Dr. T. Suman Kumar

PERSONAL DETAILS

Date of Birth:	25thAugust, 1983
Place of Birth:	Ponnur, Guntur District, Andhra Pradesh, India
Gender:	Male
Nationality:	Indian

ADDRESS

B1, Sri Priya Enclave,
Huda Trade center,
Nallagandla Road,
Serilingampally
Hyderabad
E-mail: suman.hcu@gmail.com

RESEARCH INTERESTS

- Population Dynamics
- Mathematical Biology
- Numerics of PDE

EMPLOYMENT

Associate Professor (2020 Feb 20– till date)
University of Hyderabad, Hyderabad, India.

Assistant Professor (2010 Nov 23– 2020 Feb 20)
University of Hyderabad, Hyderabad, India.

Temporary Lecturer (03, Oct 2009 – 22, Nov 2010)
University of Hyderabad, Hyderabad, India.

TEACHING

I taught the following courses:

1. *Numerical Methods and Computing*
2. *Advanced Partial Differential Equations*
3. *Partial Differential Equations-II*
4. *Partial Differential Equations*
5. *Ordinary Differential Equations*
6. *Measure and Integration*
7. *Mathematical Methods*
8. *Real Analysis-II*
9. *Discrete Dynamical Systems*
10. *Classical Mechanics*

EDUCATION

- **2006–2009** Ph.D. from Université Paris VI, Paris, under the direction of Prof. Benoît Perthame. Thesis: *Age-Structured Nonlinear Renewal Equations*.
- **2005–2006** Research Scholar in Tata Institute of Fundamental Research, Bengaluru, India.
- **2003–2005** MSc (Applied Mathematics) in University of Hyderabad, Hyderabad, India.

- Mathematical Packages: MATLAB 9.0
- Languages: C
- Operating Systems: Linux, Windows 10

1. A survey of age–structured models in population dynamics, with Joydev Haldar, in *The Proceedings of Telangana Academy of Sciences, Special Issue (Mathematical Sciences, Frontiers in Mathematics)*, Vol 1, No. 1, pp 156-168, 2020.

2. A note on a neuron network model with diffusion, with P. Michel, *Discrete and Continuous Dynamical Systems - Series B*, Vol. 25, No. 9, pp 3659–3676, 2020.

3. A note on linear stability of the steady state of a nonlinear renewal equation, *Indian Journal of Pure and Applied Mathematics,* Vol. 51, No. 3, pp 879–887, 2020.

4. A nonlinear hyperbolic system modeling currency in circulation and hoarding, with A.S. Vasudeva Murthy, *Japan Journal of Industrial and Applied Mathematics*, Vol. 36, No. 2, pp 543–560, 2019.

5. A class of general solutions of the unsteady Oseen equations, with B.S. Padmavathi, *Zeitschrift für Angewandte Mathematik und Physik*, Vol. 70, No. 3, pp 70–77, 2019.

6. A convergent numerical scheme to McKendrick–Von Foerster equation with diffusion in age, with K. Bhargav Kumar, *Numerical Methods for Partial Differential Equations*, Vol. 34, No. 6, pp 2113-2128, 2018.

7. A complete general solution of the unsteady Brinkman equations, with T. Amaranath, *Journal of Mathematical Analysis and Applications*, Vol. 461, No. 2, pp 1365–1373, 2018.

8. Asymptotic behavior of the solution of a diffusion equation with nonlocal boundary conditions, with K. Bhargav Kumar, *Discrete and Continuous Dynamical Systems - Series B*, Vol. 22, No. 2, pp 407–419, 2017.

9. On a nonlinear renewal equation with diffusion, with K. Bhargav Kumar, *Mathematical Methods in the Applied Sciences* Vol. 39, pp 697–708, 2016.

10. Extinction and blow-up phenomena in a non-linear gender structured population model, with K. Bhargav Kumar, *Nonlinear Analysis Series B: Real World Applications*, Vol. 28, pp290–299, 2016.

11. A factorization theorem for operators occurring in the Stokes, Brinkman and Oseen equations, with T. Amaranath, *Applied Mathematics and Computation*, Vol. 276, pp 75–79, 2016.

12. Exact solutions of certain class of porous medium equations using variational iteration method, with K. Bhargav Kumar, in *Pacific Journal of Applied Mathematics*, Vol. 4, No. 4, pp 219–224, 2012.

13. Steady state analysis of a nonlinear renewal equation, *Mathematical and computer modelling*, Vol. 53, No. 7–8, pp 1420–1435, 2011.

14. Nonlinear renewal equation, with B. Perthame, In *Selected Topics On Cancer Modelling Genesis - Evolution - Immune Competition - Therapy*, eds. N. Bellomo, M. Chaplain, E. De Angelis, Series: Modelling and Simulation in Science, Engineering and Technology, Birkhäuser, 2007, pp 65–96.

