DR. AYUSH SAXENA

ASSISTANT PROFESSOR
ELECTRICAL ENGINEERING DEPARTMENT
VJTI, MUMBAI-19

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EDUCATION:

Ph. D. (Full Time, Completed in 2016)
Electrical Engineering,
Veermata Jijabai Technological Institute (VJTI),
Mumbai, Maharashtra, India

- Thesis Topic: Study and Simulation of High Power Microwave Devices.
- Supervisor: Professor Navdeep M. Singh
- Thesis defended on 24/06/2016

Master of Technology (M. Tech) (2009)
in Electrical Engineering with Specialization in Control Systems,
Veermata Jijabai Technological Institute (VJTI),
Mumbai, Maharashtra, India

- Dissertation Topic: Control Theory & Optimization
- Supervisor: Professor Navdeep M. Singh
- Grade: CPI 8 (out of 10)

Bachelor in Technology (B. Tech) (2007)
Electrical Engineering,
B.S.A. College of Engineering & Technology,
Mathura, Uttar Pradesh, India

- Grade: First Class (73.16%)

RESEARCH EXPERIENCE:

Senior Research Fellow, After Ph.D. Thesis Submission Sep 2015 – June 2016
Centre of Excellence in Complex and Nonlinear Dynamical Systems (CoE-CNDS), VJTI, Mumbai, India

- Worked on Larsen & Toubro funded Consultancy Project on "Electromagnetic Field Computations of Complex Geometries"
- Duration 9 months

Senior Research Fellow, During Ph.D. for 3 years Aug 2012 - July 2015
Worked on the BRNS-DAE funded project with Accelerated Pulsed Power Division, Bhabha Atomic Research Centre, Mumbai.

- Computer Simulation of High Power Microwave Devices such as Relativistic Magnetrons and Virtual Cathode Oscillators.
- It was a collaborative research activity between VJTI and BARC.
- The collaboration work resulted in three IEEE Journal Publications and several other publications in reputed conferences and journals.

TEACHING EXPERIENCE:

Assistant Professor, Electrical Engineering Department, V.J.T.I., Mumbai. **April 2024 Onwards**

Associate Professor,
Electronics & Telecommunication Engineering Department, Dr. D. Y. Patil University, Ramrao Adik Institute of Technology, Nerul, Navi Mumbai. **Jan 2017 – March 2024**

Assistant Professor, **July 2016 - Dec 2016**
Electronics & Telecommunication Engineering Department, Ramrao Adik Institute of Technology, Nerul, Navi Mumbai.

- **JOURNAL PAPERS**

1. Vengurlekar, J., & **Saxena, A.**, "Annular Beam Driven Metamaterial Backward Wave Oscillator", International Journal of Experimental Research and Review, Vol. *37*, 131-138, 2024. https://doi.org/10.52756/ijerr.2024.v37spl.011.
2. Banerjee, Tusharika S, **Ayush, Saxena**, Arti, Hadap, and T V Reddy, K. "Investigation of non-uniform magnetic field on the beam particle energy exchange". Springer, Pramana 96, no.3 (2022): 113. https://doi.org/10.1007/s12043-022-02350-x
3. Tusharika S. Banerjee, Arti Hadap, **Ayush Saxena**, A, KTV Reddy, "Enhanced efficiency of C-band sheet beam driven backward wave oscillator guided by periodic magnetic field", **Microwave Optical Technology Letters**, 2020; 1– 7, https://doi.org/10.1002/mop.32634.
4. Tusharika S. Banerjee, **Ayush Saxena**, et.al., "Particle-in-cell simulation of a RBWO with experimental voltage input pulse and external magnetic field", **Physics Open, Elsevier**, Volume 3, 2020, https://doi.org/10.1016/j.physo.2020.100015.
5. G.T.V. Prabu, B. Dhurai & **A. Saxena**, "Influence of high voltage polarity in multi-pin upward electrospinning system on the Fiber morphology of poly (vinyl alcohol)", **Journal of Polymer Research** 27, 47 (2020), https://doi.org/10.1007/s10965-020-2005-0.
6. Tusharika S Banerjee, **Ayush Saxena**, Arti Hadap, K. T. V. Reddy, Apoorva Saxena, "Design and Performance Improvements in an A6 Relativistic Magnetron Using Particle-in-cell Code," **Universal Journal of Electrical and Electronic Engineering**, Vol. 6, No. 3, pp. 115 - 128, 2019, DOI:10.13189/ujeee.2019.060305.
7. **A. Saxena**, A. Roy, K. Kanakgiri, S. Petkar, F.S. Kazi and N.M. Singh," Particle-in-cell modeling of axial and coaxial virtual cathode oscillators", **IEEE Transactions on Plasma Science**, July 2016, DOI:10.1109/TPS.2016.2596879.
8. **A. Saxena**, N.M. Singh, K.Y. Shambharkar, F. S. Kazi, "Modeling of Reflex Triode Virtual Cathode Oscillator," **IEEE Transactions on Plasma Science**, vol.42, no.6, pp.1509,1514, June 2014. DOI: 10.1109/TPS.2014.2303854
9. **Ayush Saxena**, Barakade Raju, Singh Navdeep M., Patel Ankur, "Comparative analysis of radial and axial power output in relativistic magnetron and effect of dielectric side-walls introduced in the resonator on dominant operating mode" **European Microwave Association, Cambridge journals**, IJMWT, pp. 645, 2014, DOI: 10.1017/S1759078714000269.

