

# Anjitha V

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## Research Interests

- Broadly interested in High Power Electromagnetics & Microwave Applications.
- Current research interests include Computational electromagnetics & applications, Electromagnetic interference and compatibility, Bio-Electromagnetics, and Microwave imaging for medical and security applications.

## Academic Background

- 2024 - till date    ➤ **Post Doctoral Fellow in Electrical Engineering Department**  
**Indian Institute of Technology (IIT), Palakkad, India**  
Research area: *Microwave Imaging*  
Mentor: *Dr. Sukomal Dey, Associate Professor, IIT Palakkad*
- 2018 - 2023    ➤ **Ph.D. in Electrical Engineering**  
**National Institute of Technology (NIT), Calicut, India**  
Research area: *Computational electromagnetics with high power electromagnetic sources*  
Thesis title: *Risk Assessment of Active Human Implants Exposed to Incident Lightning Electromagnetic Radiation*  
CGPA 9.77
- 2010 - 2012    ➤ **M.Tech. in Electronics and Communication Engineering**  
**University of Kerala, India**  
Specialization: *Microwave Engineering*  
Thesis title: *Optimal design of zig-zag antenna with nonlinear segment length and pitch angle*  
*Distinction, University First Rank (CGPA 9.23)*
- 2006 - 2010    ➤ **B.Tech. in Electronics and Communication Engineering**  
**University of Calicut, Kerala**  
*First Class with Honours University Third rank (Percentage 84.1)*
- 2004 - 2006    ➤ **Higher Secondary Education**  
**Kerala State Board**  
*Distinction (Percentage 93.1)*
- 2003 - 2004    ➤ **Secondary School Education**  
**Kerala State Board**  
*Distinction (Percentage 95.5)*

## Employment History

- Aug 2023 – March 2024    **National Institute of Technology Calicut (NITC)**  
Adhoc faculty  
*Responsibilities:* Teaching undergraduate students – Courses handling: Introduction to electronics, Python programming lab, Seminar
- Jan 2013 – June 2018    **Jyothi Engineering College Thrissur**  
Assistant Professor  
*Responsibilities:* Teaching undergraduate students
- Oct 2012 – Dec 2012    **Government Engineering College Thrissur**  
Assistant Professor on Contract  
*Responsibilities:* Teaching postgraduate students.
- June 2011 – April 2012    **College of Engineering, Trivandrum**  
Guest lecturer  
*Responsibilities:* Teaching part-time B.Tech students

## Academic Projects

- Ph. D.    **Risk assessment of active human implants exposed to incident lightning electromagnetic radiation**  
In this thesis work, the quantification of risk caused on active human body when exposed to lightning electromagnetic radiation is conducted. Antenna modeling of high-power electromagnetic sources such as lightning is done and the exposure risk is evaluated using various numerical electromagnetics techniques implemented through software tools like CST Studio suite, FEKO electromagnetic simulation software and MATLAB. Experimental work is carried out using exposure of active implants inside built human phantom against lightning radiation generated in the laboratory space.  
*Skills acquired:* Antenna Design & modelling, Expertise in software tools like CST Microwave Studio, FEKO, LTSpice, MATLAB and Simulink, Well versed in implementation of Computational Electromagnetic techniques, Technical writing skills and Presentation Skills.
- M.Tech.    **1. Optimal design of zig-zag antenna with nonlinear segment length and pitch angle.**  
Developed a methodology for the optimal design of non uniform Zig-Zag antenna for desired resonant characteristics. Segment length and Pitch angle are non-linearly varied along the axis of antenna. Dev C++ is the platform used. Modeling and Analysis is done using NEC2 software tool. Developed the designed antenna using fabrication method and the antenna performance is evaluated using vector network analyser and power meter.  
*Skills acquired:* Antenna Design & Antenna testing, Familiarization of software tools like Dev C++, NEC2, Prezi.
- 2. FPGA Implementation of Distributed Arithmetic FIR filter Using VHDL.**  
FPGA implementation of the FIR filter with distributed arithmetic architecture is carried out. DA architecture is developed using VHDL. Output is observed through the Chipscope-pro output viewer.  
*Skills acquired:* FPGA, VHDL.

## Academic Projects (continued)

- B.Tech.    **■ KSEB Line Monitoring System.**  
Monitor the entire KSEB lines continuously to provide information of units consumed. Provide different ratings per unit consumption and disconnect the lower priority devices during the peak hours. The system works on the Ethernet; Turbo C is the platform used.