15. Relative value iteration analogue of the long time behavior of HJB equations, with K.S. Mallikarjuna Rao (Submitted).

16. A numerical scheme to a McKendrick–von Foerster equation with diffusion, with J. Rippol, B. K. Kakumani (In preparation).

17. A convergent numerical scheme to a parabolic equation with a nonlocal boundary condition, with Joydev Halder (In preparation).

18. A numerical scheme to a convection-reaction-diffusion equation with a nonlocal boundary condition, with Joydev Halder (In preparation).

19. Existence of global solution to a semilinear parabolic equation with logarithmic nonlinearity, with Joydev Halder (In preparation).

20. Existence of global solution to a semilinear pseudo parabolic equation with logarithmic non- linearity, with Joydev Halder, B. K. Kakumani, (In preparation).

21. Consensus with locally interacting population, with K. S. Mallikarjuna Rao, Suresh Nadupuri (In preparation).

BOOKS	• A First Course in Ordinary Differential Equations, CRC Press, Taylor & Francis Group, Florida, USA, (in Press). • Solutions to exercises of 'A First Course in Ordinary Differential Equations', CRC Press, Taylor & Francis Group, Florida, USA, (Accepted for publication).
RESEARCH GUIDANCE	• Guided **one** Ph.D student. • Guided **seven** masters' (5 year integrated masters) projects.

PROJECTS AND GRANTS

1. Title of the project: Time elapsed neuron model with diffusion, Mathematical Research Impact Centric Support, SERB, DST (Amount: Rs. 6,00,000).

2. Travel grant of Rs. 1,80,000 from NBHM to attend ICIAM 2015, Beijing.

3. Travel grant of Rs. 1,80,000 from NBHM to attend ICM 2014, Seoul.

AWARDS AND SCHOLARSHIPS

• Young Scientist Award in Mathematical and Physical Sciences-2017, Telangana Academy of Sciences, Telangana.

• Gold medal for securing the highest percentage (83.9) in M.Sc. Applied Mathematics in 2003-2005 batch, University of Hyderabad.

• CSIR (Council of Scientific and Industrial Research) Junior Research Fellowship with National Eligibility as Lecturer in 2005.

• NBHM (National Board for Higher Mathematics) Fellowship for successive years 2003-04, 2004-05.

INVITED TALKS AND SEMINARS

1. *Maths made easy*, School of Science, SVKM's NMIMS (Deemed to be university), Hyderabad, August 2020.

2. *G.F. Riemann–Legacy & Relevance*, The Department of Mathematics, Aurora's Degree & PG College, Hyderabad, September 2020.

3. *Linear partial differential equations*, 2 lectures, in the Refresher Course in mathematics, Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, December 2020.

4. *Uniform continuous functions*, in "Opportunities & Challenges in Science & Technology" organized by Telangana Academy of Sciences, Mahatma Gandhi University, Nalgonda, February 2018.

5. *Hyperbolic equations with nonlocal boundary conditions*, in Conference on Recent Developments in PDE, TIFR-CAM, Bengaluru, August 2017.

6. *A Nonlinear Renewal Equation with Diffusion*, in the Department of Mathematics, IIT Hyderabad, March 2014.

7. *Working with Beamer* in National Workshop on LaTeXand SAGE, Swami Ramanand Teerth Marathwada University, Nanded, February 2014.

8. *Nonlinear McKendrick–von Foerster Equation with Diffusion*, in Modeling Week And Study Group Meeting On Industrial Problems-2013, NIT Calicut, December 2013.

9. *Nonlinear McKendrick–von Foerster Equation with Diffusion*, in AP Science Congress 2013, University of Hyderabad, Hyderabad, Nov 2013.

10. *Extinction and blow-up of the total population of a gender structured population model,* in AP Science Congress 2012, Acharya Nagarjuna University, Guntur, Nov 2012.

11. *Linear stability of renewal equation,* in Workshop on Recent Trends in Partial Differential Equations and Applications, University of Hyderabad, March 2012.

12. Two lectures on *Eigenvalue problem of a 2nd order BVP*, in Two days lecture series on Partial Differential Equations and their applications, SVNIT Surat, Aug 2011.

13. *Age structured nonlinear population dynamics*, in National Symposium in Mathematics for Young Researchers, IIT Gandhinagar, Feb 2010.

14. *Age structured population dynamics*, in Seminar Meeting on Hyperbolic and Parabolic PDE, Department of Mathematics, IIT Bombay, Nov 2009.

15. *Age structured nonlinear renewal equations*, at Department of Mathematics and Statistics, University of Hyderabad, Aug 2009.

RESOURCE PERSON I was invited as a resourse person in the following workshops.

