

**Dr. Mrs. M. ARULMOZHI**

**Head & Associate Professor of Physics**

Jayaraj Annapackiam College for Women (Autonomous)

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Updated: July 2024

**Area of specialization**

: Condensed Matter Physics

Academic Qualifications	University /Year of passing
SSLC	Board of Secondary Education / 1985
HSC	Board of Higher Secondary Education / 1987
B.Sc	Madurai Kamaraj University / 1990
M.Sc	Madurai Kamaraj University / 1992
PGDCA	Madurai Kamaraj University / 1996
Ph.D	Madurai Kamaraj University / 2001
CYP/HRD Diploma in Youth in Development Work	Annamalai University / 2007
Certificate Course in Computer Maintenance and Hardware	Mother Teresa Women's University / 2009
Online Course in Physics of Semiconductors	Indian Institute of Technology, Kanpur/2017

**Technical Qualifications**

Typewriting – English – Higher – First Class – May 1988.

Shorthand – English – Higher – Second Class – May 1990.

**Academic Achievements**

- First rank in B.Sc Physics at Fatima College, Madurai.
- Third rank in B.Sc Physics at Madurai Kamaraj University.
- First rank in M.Sc Physics at Fatima College, Madurai.
- Received PG Merit Scholarship of UGC.

- Qualified in CSIR/UGC National Eligibility Test for Lecturership/JRF held in December 1991.
- Qualified in SLET (State Level Eligibility Test for Lecturership) held in March 1997.
- Second rank in Certificate Course in Computer Maintenance and Hardware at Jayaraj Annapackiam College for Women (Autonomous), Periyakulam.
- Qualified in SET (State Eligibility Test for Assistant Professor-SET 2017) held in April 2017.

**B.Sc. Project** : Programming the Intel 8085  $\mu$ P.

**M.Sc. Project** : Studies of Fraunhofer diffraction pattern using He-Ne Laser.

**Title of Ph.D. Thesis** : Studies on some low dimensional semiconductor systems

**Research Guide** : **Dr. S. BALASUBRAMANIAN**, Senior Professor (Retired),  
School of Physics, Madurai Kamaraj University, Madurai.

#### Teaching Experience

Course	Name of the Institution	Duration
UG	Jayaraj Annapackiam College for Women (Autonomous), Periyakulam.	1996 – till date
PG	-----do-----	2005 – till date
M.Phil.	-----do-----	2014 – 2019

#### Refresher Courses / Orientation Courses attended

Refresher/Orientation Course	University/College	Date
29 <sup>th</sup> Orientation Programme	Madurai Kamaraj University, Madurai.	01.03.2000 to 28.03.2000
Refresher Course in Physics	-----do-----	14.11.2002 to 04.12.2002
N.S.S. Orientation Course	Avinashilingam Deemed University, Coimbatore.	04.10.2006 to 12.10.2006
Refresher Course in Physical Sciences	Bharathidasan University, Tiruchirapalli.	01.02.2007 to 21.02.2007

**Short Term / Faculty Development Programmes attended (Five days and above)**

S.No.	Programme	Place & Date	Topic
1.	Online Faculty Development Programme	Kristu Jayanti College, Bengaluru. 23.04.2020 to 30.04.2020	Outcome Based Learning in Higher Education
2.	One Week Faculty Development Programme	Godavari Institute of Engineering and Technology (Autonomous), Rajamahendravaram, Andhra Pradesh. 18.05.2020 to 22.05.2020	Nanomaterials for Energy Harvesting and Biomedical Applications
3.	National Webinar	Jayaraj Annapackiam College for Women (Autonomous), Periyakulam. 22.05.2020 to 29.05.2020	Outcome based education
4.	Online FDP	Mary Matha College of Arts and Science, Periyakulam. 16.06.2020 to 20.06.2020	E-content creation and Online LMS
5.	One Week Online Workshop	JNTUK University College of Engineering, Vizianagaram. 06.07.2020 to 10.07.2020	Blended learning
6.	Five day online programme	Jamal Mohammed College (Autonomous), Tiruchirapalli. 13.07.2020 to 17.07.2020	Skill development using Learning Assistance Tools
7.	One week Faculty Development Program	Dr. MGR Educational and Research Institute, Chennai. 13.07.2020 to 20.07.2020	Essentials for Blended Learning
8.	One week Online Teaching-Learning Workshop	Institute for Development and Communication, Chandigarh. 20.07.2020 to 25.07.2020	Design, Development and Delivery of E-Content and Online Assessment

