CURRICULUM VITAE

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Doctoral & Postdoctoral Studies

⋆ US National Academy of Sciences - NRC Research Associate, Naval Postgraduate School, Monterey, California, USA Jul. 2010 - Jul. 2012.
Research Area : Stochastic Analysis of Fluid Dynamic Models

⋆ Brain Korea - 21 Postdoctoral Fellow, Yonsei University, Seoul, South Korea, Sep. 2008 - Jun. 2010.
Research Area : Inverse Problems; Partial Differential Equations

▷ Ph.D. : Bharathiar University, Coimbatore, India, 2008.
Research Area : Control Theory of Partial Differential Equations

Awards and Medals

◇ **Office of Naval Research Global Award**, MIDDX, UK to work on the project "Autonomy and Unmanned Systems" at Naval Postgraduate School, California, USA, Dec. 2013.

◇ **INSPIRE Faculty Award**, Indian National Science Academy (INSA) - Department of Science & Technology (DST), Govt. of India, Dec. 2011.

◇ **Research Associateship Award**, National Academy of Sciences/National Research Council (NRC), USA, May 2010.

◇ **Brain Korea 21-Postdoctoral Award** for Mathematical Sciences, South Korean Govt., South Korea, Aug. 2008.

◇ **Dr.K.M.Marimuthu Endowment Gold Medal**, M.Sc., Bharathiar University, India, 2003.

◇ **University Gold Medal**(*First* Rank Holder), M.Sc., Bharathiar University, India, 2003.

Professional Activities

* Interview Board Member, Students Selection for KVPY Fellowship, IISER, Trivandrum, Jan. 22-24, 2020.
* Assistant Professor, Indian Institute of Space Science and Technology, Trivandrum, India, since Oct. 2016.
* INSPIRE Faculty Fellow, Indian Institute of Space Science and Technology, Trivandrum, India, Jul. 2012 to Oct. 2016.
* Life Member, Indian Society of Industrial and Applied Mathematics (ISIAM), India.
* Member, American Mathematical Society since 2012.
* Reviewer for Mathematical Reviews(MathSciNet), American Mathematical Society, USA since 2010.
* Referee for Various International Journals.
* Junior Research Fellow, NBHM/Department of Atomic Energy, Department of Mathematics, Bharathiar University, India, Apr. 2007 - Sep. 2008.
* Member, The Indian Science Congress Association, 2008.

Ph.D. Guidance

* Mrs.D.Anjuna, Ph.D. student since 2018. She works on "Inverse problems of beam and plate models".
* Mr.Sidhartha Patnaik, Ph.D. student since 2019. He works on "Optimal control problems of magnetization dynamics".
* Mr.Tarun Sharma, NBHM/DAE project fellow since 2023. He works on parameter identification for diffuse interface models describing multiphase fluids.
* Ms.Kalpana Rawat, IIST funded Ph.D. student since 2023. She works on optimal control of stochastic fluid flow models.

Funded Research Projects and Conference Grant

1. Department of Atomic Energy/NBHM research project on "Parameter Identification for Diffuse Interface Models Describing Multiphase Fluids." The total research grant: 1619400 (INR), 2022-2025.

2. DST INSPIRE Project on "Stochastic Analysis, Control, and Solvability of Fluid Flow Models" was awarded by Indian National Science Academy, India. The total research grant: 3500000 (INR), 2012-2017.

3. Conducted a National conference on Stochastic Differential Equations and Applications in collaboration with IIT Roorkee at IIST during June 6-7, 2019. The total grant received from DAE/NBHM is 200000 (INR), and DST/SERB is 150000 (INR)

Research Visits

- Office of Naval Research Global Award, MIDDX, UK to visit Naval Postgraduate School, California, USA, Dec. 8, 2013 - Jan. 8, 2014.
- Short Visit to Chinese Academy of Sciences, Beijing, China, Apr.11-25, 2010.
- Lecture series on The Navier-Stokes Equations: Solvability, Control and Stochastic Analysis, IIT Bombay, Mumbai, Dec.29, 2007 - Jan.5, 2008.
- UGC-SAP-PhIV Visiting Fellow, IISc, Bangalore, Feb.1-Mar.31, 2007.
- Mathematics Initiative Visitor, IISc, Bangalore, Sep.10-Nov.10, 2006.
- Short Term Visitor, IISc-TIFR, Bangalore, Apr.1-Jul.10, 2006.
- Short Term Visitor, TIFR, Bangalore, May 1-31, 2005.

