

Dr. S. KARTHIKEYAN

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RESEARCH SPECIALIZATION

Differential Equations and Control Theory

PROFESSIONAL EXPERIENCE

Mar 15, 2010 onwards	Assistant Professor Department of Mathematics, Periyar University, Salem
Oct 2008 - Mar 12, 2010	CSIR - Senior Research Fellow Department of Mathematics, Bharathiar University, Coimbatore
Dec 2007 - Oct 2008	UGC- Research Fellowship in Science for Meritorious Students Department of Mathematics, Bharathiar University, Coimbatore

EDUCATIONAL QUALIFICATIONS

Ph.D.	Mathematics, Bharathiar University, Coimbatore, March 2009 Research Adviser: Prof. K.Balachadran
M.Phil.	Mathematics, Bharathiar University, Coimbatore, March 2006
M.Sc.	Mathematics, Bharathiar University, Coimbatore, April 2004
B.Sc.	Mathematics, Thiruvalluvar Govt. Arts College, Rasipuram, April 2002

RESEARCH GUIDANCE

Ph.D. guidance - 2 (Submitted) , 2 (ongoing)
M.Phil. guidance - 20 (completed), 2 (ongoing)

ACHEIVEMENTS & AWARDS

- Open Arms Travel Grant to participate in the ICM, Rio De Janerio, Brazil, 2018.
- Full financial support from NBHM to participate in 8th ICIAM, Beijing, China, 2015.
- Full travel support from DST to participate in the 7th ICIAM, Vancouver, Canada, 2011.
- CSIR-Senior Research Fellowship, 2008.
- UGC-Research Fellowship in Science for Meritorious Students, 2007.
- Full travel grant from CSIR to participate in 6th ICIAM, Zurich, Switzerland, 2007.
- Gold Medal for securing first rank in Post Graduation, Bharathiar University, 2004.

ONGOING RESEARCH PROJECT

Title: Studies on Existence and Blow-up Solutions of Partial Differential Equations

Funding Agency: SERB (Start-up Research Grant for Young Scientist)

Scheme: Sanctioned Budget: Rs. 4.39 lakhs

Period: 2016 - 2019

RESEARCH PUBLICATIONS

1. K.Balachandran and S.Karthikeyan, Controllability of stochastic integrodifferential systems, *International Journal of Control*, 80 (3) (2007), 486 - 491.
2. K.Balachandran, S.Karthikeyan and J.-H.Kim, Controllability of semilinear stochastic integrodifferential systems, *Kybernetika*, 43 (1) (2007), 31 - 44.
3. K.Balachandran and S.Karthikeyan, Controllability of Ito type nonlinear stochastic integrodifferential systems, *Journal of the Franklin Institute*, 345 (4) (2008), 382 - 391.
4. K.Balachandran, J.-H.Kim and S.Karthikeyan, Complete controllability of stochastic integrodifferential systems, *Dynamic Systems and Applications*, 17 (1) (2008), 43-52.
5. K.Balachandran, S.Karthikeyan and J.Y.Park, Controllability of stochastic systems with distributed delays in control, *International Journal of Control*, 82 (7) (2009), 1288-1296.
6. S.Karthikeyan and K.Balachandran, Controllability of nonlinear stochastic neutral impulsive systems, *Nonlinear Analysis: Hybrid Systems*, 3 (3) (2009), 266-276.
7. K.Balachandran and S. Karthikeyan, Controllability of nonlinear stochastic systems with prescribed controls, *IMA Journal of Mathematical Control and Information*, 27 (1) (2010), 77 - 89.
8. S.Karthikeyan and K.Balachandran, Constrained controllability of stochastic impulsive systems, *International Journal of Applied Mathematics and Computer Science*, 41 (2) (2011), 307 - 316.
9. S.Karthikeyan and K.Balachandran, On controllability for a class of stochastic impulsive systems with delays in control, *International Journal of Systems Science*, 41 (1) (2013), 67 - 76.
10. S.Karthikeyan, K.Balachandran and M.Sathya, Controllability of nonlinear stochastic systems with multiple time-varying delays in control, *International Journal of Applied Mathematics and Computer Science*, 259 (2) (2015), 207 - 215.
11. S.Karthikeyan, K.Balachandran and J.-H. Kim, On controllability for a class of second order semilinear stochastic systems, *Journal of Control and Decision*, 3 (2016), 211 - 222.

