

Dr. Aravinthan Devarasu

Senior Lecturer and Head

Department of Sciences, Mathematics and Education

St. Joseph University in Tanzania

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Aravinthan-Devarasu • GOP-2173-2022 • idaravinthan

Education

Bharathidasan University <i>M.B.A., CGPA: 7.01</i>	Tiruchirappalli 2017–2019
Bharathidasan University <i>Ph.D., Physics, Highly Commended</i>	Tiruchirappalli 2011–2017
Bharathidasan University <i>M.Phil., Physics, First Class with Distinction, 77.00%</i>	Tiruchirappalli 2010–2011
Bharathidasan University <i>M.Sc., Physics, First Class with Gold Medal, 80.02%</i>	Tiruchirappalli 2008–2010
Nehru Memorial College (Autonomous) (Bharathidasan University) <i>B.Sc., Physics, First Class with Distinction, 85.16%</i>	Puthanampatti 2005–2008
Nehru Higher Secondary School (State Board, Tamil Nadu) <i>H.S.C., First Class with Distinction, 83.66%</i>	Puthanampatti 2003–2005
Government High School (State Board, Tamil Nadu) <i>S.S.L.C., First Class with Distinction, 82.40%</i>	Thinnanur 2002–2003

Academic Experience

St. Joseph University in Tanzania

Senior Lecturer and Head of Department

January 2024– Till date

- Serving as the Senior Lecturer and Head of Department of Sciences, Mathematics and Education, St. Joseph University in Tanzania, Dar es Salaam, Tanzania.
- Leading a team of 25 staff members, including both teaching and non-teaching personnel.
- Spearheaded the revision of the B.Sc. with Education curriculum in alignment with TCU guidelines.
- Actively involved in developing new curricula—submitted to TCU for approval—for the Postgraduate Diploma in Education, Master of Science in Scientific Computing, and Master of Science in Industrial Mathematics.
- Overseeing departmental operations, including timetable preparation, internal examination scheduling, and project coordination.
- Organized and hosted Grand Quiz-2025, an inter-departmental quiz competition at St. Joseph University in Tanzania.
- Teaching Physics courses and conducting research in Computational Physics.

National Institute of Technology-Puducherry

Visiting Faculty

July 2023 –December 2023

- Worked as a Visiting Faculty in the Department of Physics, National Institute of Technology-Puducherry, Karaikal.
- Taught Computational Physics and Atomic and Molecular Physics courses.
- Conducted research in Computational Physics and Spintronics.

Chennai Institute of Technology

Assistant Professor

November 2021–June 2023

- Worked as an Assistant Professor at the Centre for Computational Modeling, Department of Science & Humanities, Chennai Institute of Technology, Chennai, Tamil Nadu.
- Taught Engineering Physics courses and conducted research in Computational Physics and Spintronics.

Teaching Faculty and Director

June 2020 – October 2021

- Worked as a Freelance Researcher, Faculty, and Director at E2 Academy, Tiruchirappalli, Tamil Nadu.
- Established E2 Academy as an online learning platform during the COVID-19 pandemic to offer various short courses through LMS and live video classes.
- Single-handedly developed the website, integrating Moodle, BigBlueButton, and a payment gateway into the LMS.
- Conducted free technical courses, including LaTeX and Octave, through the platform.

Central University of Tamil Nadu

Assistant Professor

July 2018– May 2020

Worked as an Assistant Professor (on contract) in Department of Physics, Central University of Tamil Nadu, Thiruvarur.

- Taught various physics courses for integrated M.Sc. students.
- Served as a Department Examination Committee Member for End Semester Examinations
- Conducted research in computational physics and spintronics.

Bharathidasan University

Research Associate

2017–2018

Worked as a Research Associate in the CSIR Project entitled "Spin Torque Nano Oscillators (STNO)" under the supervision of Prof. M. Lakshmanan in Bharathidasan University.

- Conducted research on magnetization switching and spin torque nano oscillators.