1. Gave lectures on *Structured population models* in " Mathematical Epidemiology", IIT Madras, 9–14 December, 2019.

2. Gave lectures on *Finite difference methods* in "Advanced Training School on Numerical PDEs and Inverse Problems", IIT Tirupati, 10–11 December 2019.

3. "Indian National Mathematical Olympiad training camp", Maris Stella College, Vijayawada, during 27–31 December 2018.

4. Gave lectures on *Three linear second order PDEs* in " Workshop on Real Analysis and Partial Differential Equations", Siddartha College, Vijayawada, 27–28 December 2018.

5. "Training Program in Mathematics" in NISER Bhubaneswar, 21st May 2018–2nd June 2018.

6. "Indian National Mathematical Olympiad training camp" in School of Mathematics and Statistics, University of Hyderabad, 10–13th January 2018

7. "M.T. & T.S. Programme" in IIT Madras, 23 May 2016–4 June 2016

8. "Post Graduate Training Programme 2016" of National Program on Differential Equations: Theory, Computation and Applications, IIT Ropar, Ropar, 16 May 2016–21 May 2016

9. "M.T. & T.S. Programme" in NIT Surat, 20 May 2013–15 June 2013

10. "M.T. & T.S. Programme" in IIT Kanpur, 21 May 2012–16 June 2012

SCHOOLS/
CONFERENCES/
VISITS

1. Visited TIFR-CAM, Bengaluru during 4–17 June 2017.

2. International Congress on Industrial and Applied Mathematics, Beijing, China, August 2015.

3. International Congress of Mathematicians, Seoul, South Korea, August 2014.

4. International Conference on Conservation Laws and Applications, TIFR-CAM, 1-3, July 2013.

5. Advanced Course on Mathematical Biology: Modeling and Differential Equations, Feb 2009, CRM, Bellaterra, Spain.

6. HYP 2008, 12th International Conference on Hyperbolic Problems: Theory, Numerics, and Applications, June 2008, University of Maryland, College Park, USA.

7. Conference on Reaction-Diffusion Systems and Chemotaxis, Interfaces and Singularities, March 2008, Université de Paris-Sud XI, Orsay, France.

8. Topics in Nonlinear PDEs, CIM/UC Summer School, July 2007, Coimbra, Portugal.

9. Visited Tata Institute of Fundamental Research, May 2007, Bengaluru, India.

10. 2nd Meeting on Mathematical Modelling in Biology and Medicine, Feb 2007, Université d'Evry Val d'Essonne, Evry, France.

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ORGANIZING
CONFERENCES/
WORKSHOPS

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- Organized Advanced Instructional School on Differential Equations, in the School of Mathematics and Statistics, University of Hyderabad during 4–23 June 2018.

- Organizing committee member, Workshop on Recent Trends in Partial Differential Equations and Applications, University of Hyderabad, 18–19 March 2012.

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MEMBERSHIPS

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- Member, NBHM Southern Region Library Committee (2016-till date)

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CONTRIBUTION TO
THE SCHOOL

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1. Coordinator, M.Sc. and Ph.D. students (2020-2021)

2. Mentor, I.M.Sc. Mathematics students, 1st and 2nd semester, (2020-2021)

3. Extended help in finalizing the OBE document and the Academic Audit Report for the School of Mathematics and Statistics (2020-2021).

4. Member, Departmental Academic Integrity Panel (Nov 2019–till date)

5. TurnitIn instructor for the School of Mathematics and Statistics (Aug 2016–till date)

6. Member, School Board of the School of Mathematics & Statistics (2016–19)

7. Member, Purchase Committee, for the School of Mathematics & Statistics (2016,2020-Till date)

8. Member, Library Committee of the School of Mathematics & Statistics

9. Member, Library Committee of Indira Gandhi Memorial Library

10. Member, Admission Committee of the School of Mathematics & Statistics

11. Member of the Syllabi Committee during the review of M.Sc. syllabus

12. Designed the syllabi of three new courses, namely, Advanced Partial Differential Equations, Classical theory of Partial Differential Equations (pre-PhD courses), and Partial Differential Equations-II (an elective in the 4th semester of M.Sc. program).

13. Co-ordinator, for preparatin of the entrance examination question papers (Ph.D, M.Sc. and Integrated M.Sc.) for many years.

14. Coordinated the Alumni meet in the school twice (more than 300 alumni participated each time).

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OUT-REACH

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1. I have been appointed (by HBCSE-TIFR) as the joint coordinator of Regional Mathematical Olympiad (RMO), Telangana Region (2019–till date).

2. Evaluated RMO answer scripts (5 consecutive years).

3. Trained RMO qualified students for Indian National Mathematical Olympiad.

4. Was an expert for KVPY interviews many times.

5. Examination center co-ordinator, NBHM M.Sc., and Ph.D. fellowship tests, CMI entrance test.

6. Delivered several lectures in local schools and colleges to promote Mathematics.

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