Dr. N.Meenakshisundaram
Assistant Professor of Physics,
Vivekananda College (Residential & Autonomous), College with Potential for Excellence,
Tiruvedakam West, Madurai – 625234, India
Phone: +91-8667671349 E-mail: nrmsundar@gmail.com
https://www.youtube.com/watch?v=3OY8MoXfdBk

Education

- **Ph.D.** in Physics, IIT Madras, Chennai (India) **2010**
  Thesis title: Studies in Quantum Chaos: From an almost exactly solvable model to Hypersensitive operators
- **M.Sc.** in **Physics**, The American College, Madurai, Tamilnadu (First class, 73 %) **2002**
- **B.Sc.** in **Physics**, Vivekananda College, Madurai, Tamilnadu (First class with Distinction, 89.8 %) **2000**

Research Experience

- Assistant Professor of Physics, Vivekananda College (Residential & Autonomous), College with Potential for Excellence, Tiruvedakam West, Madurai – 625234 (Since Aug. 2016)
- Assistant Professor (Research), School of Electrical and Electronics Engineering, SASTRA University, Thanjavur-613401, Tamilnadu (Dec. 2012 - June 2016)
- Post Doctoral Fellow, Computational Neuroscience Lab, IIT Madras, Chennai, Tamilnadu (Oct. 2009 - June 2010)
- CSIR- JRF (Sep. 2003 – Aug. 2005)
- CSIR-SRF (Sep. 2005 – Aug. 2009)
- System Administrator: Department Computing Facility, IIT Madras Even 2005 & Odd 2006
- Junior Research Fellow, Physical Research Laboratory, Ahmedabad, Gujarat (Aug. 2002 - July 2003)

Teaching Experience

- Assistant Professor of Physics, Vivekananda College (Residential & Autonomous), College with Potential for Excellence, Tiruvedakam West, Madurai – 625234 (Since Aug. 2016)
  Additional Responsibility - Postgraduate and Research Coordinator
  NPTEL SPOC – Local Chapter, Vivekananda College (Initiated in January 2019)
- Assistant Professor (Research), School of Electrical and Electronics Engineering, SASTRA University, Thanjavur-613401, Tamilnadu (Dec. 2012 - June 2016)
- Assistant Professor (adhoc), Physics Section, Department of Education in Science and Mathematics, Regional Institute of Education (NCERT), Mysore (RIE Mysore) - 570006, Karnataka (July 2010 – Nov. 2012)
- Teaching Assistant: Physics I and II (B.Tech.) IIT Madras Even 2006, Odd 2006, Even 2007 & Odd 2007
- Instructor: B.Tech. General Physics Laboratory, IIT Madras Even 2005 & Odd 2005
- Instructor: M.Sc. Electronics Laboratory, IIT Madras Odd 2003, Even 2004 & Odd 2004

Research Specialization and Interests

- Nonlinear Dynamics and Quantum Chaos, Theoretical and Computational Physics, Photonics, Biophysics, Material Discovery and Science/Technology Education

Grants

- Project Name: DST SERB Young Scientist
- Project Title: Studies on the interplay between Multifractal Eigenstates of Quantum Chaos and Entanglement Spectrum
- Amount: 17.75 Lakhs Rupees
- Status: Ongoing (Nov. 2016-Till date)

Awards

- Qualified in Joint CSIR-UGC Test for Junior Research Fellowship (JRF) and Eligibility for Lectureship (NET) 2002
- Qualified in GATE (Physics) with a percentile of 90.50 2002
- Qualified in All-India JEST for PhD with a percentile of 92.20 2002
- Qualified in IISc Entrance Exam for PhD 2002

Computer Proficiency

Programming	Fortran 77/90, C/C++, Anaconda, Enthought Canopy (Python module), R and Verilog
Operating Systems	Linux, Macintosh and Windows Virtual Learning Environment : Moodle
Simulation Packages	COMSOL and CoventorWare