Articles in Refereed Journals

24. K. Sakthivel, A. Hasanov and D. Anjuna, Inverse Problems of identifying the unknown transverse shear force in the Euler-Bernoulli beam with Kelvin-Voigt damping, Journal of Inverse and Ill-posed Problems, https://doi.org/10.1515/jiip-2022-0053.

23. K. Sakthivel, Optimal control of the 3D damped Navier-Stokes-Voigt equations with control constraints, Evolution Equations and Control Theory, 12 (2023), 282-317.

22. D. Anjuna, A. Hasanov, K. Sakthivel and C. Sebu, On unique determination of an unknown spatial load in damped Euler-Bernoulli beam equation from final time output, Journal of Inverse and Ill-posed Problems, 30 (2022), 581-593.

21. K. Sakthivel, A. Arivazhagan and N. Barani Balan, Inverse problem for a Cahn–Hilliard type system modeling tumor growth, Applicable Analysis, 101 (2022), 858-890.

20. D. Anjuna, K. Sakthivel and A. Hasanov, Determination of a spatial load in a damped Kirchhoff-Love plate equation from final time measured data, Inverse Problems, 38 (2022) 015009 (35pp).

19. A. Arivazhagan, K. Sakthivel and N. Barani Balan, Inverse source problem for a generalized Korteweg-de Vries equation, Journal of Inverse and Ill-posed Problems, 29 (2021), 823-848.

18. A. Arivazhagan, K. Sakthivel and N. Barani Balan, Lipschitz stability of an inverse problem for the Kawahara equation with damping, AIMS Mathematics, 5 (2020), 4529-4545.

17. Manil T.Mohan, K.Sakthivel and S.S.Sritharan, Ergodicity for the 3D stochastic Navier-Stokes equations perturbed by Lévy noise, Mathematische Nachrichten, 292 (2019), 1056-1088.

16. K.Sakthivel and A. Hasanov, An inverse problem for the K-dV equation with Neumann boundary measured data, Journal of Inverse and Ill-posed Problems, 26 (2018), 133-151.

15. K.Sakthivel, S. Gnanavel, A. Hasanov and R.K. George, Identification of an unknown coefficient in KdV equation from final time measurement, Journal of Inverse and Ill-posed Problems, 24 (2016), 469-487.

14. K.Sakthivel and S.S.Sritharan, Martingale solutions for stochastic Navier-Stokes equations driven by Lévy noise, Evolution Equations and Control Theory, 1 (2012), 355-392.

13. K.Sakthivel, S.Gnanavel, N.Baranibalan and K.Balachandran, Inverse problem for the reaction diffusion system by optimization method, Applied Mathematical Modelling, 35 (2011), 571-579.

12. K.Sakthivel, K.Balachandran, J.-Y.Park and G.Devipriya, Null controllability of a nonlinear diffusion system in reactor dynamics, Kybernetika, 46 (2010), 890-906.

11. K.Sakthivel, G.Devipriya, K.Balachandran and J.H.Kim, Controllability of a reaction-diffusion system describing predator-prey model, Numerical Functional Analysis and Optimization, 31 (2010), 831-851.

10. N.Baranibalan, K.Sakthivel, K.Balachandran and J.H.Kim, Reconstruction of two time independent coefficients in an inverse problem for the phase field system, Nonlinear Analysis: Theory, Methods and Applications, 72 (2010), 2841-2851.

9. K.Sakthivel, N.Baranibalan, J.H.Kim and K.Balachandran, Stability of diffusion coefficients in an inverse problem for the Lotka-Volterra competition system, Acta Applicandae Mathematicae, 111 (2010), 129-147.