## Research Publications

### Journal Articles

- 1 Vadukkoot, A., & Sunitha, K. (2024). Risk assessment of deep brain stimulator implant against incident lightning electromagnetic radiation. *IEEE Transactions on Electromagnetic Compatibility*, (Early Access).
- 2 Vadukkoot, A., & Sunitha, K. (2023). Time-domain analysis of the impact of advanced building construction materials on the propagation of lightning electromagnetic field and its mitigation using nanoforging. *IEEE Transactions on Electromagnetic Compatibility*, 65(2), 507–517. <https://doi.org/10.1109/TEMC.2023.3241294>
- 3 Anjitha Vadukkoot, K. R. S., & Karakkad, S. (2022). Influence of meteorological parameters on the propagation of lightning electromagnetic fields. *Journal of Electromagnetic Waves and Applications*, 36(9), 1323–1338. <https://doi.org/10.1080/09205071.2021.2024456>

### Conference Proceedings

- 1 V, A., & K, S. (n.d.). *Quantitative evaluation of the effect of human body exposure to indirect lightning electromagnetic field* [2023 9th International WIE Conference on Electrical and Computer Engineering (WIECON-ECE)].
- 2 V, A., & K, S. (2023). *Effect of aperture polarization on lightning electromagnetic field enhancement inside building structures at near and far striking distance*. <https://doi.org/10.1109/APEMC57782.2023.10217401>
- 3 Anjitha, V., Sunitha, K., & Ravishankar, K. (2021). *Time domain analysis of the effect of apertures on the shielding effectiveness of buildings*. <https://doi.org/http://dx.doi.org/10.2139/ssrn.3790208>
- 4 Ravishankar, K., V, A., & K, S. (2021). *Quantitative analysis of the effect of nanoforging on the shielding effectiveness of building construction materials*. <https://doi.org/10.1109/CATCON52335.2021.9670488>
- 5 Rajan, B. K., & Anjitha, V. (2017). *Braille code conversion to voice in malayalam*. <https://doi.org/10.1109/ICCSP.2017.8286452>
- 6 Jose, A., Deepa Merlin Dixon, K., Joseph, N., George, E. S., & Anjitha, V. (2014). *Performance study of edge detection operators*. <https://doi.org/10.1109/EmbeddedSys.2014.6953040>
- 7 Anjitha, V., & Kumar, S. (2012). *Optimal design of zig-zag antenna using nonlinear segment length and pitch angle* [2nd International Conference on Communication, Computing and Security [ICCCS-2012]]. <https://doi.org/https://doi.org/10.1016/j.protcy.2012.10.097>

### Book Chapters

- 1 Anjitha, V., & Sunitha, K. (2024). Shielding effectiveness of active medical implants and the potential use of metallic metamaterials. In *Handbook of nano-metamaterials*. Springer Nature.

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Anjitha, V., Sunitha, K., Ravi Shankar, K., & Jagadeesh Kumar, I. (2021). Influence of slots in enhancing the field due to lightning electromagnetic radiation inside building structures. In T. Sengodan, M. Murugappan & S. Misra (Eds.), *Advances in electrical and computer technologies* (pp. 1129–1138). Springer Nature Singapore.

## Awards/Achievements

- Best paper award in the 4th International Conference on Systems, energy, and Environment (ICSEE 2021), Govt. Engg. college Kannur, Kerala, during 22–23 January 2021.
- Elite silver grade for the NPTEL Swayam course on Computational Electromagnetics in the year 2019.
- Highest CGPA for M.Tech awarded by the University of Kerala in 2012.
- 3rd Rank for B.Tech Electronics and Communication Engineering awarded by the University of Calicut in 2010.
- College topper for B.Tech Electronics and Communication Engineering (2010).
- Architects and Engineers Association award for academic proficiency for the year 2009 – 2010.
- 18th rank in the 10th Board examinations, March 2004.
- District Topper in Science Aptitude Test (conducted by Regional Council for Educational Research and Development, Regional Trust, Kerala) in 2003.
- IEEE Student member for five years.
- Member of Electromagnetic Compatibility Society for five years.

## Trainings, Short Term Courses & Workshops Attended

- Participated in the Pre-Conference Workshop of the 2023 Joint APEMC & INCEMIC Symposium held in Bengaluru, India on 22nd May 2023.
- Participated in the L4 series talk on “Surface Electromagnetics: Physics Exploration and Engineering Application” conducted by IEEE MTT-S & IEEE AP-S Kerala chapter on 25/09/2021.
- Participated in the Webinar on “Human heart modelling and simulations with Capvidia FlowVision” organized by SCMS school of engineering and technology on 05/06/2020.
- Attended webinar on “Waveguide modes and antennas” conducted by Bennet University in association with Numeregion Pvt. Ltd on 26/05/2020.
- Attended a 3 day workshop on “Recent Trends in RF and Microwave Techniques and Measurements” held at Indian Institute of Space Science and Technology (IIST), Valiamala, Thiruvananthapuram, from 18 - 20th July 2012.
- Attended industrial training at Indian Telephone Industries, Palakkad in May 2011 for a period of one month, familiarizing the functioning of the industry.

## References

**Dr. Sunitha K**  
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