Courses Handled

Theory Courses Handled: Scientific Computing with Python, Computational Physics, Numerical Methods and Computer Programming with C, Electricity and Magnetism, Numerical Physics (Using Python), Atomic and Molecular Physics, Solid State Physics, Engineering Physics, Classical Mechanics and Classical and Statistical Thermodynamics

Laboratory Courses Handled: Engineering Physics Lab, Computational Lab (C Language), Advanced Computational Lab (Matlab/ Octave/ Python), Electricity and Magnetism Lab

Ph.D. Guideship

Anna University Supervisor ID: 3970025

Ph.D. Work

Title: *Effect of Interlayer Coupling and Biasing on Spin Transfer Torque Switching in Ferromagnetic Nanopillars*

Supervisor: Prof. M. Daniel

Publications

- [1] D. Aravinthan, Spin Transfer Torque: Magnetization Dynamics in Nanopillars (LAP LAMBERT Academic Publishing, London, 2024).
- [2] M. Boopathi, R. Sujatha, C. Senthil Kumar, D. Aravinthan, and S. Sadhasivam, Data-flow coverage-oriented test data generation using artificial fish school algorithm in software testing, Math. Comput. Simu.(Under Review) (2024).
- [3] S. Sabarathinam, D. Aravinthan, V. Papova, R. Vadivel, and N. Gunasekaran, Least fractional order memristor nonlinearity to exhibits chaos in a hidden hyperchaotic system, Fract. Calc. Appl. Anal. **27**, 2502–2520 (2024).
- [4] H. Boomeswaran, D. Aravinthan, and P. Sabareesan, Tunability of microwave frequency using spin torque nano oscillator by the generated oersted field with tunable free layer, Spin **14**(03), 2450001 (2024).
- [5] K. Manikandan, N. Serikbayev, D. Aravinthan, and K. Hosseini, Solitary wave solutions of the conformable space–time fractional coupled diffusion equation, Partial Differ. Equ. Appl. Math., 100630 (2024).
- [6] D. Aravinthan, H. Boomeswaran, P. Sabareesan, K. Manikandan, and J. B. Sudharsan, Enhancement of spin-torque-triggered magnetization reversal in pentalayer ferromagnetic alloys through orange peel coupling, Braz. J. Phys. **54**, 32 (2024).
- [7] K. Manikandan, N. Serikbayev, S. P. Vijayasree, and D. Aravinthan, Controlling matter-wave smooth positons in Bose–Einstein condensates, Symmetry **15**, 1585 (2023).
- [8] K. Manikandan, K. Sakkaravarthi, J. B. Sudharsan, and D. Aravinthan, Deformation of optical solitons in a variable-coefficient nonlinear Schrödinger equation with three distinct PT -symmetric potentials and modulated nonlinearities, Chaos **33**, 063132 (2023).
- [9] K. Manikandan, D. Aravinthan, J. B. Sudharsan, and R. Vadivel, Optical solitons in the generalized space–time fractional cubic-quintic nonlinear Schrödinger equation with a PT-symmetric potential, Optik **271**, 170105 (2022).

- [10] D. Aravinthan, P. Sabareesan, K. Manikandan, and J. B. Sudharsan, The effect of oscillatory interlayer exchange coupling on current-induced magnetization switching in pentalayer nanopillar alloys, *Appl. Phys. A* **128**, 910 (2022).
- [11] D. Aravinthan and P. Sabareesan, Magnetization switching by orange peel coupling in pentalayer nanopillar with dual polarizer, *Eur. Phys. J. Plus* **137**, 994 (2022).
- [12] J. B. Sudharsan, V. K. Chandrasekar, K. Manikandan, D. Aravinthan, and G. Saadhana, Dynamics of stable solitons in complex ginzburg-landau equation with pt-symmetric gaussian potential, *Optik* **268**, 169796 (2022).
- [13] J. B. Sudharsan, K. Manikandan, and D. Aravinthan, Stabilization of solitons in collisionally inhomogeneous higher-order nonlinear media with pt-symmetric harmonic-gaussian potential with unbounded gain-loss distributions, *Eur. Phys. J. Plus* **137**, 860 (2022).
- [14] K. Manikandan, D. Aravinthan, J. B. Sudharsan, and S. Reddy, Soliton and rogue wave solutions of the space-time fractional nonlinear Schrodinger equation with PT-symmetric and time-dependent potentials, *Optik* **266**, 169594 (2022).
- [15] D. Aravinthan, P. Sabareesan, K. Manikandan, and J. B. Sudharsan, Magnetization switching in pentalayer nanopillar with oscillatory interlayer exchange coupling, *J. Supercond. Nov. Magn.* **35**, 2831 (2022).
- [16] D. Aravinthan, P. Sabareesan, and M. Daniel, Spin transfer torque switching in pentalayer nanopillar with biquadratic coupling , *J. Supercond. Nov. Magn.* **31**, 2567 (2018).
- [17] D. Aravinthan, P. Sabareesan, and M. Daniel, Reduction of switching time in pentalayer nanopillar device with different biasing configurations , *J. Magn. Magn. Mater.* **421**, 409 (2017).
- [18] D. Aravinthan, P. Sabareesan, and M. Daniel, Effect of biquadratic coupling on current induced magnetization switching in Co/Cu/Ni-Fe nanopillar, *AIP Conf. Proc.* **1731**, 130032 (2016).
- [19] D. Aravinthan, P. Sabareesan, and M. Daniel, Impact of biquadratic coupling on critical current density in Co/Cu/Ni-Fe nanopillar, *AIP Conf. Proc.* **1728**, 020443 (2016).
- [20] D. Aravinthan, P. Sabareesan, and M. Daniel, Current induced magnetization switching in Co/Cu/Ni-Fe nanopillar with orange peel coupling, *AIP Advances* **5**, 077166 (2015).