12. L. Shangerganesh, V.N. Deivamani and S. Karthikeyan, Renormalized and Entropy Solutions of Tumor Growth Model with Nonlinear Acid Production, *Mathematical Modelling and Analysis*, 22 (5) (2017), 695 - 716.
13. S.Karthikeyan, K.Balachandran and M.Sathya, Controllability of semilinear stochastic delay systems with distributed delays in control, *Mathematics of Control, Signals and Systems*, 29 (4) (2017), Article 17, 15 pages.
14. L. Shangerganesh, V.N. Deivamani and S. Karthikeyan, Existence of global weak solutions for Cancer invasion parabolic system with nonlinear diffusion, *Communications in Applied Analysis*, 21 (4) (2017), 607-629.
15. L. Shangerganesh, N. Nyamoradi, V.N. Deivamani and S. Karthikeyan, On the existence of weak solutions of nonlinear degenerate parabolic system with variable exponents, *Computer and Mathematics with Applications*, 2018 (in press).

CONFERENCE PROCEEDINGS

1. S. Karthikeyan, Carleman Estimate for hereditary stochastic heat equation, *Proceeding of National Conference on Applications of Partial Differential Equations*, Bharathiar University, Coimbatore, 12 (2007), 31-39.
2. S. Karthikeyan, Controllability of perturbed nonlinear stochastic integrodifferential systems, *Proceedings of Applied Mathematics and Mechanics*, 7 (2007), 2030009-2030010.
3. K. Balachandran and S. Karthikeyan, Controllability of stochastic integrodifferential systems, *Proceedings of XV Ramanujan Symposium on Dynamic Equations*, Publications of the Ramanujan Institute, 12 (2008), 31-39.
4. S. Karthikeyan, Relative controllability of stochastic impulsive systems with delays in control, *Differential Equations and Applications: Recent Advances*, 1 (2015), 30 - 38.

INVITED LECTURES DELIVERED

1. Stochastic Dynamical Systems and Some Applications to Control Problems, National Conference on Stochastic Differential Equations and its Applications, Dr. N.G.P. Arts and Science College, Coimbatore, Dec. 27, 2017.
2. Controllability of Stochastic Dynamical Systems, National Seminar on Stochastic Differential Equations and its Applications, SRMV College of Arts and Science College, Coimbatore, Feb. 9, 2018.

CONTRIBUTED TALKS - INTERNATIONAL

1. Controllability of perturbed stochastic integrodifferential systems, 6th International Congress on Industrial and Applied Mathematics (ICIAM 2007), Zurich, Switzerland, July 16 - 20, 2007.
2. Controllability of neutral stochastic impulsive systems with distributed delays in control, 10th International Conference on Nonlinear Functional Analysis and Applications, Masan and Chinju, South Korea, July 27 - 31, 2009.
3. Controllability of stochastic impulsive systems with time-varying delays in control', 7th International Congress on Industrial and Applied Mathematics (ICIAM 2011), Vancouver, Canada, July 18 - 22, 2011.
4. Controllability of nonlinear stochastic dynamical systems with state delays, 8th International Congress on Industrial and Applied Mathematics (ICIAM 2015), Beijing, China, August 10 - 14, 2015.

CONTRIBUTED TALKS - INTERNATIONAL

1. Controllability of stochastic systems with time varying delays in control, National Conference on Advances in Differential Equations and Applications, Periyar University, Salem, Oct. 7 - 8, 2010.
2. Controllability of stochastic impulsive systems with time varying delays, Second National Conference on Advances in Differential Equations and Applications, Periyar University, Salem, March 29- 30, 2012.
3. Controllability of nonlinear stochastic dynamical systems with state delays, National Conference on Partial Differential Equations and Applications, Bharathiar University, Coimbatore, Jan. 30-31, 2014.
4. Controllability of semi-linear stochastic systems with a bilinear mode, Third National Conference on Advances in Differential Equations and Applications, Periyar University, Salem, Dec. 4-5, 2014.
5. International Conference on Nonlinear Dynamical Systems, Bharathiar University, Coimbatore, March 24 - 26, 2016.

SPECIAL LECTURES DELIVERED IN COLLEGES

1. Delivered a special lecture in the DST Internship programme held at Devanga Arts College, Aruppukottai on Dec. 2, 2011.
2. Delivered a special lecture in the Mathematics Association Meeting (MATRIG 2012) held at Kings College of Arts and Science for Women, Namakkal on Sep.10, 2012.

