

**Dr. TARUN KUMAR**

70, Devlok Colony  
 Shimla Bypass Road,  
 Dehradun – 248171, Uttarakhand (INDIA)  
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 Mobile No.: 9897783009, 6398790120

**ACADEMIC DETAILS**

Examination	Specialization	University/Institute	Year
Ph.D.	<i>Electronics &amp; Communication Engineering</i>	JIIT Noida, U.P (India)	2017
M.Tech	<i>Communication Systems &amp; Signal Processing</i>	JIIT Noida, U.P(India)	2008
B.Tech	<i>Electronics &amp; Telecommunication Engineering</i>	IETE, New Delhi(India)	2003
Diploma	<i>Electronics Engineering</i>	Govt. Poly. N.Nagar, Uttarakhand (India)	1996
Intermediate	<i>Physics, Chem., Math</i>	U.P. Board, Allahabad (India)	1993
High School	<i>Physics, Chem., Math, Bio.</i>	U.P. Board, Allahabad(India)	1991

**ACADEMIC IDENTITY**

**Vidwan-ID : 96334**  
**Orcid Id : 0000-0001-6011-8498**  
**Scopus Id: 56048181400**  
**Researcher Id: T-8152-2018**  
**Linkedin Profile: [linkedin.com/in/dr-tarun-parashar-9564b01b](https://www.linkedin.com/in/dr-tarun-parashar-9564b01b)**

**RESEARCH INTEREST**

1. Electromagnetic Metamaterials, Photonics and their applications in Sensors.
2. Microstrip Antennas and their designing using Machine Learning.

**PROFESSIONAL EXPERIENCE (13 Years Teaching + 3 Years Non-teaching)**

Organization	Designation	Duration
JAIN University, Bangalore (India)	<i>Associate Professor</i>	01/09/2020-29/06/2022
University of Petroleum and Energy Studies, Dehradun(India)	<i>Assistant Professor(SS)</i>	12/01/2015-31/08/2020
Swami Rama Himalayan University, Dehradun(India)	<i>Assistant Professor</i>	08/07/2013- 26/08/2014
ABES Institute of Technology, Ghaziabad	<i>Assistant Professor</i>	02/06/2010-25/ 06/2013
Institute of Technology and Management, Gurgaon(India)	<i>Assistant Professor</i>	25/06/2009- 01/ 06/2010
IMS Engineering College, Ghaziabad (India)	<i>Lecturer</i>	15/07/2008-24/06/2009
NTRO (Govt. of India)	<i>Service Engineer (Contractual)</i>	08/04/2005-30/04/2006
IILM Academy of Higher Learning, Gr. Noida(India)	<i>Lecturer Trainee</i>	04/01/2004- 07/04/2005
Unique Tele Systems, New Delhi (India)	<i>Service Engineer</i>	02/08/2000-02/07/2002

**JOB DESCRIPTION AT National Technical Research Organisation (NTRO)**

Worked as a Technical Support Personnel on Contract basis for one year at NTRO Earth Station, Mayur Vihar Phase-I, Delhi.

**Responsibilities:**

- Satellite Tracking in S-band and X-Band (2225 MHz, 2295 MHz, 8150 MHz, 8250 MHz and 8350 MHz)
- Antenna maintenance (11 m and 8 m diameter Cassegrain Feed)
- Boresight Alignment using VHF link

**SKILLS**

- **Online Teaching Tools:**

1. Blackboard Collaborate
  2. Zoom
  3. Google Classroom
  4. Text Book Solution (TBS) Expert and Subject Expert with *cheggindia.com*.
- **Antenna Fabrication:** Worked with EP42NV PCB prototype Machine for Microstrip Patch Antenna Fabrication.
  - **Numerical Simulation Tools:** MATLAB and OCTAVE.
  - **RF & Microwave Tools:** Advanced Design Systems (ADS) and ANSYS HFSS.
  - **Documentation Tools:**  $\text{\LaTeX}$ , MS Office.