Awards, Grants & Honours

- Awarded **2016 Joint MMM-Intermag Conference Student Travel Grant** for participating in the 2016 Joint MMM-Intermag Conference, held at the Hilton San Diego Bayfront Hotel in San Diego, California, United States during January 11-15, 2016.

- Awarded **DST – INSPIRE Senior Research Fellowship (SRF)** (from August 28, 2015 to September 30, 2016).
- Won the **Best Library User Award** for the year 2013 awarded by University Library, Bharathidasan University, Tiruchirappalli.
- Awarded **DST – INSPIRE Junior Research Fellowship (JRF)** (from October 01, 2011 to August 27, 2015).
- Awarded **Tmt. Rukmani Gopalan Memorial Gold Medal 2010** for the First Rank in the M.Sc., Physics (2008-2010) Examinations in Bharathidasan University, Tiruchirappalli.
- Secured the **University First Rank** in the Bharathidasan University Rank Examinations conducted for both Autonomous and Non-Autonomous colleges for M.Sc., Physics (2008-2010).

Research Interests

- Computational Physics, Spintronics and Nonlinear Dynamics

Papers Presented in Seminars / Conferences / Workshops

1. Presented a talk entitled “Magnetization Switching in Pentalayer Nanopillar Alloys with Oscillatory Interlayer Exchange Coupling” as an invited speaker in the **Complex System Seminar Series** organized by Laboratory of Complex System modelling and Control, Faculty of Computer Science, National Research University, High School of Economics, Moscow, Russia held on November 10, 2022.
2. Served as a Resource Person for the One Day Workshop on **L^AT_EX: A document preparation tool for writing Research Thesis** organized by Department of Computer Science and Engineering, Government College of Engineering Srirangam, Trichy held on March 04, 2022.
3. Served as a Resource Person for the **Five Day Online Programme on Skill Development using Learning Assistance Tools** organized by the PG and Research Department of Physics, Jamal Mohamed College (Autonomous), Trichy held on July 11 - 17, 2020.
4. Served as a Resource Person for the **Summer Online Training Programme on L^AT_EX** organized by the PG and Research Department of Physics, Jamal Mohamed College (Autonomous), Trichy held on June 15 - 19, 2020.
5. Served as a Member of Organising Committee of the **International Conference on Sustainable Energy Technologies (i-SET - 2018)** Jointly organized by School of Physics & School of Chemistry, Bharathidasan University, Tiruchirappalli, Tamilnadu during June 27 - 28, 2018.
6. Served as a Resource Person for the **One day Workshop on L^AT_EX** jointly Organized by Department of Physics and Department of Mathematics, Dr.SNS Rajalakshmi College of Arts & Science(Autonomous), Coimbatore, Tamilnadu held on February 02, 2018.