3. Delivered a special lecture on Differential Equations: From Integers to Fractions in Shri Sakthi Kailash Women's College, Salem on Dec. 13, 2012.
4. Delivered a special lecture on "Weak Derivatives and Weak Solutions of PDE" at the Department of Mathematics, Gandhigram Rural Institute, Dindigul on Feb. 9, 2013.
5. Delivered a special lecture on Mathematical Modelling and Differential Equations at Vivekanantha College of Arts and Science for Women, Tiruchengodu, Sep. 7, 2013.
6. Delivered a lecture on "Stochastic Processes and their Applications to Differential Equations" in the Faculty Development Programme on Advanced Theory and Applications of Mathematics held during Dec. 17-23, 2013.
7. Delivered a lecture on "Differential equations" in the one day seminar on Differential Equations, Periyar Univ. College of Arts and Science, Pappireddipatti, Jan 25, 2014.
8. Delivered a lecture on "Differential Equations and its Applications", PSG Krishnammal College for Women, Coimbatore, Dec. 11, 2014.
9. Delivered a special lecture in the One Day Seminar on "Differential Equations: Theory and Applications", Pachamuthu College of Arts and Science for Women, Dharmapuri, Sept. 12, 2015.
10. Delivered a special lecture on "Theory and Applications of Differential Equations", Selvamm Arts and Science College for Women, Namakkal, Feb. 13, 2016.
11. Delivered a special lecture on "Applications of Partial Differential Equations", VIT University, Chennai Campus on Oct. 27, 2017.
12. Delivered a special lecture on Existence and Uniqueness of Solutions of ODE, PG Extension Centre of Bharathiar University, Erode, Sep. 27, 2017.

PARTICIPATION IN WORKSHOP AND CONFERENCES

1. Workshop on Quantitative Finance, Indian Institute of Science, Bangalore, Nov. 20-24, 2006.
2. Workshop on Integrable Systems, Indian Institute of Science, Bangalore, Feb. 18-29, 2008.
3. Symposium on Nonlinear Evolution Equations, Indian Institute of Science, Bangalore, Apr. 18-19, 2008.
4. Workshop on Control and Inverse Problems, Indian Institute of Science, Bangalore, Dec. 1-15, 2009.
5. International Conference on Control and Inverse Problems, Indian Institute of Science, Bangalore, Dec. 16-18, 2009.

6. Advanced Training Mathematics School for Lecturers in Partial Differential Equations, Tata Institute for Fundamental Research, Bangalore, Dec. 13-24, 2010.
7. Special Lecture Series on Navier-Stokes Equations: Solvability, Control and Stochastic Analysis by Prof. Sivaguru S.Sritharan, Naval Postgraduate Institute, USA at Bharathiar University, Coimbatore, Feb. 14-18, 2011.
8. Special Lecture Series on Large Deviation Theory: Connections to Control Theory, Fluid Dynamics, Nonlinear PDE and Statistics by Prof. Sivaguru S.Sritharan, Naval Postgraduate School, USA at Bharathiar University, Coimbatore, Feb. 16-22, 2012.
9. Advanced Instructional School in Partial Differential Equations, Tata Institute for Fundamental Research, Bangalore, Dec. 17, 2012 -Jan. 4, 2013.
10. Advanced Level Programme, National Programme in Differential Equations, Indian Institute for Science Education and Research, Thiruvananthapuram, May 26-June 13, 2014.
11. Instructional School for Teachers on Analysis and Differential Equations, Tata Institute for Fundamental Research, Bangalore, Dec. 7-19, 2016.
12. Participated in the IFCAM International Conference on Nonlinear PDEs, Tata Institute for Fundamental Research, Bangalore, March 28-29, 2017.
13. Participated in the National level Conference on Computational and Theoretical Partial Differential Equations, National Institute of Technology, Goa during October 5-7, 2016.
14. Participated in the Advanced Workshop on Partial Differential Equations and Applications, May 29 - June 7, 2017.

NATIONAL EVENTS ORGANIZED

1. National Workshop on Mathematical Analysis and its Applications, May 7 - 12, 2012 (Supported by DST, CSIR, and UGC).
2. Mathematics Training and Talent Search Programme (Mini-MTTS), June 23 - July 5, 2014 (Supported by NBHM and jointly organized with Central University of Tamil Nad, Thiruvarur).
3. National Workshop on Advanced Analysis and Differential Equations, June 9 - 17, 2016 (Supported by NBHM, INSA, TNSCST and jointly organized with Indian Institute of Space Science and Technology, Thiruvananthapuram and Central University of Tamil Nadu, Thiruvarur).

MEMBERSHIPS IN PROFESSIONAL BODIES

1. Life member of Ramanujan Mathematical Society.
2. Member of American Mathematical Society.
3. Life Member, The Indian Society of Industrial and Applied Mathematics.