9.	International Lecture Series	Mother Teresa Women's University, Kodaikanal. 22.07.2021 to 27.02.2021	Rendezvous with Science
10.	National level Webinar	Institute for Academic Excellence, Hyderabad. 27.08.2021 to 31.08.2021	Current trends in Research & Innovation – Research paper publications – IPR and Patents – Research Projects and Fundraising
11.	International Online Faculty Development Programme (FDP)	Rajapalayam Raju's College, Rajapalayam. 14.11.2022 to 18.11.2022	Current Scenario in Advanced Materials Research and Nanotechnology
12.	National Level Online Workshop	Indian Association of Physics Teachers (IAPT) 15.02.2024 to 20.02.2024	Artificial Intelligence Awareness in Physics
13.	Five Days Online International Level Faculty Enhancement Training Programme	Gomsguru Academy, Bangalore. 24.02.2024, 26.02.2024 to 29.02.2024	Recent Trends in Teaching Methodology
14.	Malaviya Mission Teacher Training Programme (MM-TTP) of University Grants Commission (UGC)	Madurai Kamaraj University, Madurai. 04.06.2024 to 12.06.2024	NEP 2020 Orientation & Sensitization Programme
15.	One Week Online Faculty Development Program	Bonam Venkata Chalamayya Engineering College, Odalarevu. 18.06.2024 to 22.06.2024	Recent Trends in Artificial Intelligence and Machine Learning

**Key positions held in the College**

- NSS Programme Officer
- IQAC Co-ordinator
- Dean of Research
- Project Development Officer
- Head, Department of Physics

**Awards received**

Name of the Award	Organisation/Agency
Best Paper Presentation Award in the National Conference on “Advanced Functional Materials (NCAFM 2008) on 15 & 16.02.2008.	SRM University, Kattankulathur.
Global Eminent Academician Award 09.04.2021	VIJ Trust, Chennai. Reg. No. 959/2010/BK4
Women Researcher Award 04, 05.06.2021	VDGOOD Professional Association, Chennai.
Pre-eminent Academician National Award 2022 21.11.2022	Chennai Teachers Council Reg. No. 1056/2013/AF3

**Recognitions received**

Recognition	Organisation/Agency
Mock Peer Team Member for Re-accreditation by NAAC on 26.02.2010.	Yadava College, Thiruppalai, Madurai.
Member of External Question Paper Validation Committee on 27.03.2010.	Lady Doak College, Madurai.
Member of the Panel Discussion on “Motivation to students towards research” in the National Seminar on “Recent Trends in Physics”, 29 & 30.12.2010.	SFR College for Women, Sivakasi.

Assistant Chief Examiner (Hall No. 4, Centre Code: 204, Jayaraj Annapackiam College for Women (Autonomous), Periyakulam) for TNPSC Group IV & Group VIII Exams, 07.07.2012	Tamil Nadu Public Service Commission, Government of Tamil Nadu.
Member of the Staff Recruitment Committee, 19.07.2012	St. Anne's College of Education, Periyakulam.
Judge for "Puthiya Thalaimurai Aayudham Seivom's "Veetuku Oru Vingnaani 2012" Science Fest, 27.07.2012	T. M. H. N. U. Matriculation Higher Secondary School, Muthudevanpatti, Theni.
Assistant Chief Examiner (Hall No. 5, Centre Code: 204, Jayaraj Annapackiam College for Women (Autonomous), Periyakulam) for TNPSC Group II Exams, 12.08.2012	Tamil Nadu Public Service Commission, Government of Tamil Nadu.
Steering Committee Co-ordinator, NAAC Peer Team Visit, 13 to 15.03.2014	Jayaraj Annapackiam College for Women (Autonomous), Periyakulam.
Member of the Doctoral Committee for the Ph.D. Programme of Ms. I. Janet Sherly, Research Scholar, Department of Physics during 2016-'20	Gandhigram Rural Institute, Gandhigram.
Paper Valuation of Group Exams 06.11.2023 to 08.11.2023	Tamil Nadu Public Service Commission, Government of Tamil Nadu.
Member of the Doctoral Committee for the Ph.D. Programme of Ms. N. Pavithra (MKU22PFOS10532), Research Scholar, Department of Physics during 2023-till date	H.K.R.H College, Uthamapalayam.
Peer Team External Member for the Academic Audit 2022-2023, 20.12.2023	G.T.N. Arts College (Autonomous), Dindigul.