7. Presented a talk entitled "Impact of Biquadratic Coupling on Spin Current Induced Magnetization Switching in Pentalayer Nanopillar" in the **5th International Conference on Complex Dynamical Systems and Applications (CDSA), 2017** organized at Indian Institute of Technology Guwahati, Guwahati, India during December 04 - 06, 2017.
8. Presented a talk entitled "Spin Transfer Torque Magnetization Switching in Ferromagnetic Nanopillars with Orange Peel Coupling" in the **National Conference on Current Advancement in Physics** organized by Department of Physics, St. John's College, Palayamkottai, Tamilnadu, India during February 03-04, 2017.
9. Presented a poster entitled "Impact of Biquadratic Coupling on Current Induced Magnetization Switching in Co/Cu/Ni-Fe Nanopillar" in the **2016 Joint MMM - Intermag Conference** held at the Hilton San Diego Bayfront Hotel in San Diego, California, United States during January 11-15, 2016, jointly sponsored by AIP Publishing and IEEE Magnetics Society.
10. Presented a poster entitled "Effect of Biquadratic Coupling on Current Induced Magnetization Switching in Co/Cu/Ni-Fe Nanopillar" in the **60th DAE Solid State Physics Symposium** held at Amity University U.P., Noida, Uttar Pradesh, India during December 21-25, 2015.
11. Presented a poster entitled "Impact of Biquadratic Coupling on Critical Current Density in Co/Cu/Ni-Fe Nanopillar" in the **International Conference on Condensed Matter and Applied Physics (ICC 2015)** organized by Govt. Engineering College, Bikaner, Rajasthan, India during October 30-31, 2015.
12. Presented a poster entitled "Spin Transfer Torque Switching in Pentalayer Nanopillar Having Two Pinned Layers with Biasing" in the **Physics and Applied Mathematics Researchers' Meet – 2015** held at Indian Statistical Institute, Kolkata, India during March 18-20, 2015.
13. Presented a poster entitled "Spin Transfer Torque Switching in Pentalayer Nanopillar" in the **Indo-Japan Workshop on Magnetism at Nanoscale (IJWMN-2015)** Organized by National Institute of Science Education and Research (NISER), Bhubaneswar, India during January 09-12, 2015.
14. Presented a poster entitled "Impact of orange peel coupling on magnetization switching in nanopillar" in the eighth **Conference on Nonlinear Systems and Dynamics (CNSD 2013)** Organized by Indian Institute of Technology(IIT), Indore, India during December 11-14, 2013.

Participations in Seminars / Conferences / Workshop / Training Programmes (Selected)

1. April 21-27, 2025: **7-Day International Interdisciplinary Research and Industry Leadership Programme 2025 (IRILP 2025)** organized by Department of Physics, Kangeyam Institute of Technology, Tiruppur - 638 108, Tamil Nadu.
2. May 29, 2024: **Webinar on Digital and AI tools in Education** organized by Dynamic Mind Group, India.
3. November 25-26, 2022: **Workshop on Nonlinear Dynamics in Science & Engineering** organized by Centre for Nonlinear Science & Engineering (CeNSE), Department of Physics, School of Electrical & Electronics Engineering, SASTRA Deemed University, Thanjavur, Tamil Nadu.
4. September 29-30, 2022: **Workshop on Computational Physics with Python** organized by Department of Physics, Bharathidasan University, Tiruchirappalli, Tamilnadu.
5. June 27-28, 2018: **International Conference on Sustainable Energy Technologies (i-SET - 2018)** Jointly organized by School of Physics & School of Chemistry, Bharathidasan University, Tiruchirappalli, Tamilnadu.
6. February 13, 2018: **Asia Pacific Academy of Materials (APAM) Special Lecture Series** Jointly Organized by MRSI - Trichy Chapter & Centre for High Pressure Research, Bharathidasan University, Tiruchirappalli – 620 024, Tamilnadu.
7. February 14-16, 2017: **Mini Winter School on Python 2017** Organized by Centre for Nonlinear Science, PG and Research Department of Physics, Government College for Women (Autonomous), Kumbakonam, Tamilnadu.
8. January 20, 2015: **International Workshop on Strongly Correlated Materials** Organized by Centre for High Pressure Research, School of Physics, Bharathidasan University, Tiruchirappalli, Tamilnadu.
9. December 08 - 20, 2014: **Science Academies' Refresher Course on Classical Mechanics and Electromagnetism** Organized by Department of Physics, Sri Dharmasthala Manjunatheswara College (Autonomous), Ujire , Karnataka.
10. September 15 - 17, 2014: **International Conference on Magnetic Materials and Applications (ICMAGMA 2014)** Organized by Department of Physics, Pondicherry University, Puducherry.
11. August 12, 2014: **National Workshop on Resources and Technologies for Scholarly Information** Organized by Department of Library and Information Science, Bharathidasan University, Tiruchirappalli, Tamilnadu.