DFT Codes/Packages	ATK-Quantumwise, MedeA, FHI-aims, Quantum ESPRESSO, ABINIT, VASP, WIEN2K, GAMESS-US and MOPAC
MD Codes	AMBER, GROMACS, NAMD, LAMMPS and DL-POLY
Plotting Softwares	Gnuplot, Xmgrace, Xfig and Origin
Others	MATLAB, MATHEMATICA, Machine Learning, MEEP, LaTeX, Tecplot360, VMD and Bioinformatics

Career Advancement Courses (MOOC) Audited/Credited/ Pilot Projects conducted

1. 127th Orientation Course, HRDC- Pondicherry University, Pondicherry. - Feb. 1 to Feb.28, 2019
2. Canopy – Advanced Python training courses (6 Self Paced Courses) – Jan. 2015 – Dec. 2017
3. Computational Materials Physics (Self Paced Course), Ghent University, Belgium - Sep. 2016 to Dec. 2016 & Sep. 2017 to Dec. 2017
   Project: Discovery of new stable Quaternary Crystals
4. NME-ICT- **Introduction to Research Methodology** – IITB (Subscribed it as Research Methodology Course for Research Scholars/Part-time Ph.D./M.Sc./M.Tech.12 students as contact course – **Pilot project**) – Jan. 2014 to May 2016
5. Educational Technology for Engineering Teachers (IITBX-ET601X) – Jan. 2016 to May 2016
6. Signals and Systems (IITBX- ES210X) – Jan. 2016 to Apr. 2016
7. **Technical Communication for Science and Engineering** (IITBX-HS791X) – (**Graded 6 students**) - Jan. 2016 to May. 2016
8. Statistics and R for Life Sciences- Self Paced Courses (HarvardX- PH525.1X, PH525.2X and PH525.3X) – Jan. 2015 to Sep. 2015
9. Solar Energy-Fundamentals, Technology and Systems (TU-Delft, Netherlands, ET.3034TU) – Sep. 2014 to Dec. 2014
10. Introduction to Computer Science and Programming in Python (MITX-6.001X) - Feb. 2014 to Apr. 2014 & Jan. 2016 to May. 2016
11. Classical Mechanics (MITX-8.001X) – Sep. 2013 to Nov. 2013
12. 2-Day ISTE Workshop on Research Methods in Educational Technology (Using **Virtual Learning Environment – Moodle**) – 02 Feb. 2013 and 09 Feb. 2013
13. Quantum Mechanics and Quantum Computation (BerklyX-CS191X) - Feb. 2013 to Apr. 2013

MOOC Course Offered : GATE-Physics – 4 Video lectures on Mathematical Physics (SASTRA University, May 2016)

Curriculum Development

1. Revision of M.Sc. Ed., (Physics) Syllabus, RIE Mysore
2. Development of General Physics and Advanced Physics Labs and Electronics Lab for M.Sc. Ed (Physics), RIE Mysore
3. Introduced 10 experiments based on Experimental Physics Kit developed by Prof. R. Srinivasan for the M.Sc. Ed (Physics), RIE Mysore
4. Curriculum development for core courses of M.Sc. Physics following choice based credit system with Outcome based Education, SASTRA University and revising it subsequently.
5. Introduced 5 experiments based on Experimental Physics Kit developed by Prof. R. Srinivasan for M.Sc. Physics, SASTRA University
6. Question paper Setter for Ph.D. and M.Sc. Physics entrance exams, SASTRA University for 3 years
7. Training UG students for JAM/University entrance exams for pursuing M.Sc. and PG students for GATE/NET/University entrance exams for pursuing Ph.D. and training them for facing Ph.D. interviews at IITs/NITs/Universities etc., since June 2002.
8. Syllabus framing for M.Sc. Physics course as Postgraduate and Research Coordinator of Physics, Vivekananda College, Madurai.