8. K.Sakthivel, G.Devipriya, K.Balachandran and J.H.Kim, Exact null controllability of a semilinear parabolic equation arising in finance, Nonlinear Analysis: Hybrid Systems, 3 (2009), 565-577.

7. N.Baranibalan, K.Sakthivel, K.Balachandran and J.H.Kim, Inverse problems for the phase-field system with one observation, Applicable Analysis, 88 (2009), 529-545.

6. K.Sakthivel and J.H.Kim, Controllability and hedgibility of Black-Scholes equations with N stocks, Acta Applicandae Mathematicae, 111 (2010), 339-363.

5. K.Sakthivel, K.Balachandran, R.Sowrirajan and J.H.Kim, On exact null controllability of Black-Scholes equation, Kybernetika, 44 (2008), 685-704.

4. N.Baranibalan, K.Sakthivel and K.Balachandran, Uniqueness and stability in inverse parabolic equations with memory, Nonlinear Analysis: Hybrid Systems, 2 (2008), 1077-1088.

3. K.Sakthivel, K.Balachandran and S.S.Sritharan, Exact controllability of nonlinear diffusion equations arising in reactor dynamics, Nonlinear Analysis: Real World Applications, 9 (2008), 2029-2054.

2. K.Sakthivel, K.Balachandran and B.R.Nagaraj, On a class of nonlinear parabolic control systems with memory effects, International Journal of Control, 81 (2008), 764-777.

1. K.Sakthivel, K.Balachandran and S.S.Sritharan, Controllability and observability theory of certain parabolic integrodifferential equations, Computers and Mathematics with Applications, 52 (2006), 1299-1316.

Articles in Refereed Conference Proceedings

1. K. Sakthivel, Carleman estimate for parabolic equation with memory effects and exact controllability, Proceedings in Applied Mathematics and Mechanics, 7 (2007), 2030021-2030022.

Workshop/Conference/Symposium Organized

8. SERB/DST and NBHM sponsored National Conference on Stochastic Differential Equations and Applications, IIST, Trivandrum, June 6-7, 2019. (joint with Dr.Manil T. Mohan, IIT Roorkee)

7. NBHM Sponsored *Advanced Workshop on Partial Differential Equations and Applications*, Central University of Tamilnadu, Thiruvarur, May 29-June 11, 2017.

6. IIST Sponsored *Young Talent Nurture Program - 2017*, IIST, Trivandrum, May 22-June 03, 2017.

5. NBHM Sponsored *"National Workshop on Advanced Analysis and Differential Equations",* Periyar University, Salem, June 9-17, 2016.

4. *"Undergraduate Level Training Programme on Differential Equations" under* NPDE-TCA, IIST, Trivandrum, India, May 18 - June 7, 2016.

3. NBHM sponsored *"International Conference on Nonlinear Dynamical Systems",* Bharathiar University, Coimbatore, March 24- 26, 2016.

2. Advanced Workshop on *"Mathematical Theory of Control and Numerics" under* National Program on Differential Equations: Theory, Computation & Applications (NPDE-TCA), IIST, Trivandrum, India, Nov. 21-30, 2012.

1. Symposium on *"Recent Advances in Computational and Stochastic Methods in Fluid Dynamics with Control and Estimations"*, 36th SIAM Southeastern Atlantic Section Conference , University of Alabama, Huntsville, U.S.A, Mar. 24-25, 2012.

Talks/Participation in International Meetings

16. Online plenary talk on Regularizing Effect of Damping Terms in Inverse Problems for Evolution Equations, *International Conference on Quasilinear Equations, Inverse Problems and Their Applications,* Sochi, Russia, August 22-26, 2022.

15. Ergodicity of Navier-Stokes Equations with Levy Noise, International Conference in conjunction with ISIAM-2019, Bharathiar University, Coimbatore, December 5-7, 2019

14. Ergodicity of Stochastic Navier-Stokes Equations with Levy Noise, *International Congress on Industrial and Applied Mathematics(ICIAM 2019)*, Valencia, Spain, July 15-19, 2019.

13. Inverse Problem for the Generalized Korteweg - deVries Equation, *International Conference on Numerical Analysis, Computing and Applications*, Mohandas College of Engineering and Technology, Trivandrum, Dec. 19, 2018.