### Subject Expert/Membership in Board of Studies of other institutions

S.No	Name of the Institution	Board	Date of BoS meeting
1.	Fatima College (Autonomous), Madurai.	B.Sc. & M.Sc. Physics	22.06.2012, 13.03.2024
2.	V.V.Vanniaperumal College for Women (Autonomous), Virudhunagar.	B.Sc. Physics M.Sc. Physics	23.04.2019, 12.06.2024
3.	H.K.R.H. College, Uthamapalayam.	M.Sc. Physics	01.02.2020, 30.03.2021, 08.11.2022
4.	Arul Anandar College, Karumathur.	B.Sc. & M.Sc. Physics	15.02.2022, 10.01.2023, 10.01.2024
5.	Mannar Thirumalai Naicker College (Autonomous), Madurai.	M.Sc. Physics	01.04.2022, 17.04.2024
6.	Yadava College (Autonomous), Madurai.	B.Sc. & M.Sc. Physics	06.08.2022, 04.03.2023, 21.06.2023, 09.05.2024
7.	E.M.G. Yadava Women's College, Madurai.	M.Sc. Physics	07.06.2024
8.	The Madura College, Madurai.	B.Sc. & M.Sc. Physics	13.02.2024

### Membership in Academic / Professional Bodies

- Member of the Board of Studies in Physics of Jayaraj Annapackiam College for Women (Autonomous), Periyakulam since 2004.
- Member of Women Physicists' Association of Mother Teresa Women's University, Kodaikanal since 2004.
- Life Member of Indian Association of Physics Teachers since 2007.
- Life Member of Indian Science Congress Association since 2014.
- Life Member of Indian Physical Society since 2016. (LM/1099)

- Life Member of Indian Physics Association since 2017. (GEN/LM/13287)
- Active member of VDGGOOD Professional Association, Chennai during June 2021 to June 2022.
- Life Member of Raman Research Foundation since 2024.

#### Patents applied/granted

S.No.	Patent Title	Patent / Application No.	Country	Date & Status
1.	A heavy metal identification using nanotechnology-based metal oxide	370003-001	India	27.08.2022 – Applied 20.04.2023 – Published
2.	Coupled Solar and Wind Mill Controlling System	395315-001	India	17.09.2023 – Applied 12.02.2024 – Published

#### Research Projects carried out with Central / State Assistance

Nature	Title of the project	Funding Agency	Status	Duration	Project Cost
Minor	Studies on some external perturbations in nanoquantum wells	UGC	Completed	2 years (2007 – 2009)	Rs.65,000/-
Major	Investigations on excitons in nanostructures	UGC	Completed	3 years + 1 year extension (2013 – 2017)	Rs.12,82,480/-

#### Research Guidance

- Approved Guide of Mother Teresa Women’s University, Kodaikanal for Ph.D.
- Approved Guide of Madurai Kamaraj University, Madurai for M.Phil. (Part Time).

Degree	Completed	Ongoing
Ph.D.	1 (Full Time)	1 (Full Time), 1 (Part Time)
M.Phil.	4 (Part Time), 6 (Full Time)	---



### Ph.D. Thesis – Full Time

S.No.	Name of the student	Scheme	Topic	Date of Registration	Date of Viva-voce
1.	A. Anitha (PHDPHY2014F312)	Full Time	Studies on excitons in low dimensional nanostructures with varied profiles	09.07.2014	06.08.2019
2.	S. Ramyapriya (PHDPHY18F569)	Full Time	Investigations on optical properties of impurities in low dimensional semiconducting systems	20.08.2018	---
3.	M. Gayathri (PHDPHY18P576)	Part Time	Studies on Magnetic properties of donors in Novel Semiconductor Structures	08.10.2018	---

### Visits abroad

- Delivered a talk on “Studies on semiconductor quantum wells” in the Colloquium of Departamento de Física, Universidad de los Andes, Bogota D.C, **Colombia**, South America in 2003-‘04.
- Participated in “The Big Hope 2 – Youth Leaders Congress” at Liverpool Hope University, **United Kingdom** from 13.06.2018 to 20.06.2018.
- Delivered a talk on “Dynamics of donors and excitons in low dimensional systems” in the International Conference on “Advances in Physical Sciences – Thailand 2019” at Asian Institute of Technology Conference Center, Bangkok, **Thailand** on 27 & 28.05.2019.

