



**Name** : Dr R SASIREKHA  
**Designation** : Assistant Professor & Head  
**Department** : Mathematics (PG)  
**Qualification** : M.Sc., M.Phil., PGDCA., Ph.D.  
**Experience** : Teaching -14 Years  
**Research** : 13 Years  
**Area of Specialization(s)** : Differential Equations and Control Theory  
**Email(OfficialID)** : sasirekha@psgrkcw.ac.in

#### Academic Qualification

| Degree  | Branch      | Institution/University Name | Year of Graduation |
|---------|-------------|-----------------------------|--------------------|
| Ph.D.   | Mathematics | Bharathiar University       | 2017               |
| M.Phil. | Mathematics | Bharathiar University       | 2001               |
| M. Sc.  | Mathematics | Bharathiar University       | 1999               |
| B.Sc.   | Mathematics | Bharathiar University       | 1997               |

#### Additional Qualification

| Diploma/<br>Vocational/<br>Certification | Area of Specialization | Institution/University/AgencyName         | Year        |
|--|------------------------|---|-------------|
| <i>PGDCA</i>                             | Computer Application   | <i>Vishnu Computer Centre, Udumalpet.</i> | <i>1998</i> |

#### Research Guidance

| Programme | No. of Scholars |          |
|-----------|-----------------|----------|
|           | Completed       | Pursuing |
| M.Phil.   | 1               | -        |
| Ph.D.     | 1               | 2        |

### International

- Asymptotic synchronization of continuous/discrete complex dynamical networks by optimal partitioning method. *Complexity*, 21(2), (2015) 193-210. (SCI Journal) **Impact factor : 4.621, Citation : 12** [online : 28.8.2014]
- $H_\infty$  state estimator design for discrete-time switched neural networks with multiple missing measurements and sojourn probabilities. *Journal of the Franklin Institute*, 353(6) (2016) 1358-1385. (SCIE Journal) **Impact factor : 4.036, Citation : 11** [online : 06.11.2015 ]
- Synchronization of discrete-time Markovian jump complex dynamical networks with random delays via non-fragile control. *Journal of the Franklin Institute*, 353(16) (2016) 4300-4329. (SCIE Journal) **Impact factor :4.036, Citation : 17** [online : 18.08.2016]
- Combined  $H_\infty$  and passivity control for networked control systems with random gain fluctuations and sojourn probabilities: A switched system approach, *International Journal of Robust and Nonlinear Control*. 27(17) (2017), 3524-3548. (SCIE Journal). **Impact factor : 3.503, Citation : 6** [online :18.12.2016 ]
- Extended dissipativity state estimation for switched discrete-time complex dynamical networks with multiple communication channels. A sojourn probability dependent approach". *Neurocomputing*, 267 (2017) 55-68. (SCIE Journal) **Impact factor :4.438, Citation : 5** [online : 06.12.2017]
- $H_\infty$  state estimation of discrete-time markov jump neural networks with general transition probabilities and output quantization. *Journal of Difference Equations and Applications*, 23(11) (2017), 1824-1852. (SCIE Journal) **Impact factor :1.162, Citation : 9** [online : 30.08.2017]
- Robust control design for delayed periodic piecewise time-varying systems with actuator faults." *Journal of the Franklin Institute* 358, no. 18 (2021): 9587-9605.
- Disturbance Observer-Based Robust Control Design for Uncertain Periodic Piecewise Time-Varying Systems With Disturbances. *IEEE Access* 11 (2022): 1671-1681
- Observer-based fault tolerant control design for periodic piecewise time-varying systems: a fault estimation approach. *International Journal of Systems Science* 54, no. 7 (2023): 1513-1530.
- Finite-time resilient control for uncertain periodic piecewise polynomial time-varying systems. *Transactions of the Institute of Measurement and Control* 47, no. 2 (2025): 331-341.

## Book Chapter Published

Chapter 5 “Existence of solutions of abstract integrodifferential equations of Sobolev type with nonlocal condition” in **Book “*Differential Equations and Applications*”**, Yeol Je Cho, Jong Kyu Kim, Ki Sik Ha (2003) 45-51. ISBN : 1-59033-859-6

## Acted as a Resource Person

- Delivered Guest Lecture on “Applications of Differential Equations” at **Chandrakanthi Public School, Coimbatore** on 15.11.2019.

## Reviewer in journal

- **Journal of the Franklin Institute**  
FI-D-19-01416  
Title: Delay-dependent synchronization of Levy noise coupled systems with application to Chua's circuits, Hui Zhou, Yi Zhang, Wenxue Li, Journal of the Franklin Institute
- **Advances in Difference Equations**  
AIDE-D-19-01365  
Title : Synchronization of stochastic multiple weighted coupled networks with Markovian switching, Xupan Yao; Chunmei Zhang; Dan Xia, Advances in Difference Equations.