## PUBLICATIONS

### International Journals:

#### SCI

1. Tarun Kumar, Natarajan Kalyanasundaram and Geetam Singh Tomar, "Theoretical and Numerical Analysis of the Effective Medium Properties of a Ferromagnetic Microwire Lattice," published online in *Waves in Random and Complex Media*, Taylor & Francis on Feb 23, 2022 (Print ISSN: 1745-5030 Online ISSN: 1745-5049) DOI: 10.1080/17455030.2022.2039801.
2. Tarun Kumar and Natarajan Kalyanasundaram, Effective medium properties of a ferromagnetic microwire grid, *Waves in Random and Complex Media*, vol. 32, no.1, pp. 424-448, year 2022, (Print ISSN: 1745-5030 Online ISSN: 1745-5049), Taylor & Francis. (SCI)
3. Tarun Kumar, Natarajan Kalyanasundaram, Bhaurao K. Lande, "A Generalized case of the electromagnetic scattering from an array of ferrite cylinders", *Waves in Random and Complex Media* (Print ISSN: 1745-5030 Online ISSN: 1745-5049), Taylor & Francis, vol. 25, Iss. 4, 2015, pages 587-607. (SCI)

#### SCOPUS

1. T. Kumar and N. Kalyanasundaram, "A novel DNG medium formed by ferromagnetic microwire grid," *Progress In Electromagnetics Research B*, Vol. 74, 155-171, 2017. (ISSN: 1937-6472, SCOPUS)
2. T. Kumar, N. Kalyanasundaram, B. K. Lande, "A Generalized case of Electromagnetic Scattering from a finite number of Ferromagnetic cylinders", *Advanced Electromagnetics*, vol 4, No 3 (2015), pages 8-16. ISSN: 2119-0275. (ISSN: 2119-0275, SCOPUS/ESCI)
3. T. Kumar, N. Kalyanasundaram, and B. K. Lande, "Analysis of the generalized case of scattering from a ferromagnetic microwire grid", *Progress In Electromagnetics Research M*, vol. 35, 1-10, 2014. (ISSN: 1937-8726, SCOPUS/ESCI)

#### Other Journals

1. Mohit Coudhary, Tarun Kumar, Shashank Sharma, Yash Vashist, "Ultra-Wideband Hexagonal Patch Antenna for Ku Band," *International Journal for Science and Advance Research In Technology (IJSART)* ISSN: 2395-1052 Volume No. - 4, Issue No. - 4, April 2018
2. Tanisha Gupta, Tarun Kumar, Nidhi Awasthi, "Design of a CPW fed Complementing E shaped patch antenna," *International Journal of Modern Electronics and Communication Engineering (IJMECE)* ISSN: 2321-2152 Volume No. - 6, Issue No. - 2, March 2018
3. Mohit Coudhary, Tarun Kumar, Shashank Sharma, Yash Vashist, "Multiband Hexagonal Patch Antenna," *International Journal of Modern Electronics and Communication Engineering (IJMECE)* ISSN: 2321-2152, Volume No. - 6, Issue No. - 2, March 2018
4. Hemraj Choudhary, Tarun Kumar "Microstrip Antenna for Automobile Communication Systems," *International Journal of Aerospace and Mechanical Engineering*, Volume 5 – No.1, February 2018.
5. Swati and Tarun Kumar, "Dual band Equilateral triangular Patch Antenna," *IJCEM*, vol. 15, issue-5, Sep. 2012.

6. Swati, Tarun Kumar and Amul Aggarwal, "Design of split ring slot Triangular Patch Antenna," IJSRET, vol. 1, issue-3, July 2012.
7. Swati, Tarun Kumar and Amul Aggarwal, "Design of split ring slot circular patch antenna," IJRPES, vol. I-1, May 2012.