- Participated in the International Workshop on “Advanced Practices in Research Methodology – Thailand 2019” at DVaree Jomtien Conference Center, Chon Buri, **Thailand** on 29 & 30.05.2019.
- Visited “ATOMIUM – The Magic of Architecture” at Brussels, Belgium during the **Europe** visit from 14.05.2024 to 29.05.2024.

**Research Publications : IN JOURNALS**

1. Binding energy of the hydrogenic donor and that of a Wannier exciton in the  $|z|^{2/3}$  quantum well  
Physical Review B 51(4), 2592-2595, 1995.
2. Effect of magnetic field on the binding energy of hydrogenic donor in the  $|z|^{2/3}$  quantum well  
Physica Scripta 54, 651-656, 1996.
3. Electron states in a rectangular quantum well with a tilted magnetic field  
Physica Scripta, 60, 469-473, 1999.
4. Donor binding energies in nanoquantum wells with external perturbations  
Oriental Journal of Physics, 4 (1), 7 – 15, 2012.
5. Higher Education – Present Scenario and Challenges Ahead  
New Frontiers in Education, Vol. 45, No-1, 3 – 7, 2012.
6. Electron-hole transition energies in  $|z|^{2/3}$  quantum well –Matching in the middle method  
International Journal of Physics and Mathematical Sciences, 3 (1), 7 – 12, 2013.
7. Investigations on quality and osmotic pressure of water at Periyakulam, Theni District  
JAC Journal of Science, Humanities and Management, 1 (1), 40-48, 2013.
8. Theoretical investigations on the properties of quantum nanostructures dependent on Density of States  
Journal of NanoScience and NanoTechnology, 2(1), 83 – 86, 2014.
9. Wavelengths of substances by Photoelectric effect  
JAC Journal of Science, Humanities and Management, 1 (2), 19 – 26, 2014.
10. Excitons in a Surface Quantum Well  
Superlattices and Microstructures, 75, 222 – 232, 2014.

11. Magnetic field effects on exciton binding energy in a near triangular quantum well  
International Journal of ChemTech Research, Vol. 7, No. 3, 1438-1444, 2015.
12. A Comparative study on the properties of ZnO and ZnS nanoparticles  
International Journal of ChemTech Research, Vol. 9, No. 3, 308-315, 2016.
13. A Comparative Analysis of the Properties of Zinc Oxide (ZnO) Nanoparticles  
Synthesized by Hydrothermal and Sol-Gel Methods  
Indian Journal of Science and Technology, Vol. 9(40), 1-6, 2016.
14. A Case for Applied Education Today  
JAC Journal of Science, Humanities and Management, 4 (1), 22 – 25, 2016.
15. Effect of Temperature on Exciton Binding Energy in ZnSe/Zn<sub>1-x</sub>Mg<sub>x</sub>Se Quantum  
Well with Poschl-Teller Potential  
International Journal of ChemTech Research, Vol. 9(8), 298-304, 2016
16. Excitonic susceptibility in near triangular quantum wells  
Indian Journal of Physics, Vol. 91(3):287-292, 2017.
17. Simultaneous effects of pressure and temperature on excitons in Poschl-Teller  
quantum well  
International Journal of Modern Physics B, Vol. 30, 1750050-1 to 1750050-13, 2017.
18. Effects of Dielectric Screening Function and Image Charges on Hydrogenic Donor  
Binding Energy in a Surface Quantum Well  
Journal of Physical Science, Vol. 28(1), 73-85, 2017.
19. Photo-ionization Cross-section and Binding Energy of Exciton in a Parabolic  
Quantum Well  
International Research Journal of Engineering and Technology, Vol. 4(9), 197-204,  
2017.
20. Effects of spatially dependent effective mass and non-parabolicity on hydrogenic  
impurity binding energy in a near triangular quantum well  
International Research Journal of Engineering and Technology, Vol. 4(9), 308-311, 2017.
21. Exciton binding in a pyramidal quantum dot  
Pramana – J. Phys. 90:57, 1-6, 2018.
22. Polarizability of Exciton in Surface Quantum Well  
Journal of Physical Science, Vol.30(1), 33-45, 2019.