Innovative teaching Practices

- ✓ Paragogy along with Pedagogy
- ✓ Constructivism and their variants
- ✓ Active learning
- ✓ Reinforcement learning
- ✓ Reward based learning
- ✓ Flipped learning
- ✓ Mini projects
- ✓ Concept Centered Experiments
- ✓ Outcome based Education
- ✓ Connectivism
- ✓ Activity based learning
- ✓ Cooperative learning
- ✓ Peer learning
- ✓ Problem solving
- ✓ Moodle -Virtual Learning Environment

Publications

S.No.	Publication details	Year
1.	K. Roja, Priya Mehta, M. Premalatha, K. Jeyadheepan, C. Gopalakrishnan, N.Meenakshisundaram, Kamatchi Sankaranarayanan, Biosynthesized silver nanoparticles as antimicrobial agents and photocatalytic degradation of methylene blue, Desalination and Water Treatment (2019).(doi: 10.5004/dwt.2019.23605)	2019
2.	Santhia Carmel, Adhithan Pon, N Meenakshisundaram, R. Ramesh and Arkaprava Bhattacharyya, Bandgap Scaling and Negative Differential Resistance behavior of Zigzag Phosphorene Antidot Nanoribbons (ZPANRs), Phys. Chem. Chem. Phys. 20, 14855.	2018
3.	S M Ramachandran, K V P Latha and N Meenakshisundaram, Calculation of the atomic electric dipole moment of Pb2+ induced by nuclear Schiff moment, J. Phys. B: At. Mol. Opt. Phys., 50, 145003.	2017
4.	M.S.Sameeha, Soumya Joy, N. Meenakshisundaram, R.K. Karn, C. Gopalakrishnan, P. Karthick, K. Jeyadheepan, K. Sankaranarayanan, Phase Tuned Synthesis of Titanium Di-Oxide Nanoparticles for Room Temperature Enhanced Ammonia Detection. RSC Advances Vol.7,37720.	2017
5.	K. Sankaranarayanan, N.Meenakshisundaram, Micro-viscosity induced conformational transitions in Poly-L-Lysine. RSC Advances, Vol.6, 74009.	2016
6.	N. Meenakshisundaram, K. Sankaranarayanan, Role of Interfacial viscosity and pH in L-Phe, L-Trp molecular rotors. Spectroscopy & Spectral Analysis Vol. 5, 35.	2016
7.	Kamatchi Sankaranarayanan, N. Meenakshisundaram, Influence of Ficoll on urea induced denaturation of Fibrinogen. AIP Advances Vol. 6, 035150.	2016
8.	N. Meenakshisundaram, Design and Analysis of Dual Periodic Optical Superlattices using Walsh-Hadamard Transform Matrix, Optics and Quantum Electronics, 48, 176.	2016
9.	N. Meenakshisundaram, The Analysis of Eigenstates of a Few Generalized Quantum Baker's Maps Using Hadamard and Related Transforms, International Journal of Bifurcation and Chaos, 26, 1650057.	2016
10.	Gargi Rastogi, N. Meenakshisundaram and Kamatchi Sankaranarayanan, Propensities to ATP binding sites in Myosin II domains, Research Journal of Biotechnology, 10, 78.	2015
11.	N. Meenakshisundaram, Hypersensitivity to perturbation of some crucial operators relevant to quantum computation, Physica Scripta, 90, 035102.	2015
12.	N. Meenakshisundaram, L. Vignesh and P. Sabareesan, Tailoring of Bandgaps in Magnonic Antidot Waveguides by Varying Bias Field, Asian Journal of Applied Sciences, 7 (8): 814.	2014
13.	N. Meenakshisundaram, Krishnamoorthy Pandiyan and Raman Kashyap, A Systematic Approach for Designing Quasi-Periodic Optical Superlattice using Hadamard Matrix, Journal of Optics (IOP), 16,015204.	2014
14.	K.N. Magdoom, D. Subramanian, V.S. Chakravarthy, B. Ravindran, Shun-ichi Amari and N. Meenakshisundaram, Modeling Basal Ganglia for understanding Parkinsonian Reaching Movements, Neural computation, 23, 477.	2011
15.	Arul Lakshminarayan and N. Meenakshisundaram, Using the Hadamard and related transforms for simplifying the spectrum of the quantum baker's map, J. Phys. A, 39, 11205.	2006
16.	N. Meenakshisundaram and Arul Lakshminarayan, The Fourier transform of the Hadamard transform: Multifractals, Sequences and Quantum Chaos, Allied Publishers, Ed. M. Lakshmanan and Rajasekar, pp-69, Chennai, India, February.	2006
17.	N. Meenakshisundaram and Arul Lakshminarayan, Multifractal eigenstates of quantum chaos and the Thue-Morse sequence, Phys. Rev. E71, 065303(R).	2005