## National/International Conferences

1. Tarun Kumar, Basavraj D. R. " Anti-Drone Systems: A Review", presented in the National Conference JNANA CHILUME, held on 25 Nov. 2020 at JAIN University Bangalore (INDIA).
2. Pant, Vishal; Choudhary, Yogendra; Sharma, Abhinav; Kumar, Tarun; Gowri, R, A novel compact UWB antenna for wireless applications, Advances in Intelligent Systems and Computing, Volume 989, Year 2020, Pages 833-840.
3. Tarun Kumar and Abhinav Sharma, "Analysis of the Electromagnetic Scattering from Two Crossed Ferromagnetic Microwires", presented in ICSC-2019, held on 19-21 April 2019 at THDC Institute of Hydropower Engineering & Technology, New Tehri, Uttarakhand, India.
4. Tanisha Gupta and Tarun Kumar, "A Dual band high gain patch antenna with reduced cross polarization levels designed for X and Ku band", submitted to the International Conference on Intelligent Communication Control and Devices (ICICCD 2018) to be held at UPES, Dehradun on 21-22 December 2018.
5. Tarun Kumar, "Analysis of the Scattering from a Ferromagnetic Microwire using Impedance Boundary Condition", Proceedings of the International Conference on Intelligent Sustainable Systems (ICISS 2017) held in Bhopal (M.P) on December 24, 2017, ISBN:978-1-5386-1959-9.
6. Tarun Kumar, "Analysis of the Effective permittivity and Effective permeability of a grid of ferromagnetic microwires", presented in UPCON2015, IEEE UP Section Conference on Electrical, Computer and Electronics held at IIIT Allahabad on 4-6 Dec 2015.
7. Tarun Kumar and R.C.Jain, "A Comparative study of the Electromagnetic Scattering from an array of Ferromagnetic cylinders at oblique incidence", accepted in 10th International Conference on Microwave Antenna & remote Sensing (ICMARS 2014) held in Jodhpur on Dec. 9th-12th 2014.
8. Tarun Kumar, "Design of a Linear, Broadside, 2-Element Equilateral Triangular Patch Antenna Array" Presented in National Conference on Advances in Microwave Communication, Devices and Applications in association with IEEE MTT-S India council and IETE, Jaipur, held at RIET, Bhankota, Jaipur on 16-17 Feb.2010.
9. Tarun Kumar, "Comparison of Coaxial & Microstrip line fed Equilateral triangular Patch Antenna", Presented in National Symposium on Advances in Microwave Materials, Devices & Applications held on 12th December 2009 at JEC, Kukas (Rajasthan) in association with IEEE MTT-S/IETE.

## CONSULTANCY/COLLABORATION

Engaged in the Collaborative Research project on Electromagnetic Phenomenon in Electrical Systems with:  
**Antarriksh Inc., 1196, McKay Drive, San Jose, California, U.S.A, Ph. No. +1 4084647599**

## JOURNALS REVIEWED

- Wave in Random and Complex Media (Taylor & Francis), Indexing: SCI.
- The Applied Computational Electromagnetics Society Journal (ACES), Indexing: SCI.
- International Journal of Microwave and Wireless Technologies, Indexing: SCI.
- Advanced Electromagnetics, Indexing: SCIE.

## DOCTORAL THESIS

**Title:** Analysis & Design of Metamaterials using Ferromagnetic Microwires.

**Supervisor:** Prof. R.C Jain (*Former supervisor: Prof. N. Kalyansundaram*). ECE Deptt. IIIT Noida.

**External-Supervisor:** Prof. B.K.Lande, Swami Rama Himalayan University, Jolly Grant, Dehradun.

**Summary of work:** The thesis involves the analysis of a generalized case of scattering from a grid consisting of an infinite number of ferromagnetic microwires. A generalized solution for the diagonal components of tensor effective permittivity and permeability is obtained for an artificial medium formed by such a ferromagnetic microwire grid. The analysis of effective permittivity and permeability is done through calculating the average and local field components within a unit cell. The work is also extended to a linear  $1 \times 6$  and planar  $2 \times 3$  array of finite number of ferromagnetic microwires. There are various techniques such as iterative technique, method of moment and boundary value type solutions available in the literature for the analysis of electromagnetic scattering. Among them, boundary value type solution is found to be more accurate. Therefore, a boundary value type solution is obtained for electromagnetic scattering. Scattering field coefficients are obtained by matching the tangential field components at the surface of microwires.

#### MASTER'S THESIS

**Title:** Design, Development & Analysis of Microstrip antenna for Space applications.

**Supervisor:** Prof. Samir Dev Gupta, ECE Deptt. IIIT Noida.

**Summary of work:** The work has been dedicated to the optimization of a equilateral triangular patch antenna and its design considerations with the simulations of edge feeding techniques using the ADS (2006) RF Momentum tool. The simulation results obtained herewith are compared to a coax fed triangular patch antenna of same dimensions and configuration. Though different arrays can be created using the ETP, the work includes the twin patch and corporate feeding technique to form two different designs of  $1 \times 2$  arrays. The work was carried out with the evaluation of the input impedance of ETP (Equilateral Triangular Patch) at the centre of edge by and indirect method.