12. Dynamic Programming of Stochastic Burgers Equation with Lévy Noise, International Congress of Mathematicians (ICM-2018), Rio de Janerio, Brazil, Aug. 1-9, 2018.

11. Ergodicity of Stochastic Navier-Stokes Equations, *83rd Annual Conference of IMS- an International Meet*, Sri Venkateswara University, Tirupati, Dec. 12-15, 2017.

10. International Congress of Mathematicians (ICM -2014), Seoul, South Korea, Aug. 13-21, 2014.

9. International Workshop on Computational Science and Engineering, Yonsei University, Seoul, Korea, Oct.19, 2009.

8. New Models on Sonar Equation and Calculation of Probability of Detection, 10th Security Workshop, Naval Postgraduate School, Monterey, USA, May 21-23, 2012.

7. Martingale Solutions for Stochastic Navier-Stokes Equations with Itô-Lévy Noise, 36th SIAM Southestern Atlantic Section Conference, University of Alabama, Huntsville, USA, Mar. 24-25, 2012.

6. Viscous Flow Past Moving and Rotating Bodies: Stochastic Analysis and Control, SIAM Conference on Control and It's Applications, Baltimore, USA, Jul. 25-27, 2011.

5. Inverse Problem of Reconstructing a Diffusion Coefficient in the Phase Field System, Chinese Academy of Sciences, Beijing, China, Apr.11-25, 2010.

4. Null controllability of a reaction diffusion system by one control force, Joint Meeting of KMS and AMS, Ewha Womans University, Seoul, Korea, Dec.16-20, 2009.

3. Controllability of the generalized Black-Scholes equations, International Conference on Scientific Computation and Differential Equations, Beijing, China, May 24-29, 2009.

2. Carleman type estimate and exact controllability to the trajectories of a parabolic equation with memory, Summer School "De Ludo Aleae" on Probability and Homogenization, University of Rome, Italy, Sep.10-16, 2007.

1. Carleman estimate for parabolic equation with memory effects and exact controllability, ICIAM-07, ETH-University of Zurich, Switzerland, Jul.16-20, 2007.

Talks/Participation in National Meetings

57. Online talk on A Class of Inverse Problems of a Generalized Korteweg - deVries Equation, *International Conference on Mathematical Sciences, Modeling and Computational Intelligence,* Kumaraguru College of Technology, Coimbatore, September 29-30, 2022.

56. Online talk on Dynamic Programming of the Stochastic Navier-Stokes Equations, *International Conference on Dynamical Systems, Control Theory & Their Applications,* IIT-Roorkee, July 01-03, 2022.

55. Inverse Problem of Damped Kirchhoff–Love Plate Equation, *Third National Conference on Control and Inverse Problems*, Central University of Tamilnadu, Thiruvarur, February 25-26, 2022.

54. Differential Equations and Applications, *Refresher Course in Mathematics,* Kerala University, Trivandrum, January 9, 2022.

53. A Class of Inverse Problems of a Generalized Korteweg - deVries Equation, *National Seminar on Differential Equations: Analysis and Applications,* St.Thomas College, Kozhencherry, December 18, 2021.

52. Controllability, Optimal Control and Inverse Problems in Differential Equations, Faculty Development Program organized by Amrita School of Arts and Science, Kochi, July 7, 2021.

51. Five lectures on Stochastic Differential Equations in National Workshop on Stochastic Differential Equations and Applications, Periyar University, Salem, March 10-13, 2021.

50. Webinar on Applications of Partial Differential Equations in Control and Inverse Problems, Kumaraguru College of Technology, Coimbatore, January 20, 2021.

49. A Class of Inverse Problems of a Generalized Korteweg - deVries Equation, Webinar on National Conference on Mathematical Theory of Control, IIST-NIT Puducherry, December 10-12, 2020

48. Webinar on Optimal Control of Partial Differential Equations and Applications, Reva University, Bangalore, July 16, 2020.