Courses Taught

Undergraduate Level

RIE Mysore

Quantum Mechanics and Statistical Mechanics
Quantum Mechanics and Relativity
Electricity and Magnetism

Vivekananda College, Madurai
Classical Mechanics, Quantum Mechanics and Relativity
Physics for Competitive Examinations
Solar Energy
Allied Physics I & II
Mechanics
Electricity and Magnetism
Thermodynamics and Statistical Mechanics
Solid State Physics
Nuclear Physics
Space Science
Numerical Methods

Postgraduate Level

RIE Mysore

Science of Renewable Energy Sources
Liquid Crystals
Mathematical Physics – I
Optics

SASTRA University, Thanjavur

Thermodynamics and Statistical Physics

Solid State Physics

Modern Physics
Astrophysics

Ph.D./Project Guidance

Ph.D. -1 (Ongoing)	Design and Development of Metal oxide Nanoparticles Decorated Carbon Nanomaterials for Boosting the Photocatalytic Activity (M.Aravindh, Since Nov. 2018)
M.Tech.-1	Tailoring of Bandgaps in Magnonic Antidot Waveguides by Varying Bias Field (L.Vignesh (114051023), SASTRA University - 2014)
M.Sc. - 1	Design and analysis on Aperiodic Optical Superlattice using Walsh-Hadamard matrix (G. Saravanapriya (115124006), SASTRA University - 2015)

Conferences /Schools /Refresher Courses/Workshops Participated

- Worskshop and Symposium on Advanced Simulation Methods: DFT, MD and Beyond Basic Principles and Modern Insights" (ASM2019), IIT Delhi, Mar. 6 to Mar.10, 2019
- Science Acadmies' Lecture Workshop on Emerging trends in Material Science, Jan. 03 and Jan. 04, 2017, P.G. and Research Department of Physics, Raja Doraisingam Govt. Arts College, Sivagangai, India.
- National Level Workshop on Genomic Analysis and Protein Designing using Internet Tools, Oct. 6, 2016, Post Graduate and Research Department of Zoology, Vivekananda College, Madurai, India.
- One day Workshop on Verilog Programming, Dec. 15, 2015, SASTRA Univeristy, Thanjavur, India.
- Science Acadmies' Lecture Workshop on Nonlinear Physics, Jan. 23-35, 2014, Post Graduate and Research Department of Physics, Bishop Heber College, Trichy, India.
- International Conference on Multidisciplinary Frontiers of Medicinal Chemistry: Synthesis, Molecular Biology & Technology, Jan. 18 and Jan. 19, 2013, Department of Chemistry, SASTRA University, Thanjavur, India.
- 7th National Conference on Nonlinear Systems and Dynamics (NCNSD-2012), July 12 - 15, 2012, IISER PUNE, India.
- 30th Refresher Course in Experimental Physics, Sponsored by various Academy of Sciences, July 11 – July 27, 2011, Department of Physics, IIT Madras, Chennai, India.
- Special course on Analytical Methods, July. 7 – July 19, 2010, National Centre for Catalysis Research, IIT Madras, Chennai, India.
- 3rd National Conference on Nonlinear Systems and Dynamics (NCNSD-2006), Feb. 6-8, 2006, Ramanujan Institute for Advanced study in Mathematics, University of Madras, Chennai, India.
- SERC School on Nonlinear Dynamics, Nov. 28 – Dec. 18, 2004, Physical Research Laboratory, Ahmedabad, India.
- National School on Nonlinear Dynamics, Dec. 21-27, 2003, Indian Statistical Institute, Kolkatta, India.
- National Conference on Nonlinear Systems and Dynamics (NCNSD-2003), Dec. 28-30, 2003, IIT Kharagpur, India