## Paper Presentations in Conference International

- Presented paper titled “**Asymptotic Synchronization of Discrete-time Markovian jump Complex Dynamical Networks with Probabilistic time-varying Delays**”, in ICCMS, Department of Mathematics, **Banasthali University, Rajasthan, India**, during 24<sup>th</sup> - 26<sup>th</sup> January 2017

## National

- Presented paper titled “**Non-Fragile H infinity Control for Networked Control Systems, A Sojourn Probability Approach**”, in National Conference on Differential Equations and Dynamical Systems, **NIT Puducherry, Karaikal**, during 5<sup>th</sup> – 6<sup>th</sup> April 2019
- Presented paper titled “**H $\infty$  State Estimator for discrete-time CDNs with mixed delays**”, in National Conference on Computational Topology and Differential Equations (NCCTDE-2018), Department of Mathematics, Anna University Regional Campus & **DRDO – BU CLS, Bharathiar University Campus, Coimbatore**, during 21<sup>st</sup> April 2018
- Presented paper titled “**Synchronization of discrete-time complex dynamical networks with Markovian jumping parameters using optimal partitioning method**”, in National Conference on Recent Trends in Theory and Applications of Partial Differential Equations,

Department of Mathematics, **Bharathiar University**, Coimbatore during 26<sup>th</sup> – 27<sup>th</sup> March 2015

### Participation in Conference

- Participated in National Level Conference on "RECENT TRENDS IN PURE AND APPLIED MATHEMATICS' during 30.1.2025 to 31.01.2025, Krishtu Jayanti College, Bengaluru
- Participated in National Conference on "CUTTING EDGE INNOVATIONS IN MATHEMATICAL BIOLOGY' during 09.12.2024 to 10.12.2024, PSGCAS
- Participated in National Conference on Mathematical Innovations in Science, Engineering and Technology during 16.10.2024 to 17.10.2024, PSGRKCW
- Participated in Fourth National Conference on “**Computational Biology**”, **DRDO-Bharathiar University**, Coimbatore, India on 7 September, 2017.
- Participated in “**5<sup>th</sup> SERC School on Nonlinear Dynamics**” held during December 1-21, 2016 at Department of Physics, **PSG College of Technology**, Coimbatore.
- Participated in **Conference on Computational and Theoretical Partial Differential Equations** (CCT-PDE 2016), Department of Humanities & Sciences, **NIT Goa** during October 05-07, 2016.
- Participated in National Conference on “Computational Biology”, **DRDO-Bharathiar University**, Coimbatore, India, during March 27-28, 2014.
- Participated in National Conference on “**Partial Differential Equations and Applications**”, Department of Mathematics, **Bharathiar University**, Coimbatore, India, during, January 30-31, 2014.

### Participation in Seminars

- Participated in Two day National Seminar on “**Multi Functional Nanomaterials and their Engineering Applications (MNEA 2012)**”, **KPRIET**, Coimbatore, during 27<sup>th</sup> , 28<sup>th</sup> April 2012.
- Participated in **UGC Sponsored Two Day National Seminar** on “**Recent trends in Nonlinear Differential Equations**”, **Sri GVG Visalakshi College for Women**, Udumalpet, during 22<sup>nd</sup>, 23<sup>rd</sup> December 2004.
- Participated in Seminar on “**Genetics, Health and Disease**”, **Bharathiar University**, Coimbatore, during 16<sup>th</sup> March 2000.
- Participated in National Seminar on “**Recent Developments in Applied Mathematics**”, **Bharathiar University**, Coimbatore, during 24<sup>th</sup>, 25<sup>th</sup> February 2000.

### Participation in Workshop

- Participated in Workshop Graph Theory with Python on 05.03.2024 to 06.03.2024 PSGRKCW
- Participated in Workshop Latex - A Documenting Research Tool on 19.09.2023, PSGRKCW.
- Participated in “**Latex Training Program**”, organized at **Vellalar College** for Women, Autonomous in January 2020.