47. Webinar on Optimal Control of Partial Differential Equations and Applications, IIIT-Kottayam, July 3, 2020.

46. Webinar on Differential Equations and Applications to Optimal Control Problems, Kongunadu Arts & Science College, Coimbatore, June 4, 2020.

45. Webinar on Some Aspects of Solutions of Partial Differential Equations, Nirmala College for Women, Coimbatore, May 26, 2020.

44. Inverse Problem for a Cahn-Hilliard Type System by Boundary Measurements, *National Conference on PDEs and Applications,* Periyar University, Salem, March 5-6, 2020.

43. Four lectures on Stochastic Differential Equations, Periyar University, Salem, March 3-4, 2020.

42. Five lectures on Weak Solutions for Elliptic Equations, Advanced Workshop on PDEs and Applications, Central University of Kerala, December 22-24, 2019.

41. Ergodicity of Stochastic Navier-Stokes Equations, National Conference on Differential Equations and Dynamical Systems, NIT Puducherry, April 5-6, 2019.

40. Trajectory Controllability and Stability of Swift-Hohenberg Equation, *National Conference on Control and Inverse Problems*, Central University of Tamilnadu, Thiruvarur, Mar. 1-2, 2019.

39. Reconstruction of a Coefficient in the Inverse Problem for the Generalized Korteweg - deVries Equation, *National Conference on Recent Developments in Mathematics,* Govt Arts College, Coimbatore, Feb. 22, 2019.

38. Five Lectures on Optimal Control of Differential Equations, IIT Mandi, June 13-20, 2018.

37. Three Lectures on Applications of Differential Equations to Optimal Control Problems, *NCM sponsored Instructional School for Teachers*, Indian Institute of Space Science and Technology (IIST), Trivandrum, May 14 -26, 2018.

36. Four Lectures on Elliptic PDEs, *UGC Sponsored National Workshop on Partial Differential Equations*, Periyar University, Salem, March 23-25, 2018.

35. Some Applications of Differential Equations to Control Problems, Vellalar College for Women , Erode, Dec. 5, 2017.

34. Differential Equations and Applications, PKR Arts College for Women, Gobi, Tamilnadu, July 14, 2017.

33. Six lectures on Elliptic PDEs, *Advanced Workshop on Partial Differential Equations and Applications*, Central University of Tamilnadu, Thiruvarur, May 29-June 11, 2017.

32. Four Lectures on Real Analysis, *Young Talent Nurture Program (YTN-2017)*, Indian Institute of Space Science and Technology (IIST), Trivandrum, May 22 - June 03, 2017.

31. Optimal Control of Stochastic Navier-Stokes Equations Forced by Levy Noise, *National Conference on Recent Advances in Theoretical and Computational Methods for PDEs*, Dr.N.G.P. Arts and Science College, Coimbatore, Jan. 7, 2017.

30. Control and Inverse Problems of Differential Equations, *National Conference on Differential Equations and its Applications*, P.K.R. Arts college for Women, Gobi, Jan 6, 2017.

29. On the Dynamic Programming Approach for the Optimal Control of Stochastic Navier-Stokes Equations, *National Conference on Computational and Theoretical PDEs,* NIT Goa, Oct 5-7, 2016.

28. Six Lectures on Existence, Uniqueness and Regularity of Solutions for Partial Differential Equations, *National Workshop on Advanced Analysis and Differential Equations,* Periyar University, Salem, Jun 9-17, 2016.

27. Five Lectures on Functional Analysis, *Young Talent Nurture Program (YTN-2016)*, Indian Institute of Space Science and Technology (IIST), Trivandrum, May 24 - June 06, 2016.

26. Calculus of Variations and Optimal Control Theory, *National Conference on Recent Developments in Differential Equations and their Applications,* PSGR Krishnammal College for Women, Coimbatore, Mar 4-5, 2016.

25. Determination of a Coefficient in KdV Equation by Optimization Method, *19th Ramanujan Symposium on Recent Trends in Nonlinear Partial and Fractional Differential Equations*, University of Madras, Chennai, Mar 3, 2016.

24. Three Lectures on Optimal Control Theory of Differential Equations, Periyar University, Salem, Feb. 29 - Mar 2, 2016.