Conferences/ Workshops Organized/Served as Resource Person for Refresher Courses

- Coordinator, Science Academies' Lecture Workshop on Recent Trends in Applied Physics for Technology, Dec. 29 and Dec. 30, 2017, Vivekananda College, Madurai, India.
- Coordinator, One day Hands on Workshop on LaTeX for Faculties, Research Scholars and M.Tech. (2014 & 2015), SASTRA University, Thanjavur, India.
- Organizing Committee Member, 1st International Conference on Opto-Electronics and Photonic Materials (ICOPMA 2015), SASTRA University, Thanjavur, India.
- Organizing Committee Member, International Conference on Thin Films & Applications (ICTFA 2013), SASTRA University, Thanjavur, India.
- Resource Person, 46th Refresher Course in Experimental Physics, Sponsored by various Academy of Sciences, Mar. 5 - 20 Mar. 2013, Indian Academy of Sciences, Jalahalli, Bangalore, India.
- Resource Person, 38th Refresher Course in Experimental Physics, Sponsored by various Academy of Sciences, June 5 –June 20, 2012, Department of Physics, B.S. Abdur Rehman University, Vandalur, Chennai, India.

Academic Research Collaboration

IIT Delhi	BARC, Mumbai
IIT Madras	NIT Trichy
Pondicherry University	SASTRA University
PRL, Ahmedabad	IASST Guwahati

Academic Research Visits

IIT Delhi – May 2019
Pondicherry University – April 2019
IIT Madras – November 2016, June 2018, January 2019
Pondicherry University – May 2017 to June 2017, November 2017
Physical Research Laboratory, Ahmedabad – May 2018
SASTRA University – February 2017, February 2018
IIT Delhi – July 2018 & March 2019
NIT Trichy – January 2019
IASST Guwahati – November 2019 and December 2019

Invited Talks and Academic Outreach Activities

16.05.14 - The Walsh-Hadamard transform : From Sequences to phase reversal quasi-phase matched grating structures, Department of Physics, IIT Madras

16.01.19 - 2D materials for nanoscale applications, Department of Physics, IIT Madras

10.03.19 - Investigation on the electrical and transport properties of phosphorene antidot nanoribbons for nanoscale applications, ASM 2019, IIT Delhi

07.01.19 - Invited Lecture titled "What, Who, When, Where, How, Why of a Career and You" – Lakshmi College of Education, Gandhigram.

11.01.19 - One day workshop on "Physics for Competitive Exams (GATE/NET/SET/JEST etc.,)" – The American College, Madurai.

20.03.19 - Valedictory Address – UG and PG Association of Physics titled "So you want to be a Physicist? "– Fatima College, Madurai.

06.06.19 - Novel 2D materials for nanoscale applications, JNCASR, Bangalore

15.11.19 - Phosphorene antidot nanoribbons - a novel 2D material for nanoscale applications, IASST, Guwahati

27.10.20 – CSIR-NET Coaching – Physical Sciences – Cluster of Colleges Program, SFR College for Women Sivakasi

Membership in bodies

Life Member, Indian Association of Physics Teachers (10392, L6627)

Other Information

- References available upon request
- Known Languages: English, Tamil and Hindi

I, hereby declare that all the information found in my resume is true to the best of my knowledge and belief.

Place: Madurai
Date: January 28, 2020

Sincerely,
N. Meenakshisundaram