12. February 24 - March 01, 2014: **NMI Workshop on Nonlinear Integrable Systems and their Applications** Organized by the Centre for Nonlinear Dynamics, School of Physics, Bharathidasan University, Tiruchirappalli, Tamilnadu.
13. January 27 - 31, 2014: **Training Programme on Research Writing** Organized by Centre for Technical Writing and Academic Writing, Bharathidasan University, Tiruchirappalli, Tamilnadu.
14. January 11 - 14, 2013: **Conference on Condensed Matter and Biological Systems (CCMB13)** Organized by Department of Physics, Banaras Hindu University, Varanasi, Uttar Pradesh.
15. July 12-15, 2012: **Seventh National Conference on Nonlinear Systems and Dynamics (NCNSD2012)** Organized by Indian Institute of Science Education and Research (IISER), Pune, Maharashtra.
16. December 19-22, 2011: **Workshop on Theoretical Physics** Organized by the Department of Physics, Bharathiyar University, Coimbatore, Tamilnadu.
17. January 04 - 26, 2011: **DST-SERC School on Nonlinear Dynamics** Organized by the Centre for Nonlinear Dynamics, School of Physics, Bharathidasan University, Tiruchirappalli, Tamilnadu.
18. August 12 - 17, 2010: **ICM 2010 Satellite Conference on Integrable Systems and Geometry** Conducted by Dept of Mathematics, Pondicherry University, Puducherry.
19. December 08-14, 2009: **Second Science Conclave: A Congregation of Nobel Laureates** Conducted by Indian Institute of Information Technology, Allahabad, Uttar Pradesh.
20. May 25 – June 19, 2009: **Summer Training Programme in Physics** Organized by Department of Nuclear Physics, University of Madras, Chennai, Tamilnadu.

Computer Skills

Operating System: Linux (Ubuntu, Fedora), Windows, macOS

Programming Languages: FORTRAN, C, C++, Python

Applications: L^AT_EX, Gnuplot, GIMP, MS Office, OpenOffice, LibreOffice

Specialized Software: OOMMF, Matlab/ Octave

Installation & debugging: Very Good Knowledge in installing and debugging Softwares & Operating Systems. Also have a good knowledge on domain configurations, website design & e-content creation.

Languages

Tamil: Read, Write & Speak

Mother Tongue

English: Read, Write & Speak

Fluent

Swahili: Speak

Basic

Co-Curricular Activities

- Hosted The Grand Quiz - 2019 & 2020 editions part of National Science Day Celebrations organised by Department of Physics, Central University of Tamil Nadu, Thiruvavur.
- Served as a Department Newsletter Committee Member from February - 2019 to May - 2020 in Department of Physics, Central University of Tamil Nadu, Thiruvavur.
- Served as a Examination Committee Member for End Semester Examinations - November 2018, April 2019 & November 2019 conducted by Department of Physics, Central University of Tamil Nadu, Thiruvavur.
- Reviewer in Applied Physics Letters (AIP Publication), Pramana.
- Served as a Residential Warden during 2018 - 2019 at New Boys Hostel, Central University of Tamil Nadu, Thiruvavur.
- Served as a Treasurer of Physics Association for Creativity and Excellence (PACE) (2012-2013) in Bharathidasan University, Tiruchirappalli.
- Organized Teacher's Day Celebrations 2012, National Science Day celebrations 2013 & 2015 in School of Physics, Bharathidasan University with two other colleagues.
- Served as a Accounts Committee Member (2008-2009) in Post Graduation Hostel for Men in Bharathidasan University.
- Served as a Member in Accounts Committee (2012-2013) & (2015-2016), Hostel Rules and Regulations formation Committee (2015) & Web-maintenance Committee (2015-2016).
- Designed a Website for Physics Association for Creativity and Excellence (PACE) & for National Science Day Celebrations with Online Registration, Comments / Feedback facility.
- Served as the Class Representative in Under-Graduate, Post-Graduate & M.Phil Programme.

Interests

Reading: I enjoy reading books, which helps broaden my knowledge and understanding of various subjects.

Blogging: For the past decade, I have maintained an educational blog with over 500,000 visits, sharing insights and information related to education.

References

Department Head

Dr. Amrtha Bhide

Associate Professor & Head

Department of Physics

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Collaborator

Dr. P. Sabareesan

Assistant Professor (Research)

Centre for Nonlinear Science and Engineering

School of Electrical and Electronics Engineering

SASTRA University

Thanjavur – 613 401

Tamilnadu, INDIA

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Supervisor

Prof. M. Daniel

Professor in Physics (Retd.)

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School of Physics

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Tamilnadu, India.

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Department Head

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Personal Details

Father's Name	P. Devarasu
Mother's Name	D. Vijayalakshmi
Date of Birth	29.07.1987
Age	37
Marital status	Married
Spouse's Name	S. Sivaranjani
Child's Name	A. Magizhnan
Nationality	Indian
Passport Number	C0726803
Religion	Hindu
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