23. Two Lectures on Control and Inverse Problems, *National Conference on Control and Inverse Problems,* Central University of Tamilnadu, Thiruvarur, Feb. 25-26, 2016.

22. Carleman estimates and Controllability of Heat Equation, *Advanced Level Workshop on Controllability of Heat and Wave Equation,* IIT, Mandi, Nov. 16-20, 2015

21. Four Lectures on complex Analysis, *Young Talent Nurture Program (YTN-2015)*, Indian Institute of Space Science and Technology (IIST), Trivandrum, May 25 - June 07, 2015.

20. Optimal Control Theory: Maximum Principle and Dynamic Programming, *National Conference on PDEs and Applications*, Bharathiar University, Coimbatore, Mar. 26-27, 2015.

19. Three Lectures on Integral Theorems on Vector Calculus, *Young Talent Nurture Program (YTN-2014)*, Indian Institute of Space Science and Technology (IIST), Trivandrum, May 13-25, 2014.

18. On the Solvability of Stochastic Navier-Stokes Equations with Levy Noise, *National Conference on PDEs and Applications,* Bharathiar University, Coimbatore, Jan. 30-31, 2014.

17. A Little Journey to the Land of Mathematics, *DST Inspire Camp*, Noorul Islam University, Kumaracovil, Jul. 18, 2013.

16. Some Aspects of Solutions of Partial Differential Equations, Periyar University, Salem, Feb. 22, 2013.

15. Martingale Solutions for Stochastic Navier-Stokes Equations with Lévy Noise, *Winter School on Stochastic Analysis and Control of Fluid Flow,* Indian Institute of Science Education and Research (IISER), Trivandrum, Dec 3-20, 2012.

14. Three Lectures on Calculus of Variations and Optimal Control Theory, Advanced workshop on *Mathematical Theory of Control and Numerics*, Indian Institute of Space Science and Technology (IIST), Trivandrum, Nov. 21-30, 2012.

13. Martingale Solutions for Stochastic Navier-Stokes Equations with Ito-Levy Noise, Indian Statistical Institute, Delhi Centre, Delhi, Nov.23, 2011.

12. Solvability of Incompressible Navier-Stokes Equations in Bounded Domains, *Seminar on Differential Equations and Dynamical Systems,* SRMKV College, Coimbatore, Feb. 18-19, 2011.

11. The Symposium on Nonlinear Evolution Equations, IISc, Bangalore, Apr.18-19, 2008.

10. Workshop on Nonlinear Control Systems, NIT, Trichy, Feb.21, 2008.

9. Exact Controllability to the Trajectory of a Parabolic Equation with Memory, *National Conference on Applications of Partial Differential Equations*, Bharathiar University, Coimbatore, Jan.24-25, 2007.

8. Carleman estimate for parabolic equation with memory and exact controllability, *National Conference on differential Equations and Applications*, Periyar University, Salem, Sep.28-29, 2006.

7. On a class of nonlinear parabolic integrodifferential control systems, *Recent Trends in Nonlinear Differential equations and Dynamical Systems,* P.S.G. College of Arts & Science, Coimbatore, Mar.24-25, 2006.

6. Carleman estimate and exact controllability of partial integrodifferential equations, *XIII-Ramanujan Symposium on Nonlinear Differential Equations,* University of Madras, Chennai, Feb.8-10, 2006.

5. Carleman inequality and partial differential equations, *National Conference on Partial Differential Equations and Applications,* Bharathiar University, Coimbatore, Mar.10-11, 2005.

4. National Seminar on Recent Innovations in Mathematics, Kongunadu Arts & Science College, Coimbatore, Aug.5, 2006.

3. Existence and uniqueness result of a nonlinear integrodifferential equation, *Proceedings of XII-Ramanujan Symposium on Recent Trends in Analysis,* University of Madras, Chennai, Mar.2-4, 2005.

2. National Conference on Fluid Flow and Control, Bharathiar University, Coimbatore, Mar.17-18, 2004.

1. The Workshop on Partial Differential Equations, Viscosity Solutions and Applications, IISc, Bangalore, Jul.21-Aug.08, 2003.