	Summer I	MATH 685	Directed Studies: Bio-Fluid Mechanics	1
2008	Spring	MATH 401	Advanced Engg. Math. (Perturbation Methods + Classical Methods for PDEs)	22
2008	Spring	MATH 151	Engineering Mathematics I (Calculus-I)	78
2008	Spring	MATH 151	Engineering Mathematics I (Calculus-I)	58
2007	Fall	MATH 605	Mathematical Fluid Dynamics	10
2007	Summer I	MATH 601	Methods of Applied Mathematics	12
2007	Spring	MATH 401	Advanced Engg. Math. (Perturbation Methods + Classical Methods for PDEs)	25
2007	Spring	MATH 151	Engineering Mathematics I (Calculus-I)	84
2006	Fall	MATH 601	Methods of Applied Mathematics	34
2006	Summer I	MATH 601	Methods of Applied Mathematics	25
2006	Spring	MATH 401	Advanced Engg. Math. (Perturbation Methods + Classical Methods for PDEs)	28
2006	Spring	MATH 689	Computational Math. for Fluid Dynamics	20

Year	Semester	Course number	Course Title	Enrollment
2005	Fall	MATH 605	Mathematical Fluid Dynamics	5
2005	Summer I	MATH 601	Methods of Applied Mathematics	24
2004	Fall	MATH 672	Hydrodynamic Stability	5
2004	Fall	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	14
2004	Summer I	MATH 601	Methods of Applied Mathematics	24
2004	Spring	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	46
2003	Fall	MATH 605	Mathematical Fluid Dynamics	7
2003	Fall	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	48
2003	Summer II	MATH 417	Numerical Analysis	27
2003	Spring	MATH 601	Methods of Applied Mathematics	27
2003	Spring	MATH 664	Seminar in Applied Math. - Computational Math. for Fluid Dynamics	15
2002	Fall	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	50
2002	Summer I	MATH 601	Methods of Applied Mathematics	27
2002	Spring	MATH 601	Methods of Applied Mathematics	14
2002	Spring	MATH 672	Hydrodynamic Stability	7
2001	Fall	MATH 605	Mathematical Fluid Dynamics	11
2001	Summer II	MATH 685	Directed Studies: Fast Algorithms for Computational Fluid Dynamics	1
2001	Summer I	MATH 601	Methods of Applied Mathematics	26
2001	Spring	MATH 601	Methods of Applied Mathematics	16
2001	Spring	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	33
2000	Fall	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	48
2000	Summer II	MATH 602	Methods and Applications of PDES	6

Year	Semester	Course number	Course Title	Enrollment
2000	Spring	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	46
1999	Fall	MATH 605	Mathematical Fluid Dynamics	8
1999	Fall	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	25
1999	Spring	MATH 672	Hydrodynamic Stability	6
1998	Fall	MATH 308	Ordinary Differential Equations	47
1998	Fall	MATH 308	Ordinary Differential Equations	48
1998	Spring	MATH 308	Ordinary Differential Equations	50
1997	Fall	MATH 308	Ordinary Differential Equations	34
1997	Fall	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	47
1997	Spring	MATH 308	Ordinary Differential Equations	17
1997	Spring	MATH 311	Topics in Applied Mathematics (Linear Algebra + Vector Calculus)	48
1996	Summer II	MATH 308	Ordinary Differential Equations	66
1996	Summer I	MATH 691	Research	1
1996	Spring	MATH 308	Ordinary Differential Equations	36
1996	Spring	MATH 685	Mathematical Fluid Dynamics	1
1996	Spring	MATH 691	Research	2
1995	Fall	MATH 605	Mathematical Fluid Dynamics	5
1995	Summer	MATH 614	Dynamical Systems and Chaos	14
1995	Spring	MATH 689	Special Topics: Mathematical Fluid Dynamics	9
1994	Spring	MATH 308	Ordinary Differential Equations	41
1994	Spring	MATH 308	Ordinary Differential Equations	71
1994	Spring	MATH 689	Special Topics: Hydrodynamic Stability	5
1993	Fall	MATH 131	Mathematical Concepts: Calculus	96
1993	Fall	MATH 131	Mathematical Concepts: Calculus	100
1993	Spring	MATH 689	Special Toipcs: Mathematical Fluid Dynamics	13

Year	Semester	Course number	Course Title	Enrollment
1992	Fall	MATH 131	Mathematical Concepts: Calculus	110
1992	Fall	MATH 664	Seminar in Applied Mathematics	7
1992	Spring	MATH 308	Ordinary Differential Equations	96
1992	Spring	MATH 610	Numerical Methods for Partial Differential Equations	26
1991	Fall	MATH 308	Ordinary Differential Equations	99
1991	Fall	MATH 161	Engineering Mathematics II (Calculus-II)	98
1991	Spring	MATH 308	Ordinary Differential Equations	107
1991	Spring	MATH 161	Engineering Mathematics II (Calculus-II)	94
1990	Fall	MATH 131	Mathematical Concepts: Calculus	48
1990	Fall	MATH 308	Ordinary Differential Equations	76
1990	Spring	MATH 161	Engineering Mathematics II (Calculus-II)	70
1990	Spring	MATH 610	Numerical Methods for Partial Differential Equations	35
1989	Fall	MATH 639	Iterative Techniques	11
1989	Fall	MATH 308	Ordinary Differential Equations	87
1989	Spring	MATH 610	Numerical Methods for Partial Differential Equations	12
1988	Fall	MATH 308	Ordinary Differential Equations	75
1988	Fall	MATH 417	Numerical Analysis	20
1988	Spring	MATH 308	Ordinary Differential Equations	81
1988	Spring	MATH 152	Engineering Mathematics II	104
1987	Fall	MATH 308	Ordinary Differential Equations	49
1987	Fall	MATH 152	Engineering Mathematics II	111