10. **Ayush Saxena**, Somesh Tewari, Navdeep Singh, Archana Sharma & K Mittal "Simulation of Breakdown Mechanism In High Power Spark Gaps Filled With Nitrogen Gas at Atmospheric Pressure", **Taylor & Francis Journals, Radiation Effects and Defects in Solids**, Jan, 2015, DOI:10.1080/10420150.2014.998671.
11. S.V. Tewari, A. Roy, A. Sharma, K.C. Mittal, D.P. Chakravarthy, **A. Saxena**, N.M. Singh, "Particle-in-Cell Simulations of Discharge Along Gas–Solid Interface," **IEEE Transactions on Plasma Science**, vol.41, no.3, pp.578,584, March 2013, doi:10.1109/TPS.2013.2241080.

- **INTERNATIONAL CONFERENCE PAPERS**

1. Nidhi Singh, **Ayush Saxena** and Chandrakant Gaikwad, "Analysis of Specific Absorption Rate (SAR) on Human Head and Brain Under Exposure to Electromagnetic Radiation in Indoor and Outdoor Environment," 2022 SARC International conference (IJEEDC) journal, Mumbai, India 2022, pp. 53-60.
2. Amey Salunkhe, Ashwini Naik, **Ayush Saxena**, "Analysis of 2x2 Microstrip Patch Array Antenna Using Various Feeding Techniques", International Conference on Advanced Electrical and Electronics Engineering (ICAEEE), Pune, India, June 2022. ID: SA-AEEE-PUNE-010622-3021.
3. Rishav Das, **Ayush Saxena**, Sharmila Petkar, "Investigating the role of Machine Learning Techniques in Performance Prediction of High Power Microwave Devices", VSTAA 2022, DAE-BARNS, BARC, Mumbai, Feb. 2022. www.vstaa2022.com
4. Jyoti V. **Ayush S.** et. al, "Impact on Efficiency of High-Power Vacuum Electron Devices inspired by Metamaterials: A Review", VSTAA 2022, DAE-BARNS, BARC, Mumbai, Feb. 2022. www.vstaa2022.com
5. J. P. Vengurlekar, R. Dash and **A. Saxena**, "Estimation of Simulated Particles in Magnetron using Image Color Detection," 2021 6th IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE), Dec. 2021, pp. 1-4, DOI: 10.1109/ICRAIE52900.2021.9704022.
6. T. S. Banerjee, **A. Saxena**, et.al, "Annular Beam Driven Metamaterial Backward Wave Oscillator", Conference on Technologies for Future Cities (CTFC 2021), PCoE, Navi Mumbai, Oct. 2021. ISBN: 978-1-6654-2501-8.
7. S. B. Umbarkar, **A. Saxena** et al., "Particle in cell simulation of peaking switch for breakdown evaluation," 2014 International Symposium on Discharges and Electrical Insulation in Vacuum (ISDEIV), Mumbai, 2014, pp. 297-300, doi: 10.1109/DEIV.2014.6961678.
8. A. S. Deshpande, **A. Saxena** et al., "Electrodynamic analysis and characterisation of void discharge using particle in cell code," 2013 19th IEEE Pulsed Power Conference (PPC), San Francisco, CA, 2013, pp. 1-6, doi: 10.1109/PPC.2013.6627681.
9. S. V. Tewari**, A. Saxena** et al., "Computational model of discharge across a gas/solid interface at high pressure," 2012 International Conference on Emerging Trends in Science, Engineering and Technology (INCOSET), Tiruchirappalli, 2012, pp. 532-535, doi: 10.1109/INCOSET.2012.6513960.

- **BOOK PUBLICATION**

1. **Ayush Saxena,** Amitava Roy, Navdeep M. Singh, "High Power Microwave Devices: Modeling and Simulation", Lambert Academic Publishing ISBN 978-3- 659-85388-3, Aug. 2017.

- **NATIONAL CONFERENCE PAPERS**

1. Vrishali Patil, Pallavi Sapkale, **Ayush Saxena** and Shital Mali, "Design and Performance Evaluation of a Planar BiQuad Antenna Operating at 2.4GHz", 2nd International Conference for Emerging Technology (INCET) Belgaum, India. May 21-23, 2021.

2. **Ayush Saxena,** Akash Baidya, Sumeet K, "Magnetic Signature Estimation and Degaussing of Naval Vessels using Electromagnetic Simulations", Young Scientist's Conference, India International Science Festival, Kolkata, Nov. 19.

- **AWARDS**

1. Awarded "**2nd Prize**" in Technical Papers category in the National-Level Student's Conference on Frontiers in Engineering & Technology, RAIT, Nerul, Navi Mumbai, 2019.
2. Participated in **E-Yantra Ideas Competition (eYIC-2018) Regional Finals** held at K. J. Somaiya College of Engineering, Mumbai organized by the department of computer science and engineering, IIT Bombay, 2018.
3. Received '**Elsevier Reviewer Recognition**' for reviewing a paper in the "Journal of Magnetism and Magnetic Materials", Elsevier, 2018.
4. Awarded "**Best Teacher**" in the department of Electronics & Telecommunication Engineering during 2017-18, RAIT, Nerul, Navi Mumbai.
5. Awarded "**Four Star Performer**" for overall academic performance in 2016-17, RAIT, Nerul, Navi Mumbai.