- Participated in Workshop on **Effective Community Engagement Activities**, PSGR Krishnammal College for Women, Coimbatore in collaboration with **Cognizant Foundation**, during, 10<sup>th</sup> , 17<sup>th</sup> July 2020
- Participated in International Workshop on “**Mathematical Modelling and Scientific Computing**” (IWMMSC-2019), **The Gandhigram Rural Institute**, Dindigul, during, 4<sup>th</sup>, 5<sup>th</sup> September 2019.
- Participated in **UGC-SAP -DRSI** Sponsored National Workshop on **New Trends On Stochastic Processes, SQC & Reliability Using R Programming** (NTSPQCR 2019), **Annamalai University**, during, 11<sup>th</sup>, 12<sup>th</sup> July 2019.
- Participated in Workshop on “**Journey of Transforms in Engineering**”, **KPRIET** Coimbatore, during 31<sup>st</sup> October 2012.
- Participated in Workshop on “Joy of Teaching Transforms (Laplace, Fourier and Z) from Engineering perspective”, **PSG College of Technology**, Coimbatore, during 4<sup>th</sup> August 2012.

#### Participation in Faculty Development Programme

- Participated in 5 Days Faculty Development Programme on "Innovative Trends in Artificial Intelligence for Teaching and Research" during 27.01.2025 to 31.01.2025 PSGRKCW
- Participated in FEP on "Application of Artificial Intelligence in Higher Education" during 17.12.2024 to 18.12.2024
- Participated in International Virtual FDP on " Mathematics and its Application" on 11.03.2024 to 15.03.2024, PSGRKCW
- Participated in FDP on “**Artificial Intelligence and Data Science**”, **PSGRKCW**, during, 8<sup>th</sup> August 2020.
- Participated in Five days FDP on “**Applications of Mathematics in Engineering**”, **KPRIET**, Coimbatore, during, 27<sup>th</sup> to 31<sup>st</sup> July 2020.

#### Participation in Webinar

- Participated in Webinar on “**IoT & Artificial Intelligence**”, **CIT in collaboration with IBM – CSR**, Coimbatore, during, 14<sup>th</sup> October 2020.
- Participated in International Webinar on “**Dynamical Systems and its Applications (IWDSA – 2020)**”, **Bharathiar University**, Coimbatore, during, 17-21, August 2020.
- Participated in International Webinar on “**Fractional system with Rossenblatt process and Poison Jumps – Optimal Controllability**”, **KPRIET**, Coimbatore, during, 27<sup>th</sup> June 2020

#### Conference / Seminar/ Workshop Organized

- Three days national FDP on Effective Teaching and Learning Methodology for Differential Equations, 25.04.2022 to 27.04.2022, at PSGR Krishnammal College for Women, Coimbatore.

- A Seven Day International Level Virtual Faculty Development Program (FDP) On "Exploring New Frontiers in Pure and Applied Mathematics: Unraveling Complexity" 24.02.2025 to 03.03.2025 at PSGR Krishnammal College for Women, Coimbatore.
- One Day National Seminar on Emerging Trends & Break Through in Pure and Applied Mathematics : Unveiling New Paradigm 14.03.2025 at PSGR Krishnammal College for Women, Coimbatore.
- One day Workshop on Vedic Mathematics, 25.9.2019
- Guest Lecture on Awareness – "Life Skills- A Gender Sensitization Program" , 1.8.2019
- One day Workshop on Entrepreneurship Development Skills, 26.7.2019

## Grants

- **DST, New Delhi**  
**PI**(Principal Investigator) DST WOS-A, (**Women Scientist Scheme**) (06.07.2015- 29.06.2018), Department of Mathematics, Bharathiar University, Coimbatore, Tamilnadu, India.  
 Date of Sanction: 30.06.2015 **Reference Number** : SR/WOS-A/MS-03/2014.  
**Project Title:** "Studies on stability and  $H_\infty$  filter design for discrete-time delay systems: A linear matrix inequality approach"  
**Sanctioned Amount : Rs 17,76,000/-**

## Membership in Professional Bodies

| Name of the Professional Body                        | Nature of membership | Duration         |
|--|----------------------|------------------|
| Indian Society of Industrial and Applied Mathematics | Life time member     | Life time member |

## Awards/Honors

| Awards/Honors  | Agency/Institute                            | Year of Award |
|--|---|---------------|
| Best Mentor  |   |               |
| Dr R Sasirekha of Mathematics (PG) as Internship Coordinator, IIC Member, CIED received the <b>Outstanding Contributor Award</b> | Institution's Innovation Council of PSGRKCW | 2024-2025     |

## Indexing and Citations

H index -6, i10 index -5

## Contribution

- CIIED IIC Member since 2024
- Coordinator for CSIR NET Coaching Classes since 2021 onwards
- Admission Coordinator since 2019
- Department Association In-charge and BOS member
- Organizer of Seminar, FDP, Workshop

Dr R Sasirekha of Mathematics (PG) as Internship Coordinator, IIC Member, CIIED received the **Outstanding Contributor Award** by Institution's Innovation Council of PSGRKCW for the period 2024-2025