#### MASTER'S THESIS SUPERVISED

**Topic:** "Designing and Analysis of Broadband Microstrip Patch Antenna"

**Student's name:** Ms. Swati Siddhu

**University/Institute:** ABES Engineering College (Ghaziabad)/GBTU/MTU, INDIA.

#### DOCTORAL THESIS SUPERVISING

- **Topic:** "Analysis & Design of Phased Array Antenna using Machine Learning "  
**Scholar's name:** Mr. Basavraju D.R.  
**University/Institute:** JAIN University , Bangalore (INDIA).
- **Topic:** "Video De-noising using Random Forest Algorithm"  
**Scholar's name:** AMULYA H. G.  
**University/Institute:** JAIN University , Bangalore (INDIA).

#### DOCTORAL THESIS EXAMINED

**Topic:** "Development of intelligent radiating elements: a near field excitation approach"

**Scholar's name:** A. Kotrashetti

**University/Institute:** Assam Don Bosco University, Guwahati (Assam) INDIA.

#### WORKSHOPS/CONFERENCES/FDP ATTENDED

##### On-line

1. Attended Virtual Mini Colloquia (MQ) on "Advances in III-N Devices and Systems" Organized by IEEE EDS Delhi Chapter (New Delhi, India) during June 01-06, 2022.
2. Participated in online TEQIP sponsored Short Term Training Program on "Emerging Trends in VLSI Design" from September 12- September 16, 2020 organized by SV NIT, Surat, India.

3. Successfully completed Mathematics for Machine Learning: PCA a 4 WEEKS course offered through Coursera on 07/10/2020 authorized by Imperial College London.
4. Successfully completed Mathematics for Machine Learning: Multivariate Calculus a 6 WEEKS course offered through Coursera on 12/09/2020 authorized by Imperial College London.
5. Successfully completed Advanced Instructional Strategies in the Virtual Classroom a 5 WEEKS course offered through Coursera on 10/09/2020 authorized by University of California, Irvine.
6. Successfully completed Grammar and Punctuation a 4 WEEKS course offered through Coursera on 2/9/2020 authorized by University of California, Irvine.
7. Successfully completed Performance Assessment in the Virtual Classroom a 6 WEEKS course offered through Coursera on 25/08/2020 authorized by University of California, Irvine.
8. Successfully completed Neural Networks and Deep Learning a 4 WEEKS offered through Coursera on 16/08/2020 authorized by deepLearning.AI.
9. Successfully completed Mathematics for Machine Learning: Linear Algebra a 5 WEEKS course offered through Coursera on 12/08/2020 authorized by Imperial College London.
10. Successfully completed Speak English Professionally: In Person, Online & On the Phone a 5 WEEKS course offered through Coursera on 11/08/2020 authorized by Georgia Institute of Technology.
11. Successfully completed Python Programming Essential a 4 WEEKS course offered through Coursera on 10/08/2020 authorized by Rice University.
12. Successfully completed Emerging trends & Technologies in virtual K-12 classroom a 5 WEEKS course offered through Coursera on 04/08/2020 authorized by University of California, Irvine.
13. Successfully completed AI For Everyone an online non-credit 4 weeks course authorized by deeplearning.ai and offered through Coursera on 07/12/2020.
14. Successfully completed three days Faculty Development Program on “ Outcome Based Education (OBE)” from May 18-20, 2020 organized by School of Engineering, UPES, Dehradun (INDIA).
15. Successfully completed Foundations of Virtual Instruction; an online non-credit course authorized by University of California, Irvine on May 31, 2020.