23. Pressure induced  $\Gamma$ -X band mixing effect on the binding energies of a hydrogenic donor in a GaAs/Al<sub>x</sub>Ga<sub>1-x</sub>As parabolic quantum well  
The International journal of analytical and experimental modal analysis, Vol.VIII(II), 1221-1227, 2021.
24. Photo-ionization cross-section of a hydrogenic donor in a near triangular quantum well  
Philosophical Magazine – Online: <https://doi.org/10.1080/14786435.2022.2157505> - December 2022; Print: 103(5), 482-491, 2023.
25. Effect of Phonon and Magnetic fields on the binding energy of a hydrogenic donor in a Woods-Saxon potential well  
JAC Journal of Science, Humanities and Management, 10(1), 46 – 57, 2022.
26. Effect of tilted magnetic field on the binding energy of a hydrogenic donor in a near triangular quantum well  
Philosophical Magazine – Online: <https://doi.org/10.1080/14786435.2023.2216030> - June 2022; Print: 103(15), 1453-1463, 2023.
27. Variation of refractive index of a hydrogenic impurity in a parabolic quantum well  
The European Physical Journal B – Online: <https://doi.org/10.1140/epjb/s10051-023-00635-7> - December 2023; Print: 96:164, Pages 1 to 7, 2023.
28. Ni-doped SnS<sub>2</sub>: an investigation into its optical, magnetic and electronic structures  
Applied Physics A: Materials Science & Processing – Online: <https://doi.org/10.1007/s00339-023-07201-z> - December 2023; Print: 130:46, Pages 1 to 16, 2024.
29. Electronic Structure using Powder XRD and its Correlation with the Origin of Room Temperature Magnetism in Cr<sup>3+</sup> doped SnO<sub>2</sub>  
Journal of Electronic Materials – Online: <https://doi.org/10.1007/s11664-024-11192-9> - June 2024.

#### **Papers presented in Seminars/Conferences/Workshops - 42**

#### **Details of Seminars, Conferences, Symposia organized**

- Organizing Secretary for the National Conference on “Quality and Relevance in Higher Education – New Challenges” in 2008-'09.
- Convener of the UGC sponsored National Seminar on “Human Rights” in 2010-'11.

- Convener of the UGC sponsored National Seminar on “Recent Trends in Physics” in 2017-’18.
- Convener of the International Virtual Conference on “Emerging Technologies in Materials Science (ICETM – 2024)” in 2023-’24.

#### **Books Published/Edited**

- Co-author of the book on “Practical Physics” - 2007-’08.
- Co-author of the book on “NSS” - 2008-’09.
- Co-author of the II Edition of the book on “Practical Physics” – 2015-’16.
- Co-editor of the Proceedings of the National Conference on “Recent Trends in Physics and Materials Research” at Jayaraj Annapackiam College for Women (Autonomous), Periyakulam during 04, 05 .02.2016.

#### **Course Materials Prepared**

- II UG Students (Foundation Course) – A Chapter in “Social Education” – 2005-’06.
- Non-major Elective course on “Astronomy and Astrophysics” – 2015-’16.
- Unit – III of UG Foundation Course on “Introductory Physics” – 2023-’24.

#### **Editor/Reviewer of Journals**

- Editor of the College Journal – JACJOSHAM – Jayaraj Annapackiam College Journal of Science, Humanities and Management during 2018-’21.

#### **External Examiner for Practical Exams/Project Viva-voce**

S.No.	Name of the Institution	Date	Class
1.	Arul Anandar College, Karumathur, Madurai District	13.06.2022	II M.Sc. Physics Practicals and Project Viva-voce
2.	The Madura College, Madurai.	17.11.2022 & 18.11.2022	III B.Sc. Physics Practicals

#### **Served as Resource Person in 54 Programmes**

**Seminars/Conferences/Workshops attended in other institutions - 18**

**Seminars/Conferences/Workshops attended ONLINE - 113**

**Seminars/Conferences/Workshops attended in the College - 21**

### **Institutes visited**

- Indian Institute of Astrophysics, Indian Institute of Science, Raman Research Institute and Visweswaraiya Museum, Bangalore in 1996-'97.
- Radio Astronomy Centre, Ooty in 1998-'99.
- Indian Institute of Astrophysics, Kodaikanal Observatory in 2005-'06.
- Priyadharshini Planetarium and Vikram Sarabhai Space Centre, Kerala in 2006-'07.
- G.D. Naidu Museum, Coimbatore in 2009-'10.
- International Research Centre, Kalasalingam University, Krishnankoil in 2014-'15.
- India Based Neutrino Observatory, TIFR, Madurai in 2019-'20.
- Regional Test Centre (Solar Thermal), Madurai Kamaraj University in 2019-'20.
- Pondicherry University, Andaman Campus in 2022-'23.

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