#### **Off-line**

1. Participated in One Week Short Course/FDP on AI and Machine Learning from 23rd December- 27th December, 2019, Recognized by AICTE at par with QIP for recognition/credits by EICT, IIT Roorkee, India.
2. Participated in ICSC-2019, held on 19-21 April 2019 at THDC Institute of Hydropower Engineering & Technology, New Tehri, Uttarakhand, India.
3. Participated in Faculty Development Program on AI and Machine Learning from 04-08 June 2018 at IIT Roorkee (INDIA)
4. Attended TEQIP sponsored one week short term course on "Recent Trends in Microwave Engineering" from 12-16 February 2108 at THDC Institute of Hydropower Engineering & Technology, B Puram, New Tehri (Uttarakhand) India.
5. Participated in International Conference on Intelligent Sustainable Systems (ICISS 2017) held in Bhopal (M.P), India, on December 24, 2017.
6. Participated in FDP on Electromagnetics, Antenna, Microwave & RF Design Using ANSYS HFSS Tool Entuple Technologies Pvt Ltd., 2730, 80 Feet Road, HAL 3rd Stage, Indiranagar, Bangalore (India) - 560038 from May 31-June 3, 2016.
7. Participated in UPCON2015, IEEE UP Section Conference on Electrical, Computer and Electronics held at IIIT Allahabad (India) on 4-6 Dec 2015.
8. Participated in 10th International Conference on Microwave Antenna & remote Sensing (ICMARS 2014) held in Jodhpur (India) on Dec. 9th-12th 2014.

9. Participated in National Conference on "Microwave Antennas and Remote Sensing (NMARS)" in association with IEEE held on 07-08 June, 2013 at GEHU Dehradun (U.K),India.
10. Participated in Science Academies Lecture Workshop on Frontiers in Science & Engineering - Opportunities for Graduates February 17-18, 2012 at University of Delhi South Campus, Benito Juarez Road, Dhaula Kuan, New Delhi(India).
11. Participated in Intensive workshop on Microwave Tubes held on 27th Nov. 2010 at IIIT Noida (India).
12. Participated in Workshop on COMSOL Multiphysics held on 28th April 2011 in Delhi (India).
13. Participated in 4 days Faculty Development Program (FDP) from 4th- 7th Jan. 2010 at ITM Gurgaon (India).
14. Participated in National Conference on Advances in Microwave Communication, Devices and Applications, being organized by RIET, Bhankrota, Jaipur in association with IEEE MTT-S India council and IETE, Jaipur (India), on 16-17 Feb.2010.
15. Participated in Joint symposium of IEEE MTT-S/IETE on Microwave Materials, Devices & Applications held on Dec. 12, 2009 at Jaipur Engineering College, Kukas, Jaipur (India).
16. Participated in Joint Symposium by IETE & IEEE on Microwave Technologies held on 25th Nov. 2008 at India International Centre Annexe, Lodhi Estate, New Delhi 110003 (India).

#### WORKSHOPS/GUEST LECTURES ORGANISED

1. Organised guest lecture on "Emerging trends in Microstrip Antenna" at UPES, Dehradun (Uttarakhand) in 2019.
2. Organised guest lecture on "5G-Communication" at University of Petroleum and Energy Studies, Dehradun (Uttarakhand) in 2018.
3. Organised workshop on "Amateur Radio" at University of Petroleum and Energy Studies, Dehradun (Uttarakhand) in 2016.
4. Organised guest lecture on "Communication and non-communication applications of Microwave" at ABES Institute of Technology Ghaziabad (U.P) in 2012.
5. Organised a YOGA session at ABES Institute of Technology Ghaziabad (U.P) in 2012.

#### PROFESSIONAL MEMBERSHIP

1. Member of the International Association of Engineers (IAENG) (*Membership No.- 287315*).
2. Associate Member of Industrial Engineering and Operations Management (IEOM) Society International (*Membership No.- 1437595*).
3. Life Member of The Institution of Electronics and Telecommunication Engineer (IETE), Lodhi road, New Delhi, India. (*Membership No.- M117383*).
4. Associate Member of the International Association of the Innovation Professionals (IAOIP) (*Membership No.- 5458*).

#### TEACHING INTEREST

- Electromagnetic Field Theory
- Antenna and Wave Propagation
- Microwave Engineering
- Digital Signal Processing
- Signals and Systems
- Radar Technology

#### ADMINISTRATIVE RESPONSIBILITIES

1. Programme Head of UG Programme since March 2022 at JAIN University Bangalore.

2. Mentorship of B.Tech ECE-5A students and NBA in-charge of P28 file since Jan 2021 at JAIN University Bangalore.
3. Course Coordinator and Activity Coordinator at UPES, Dehradun (Uttarakhand), India, for four years.
4. Examination Incharge at Swmai Rama Himalayan University Dehradun (Uttarakhand), India, for 1 year.
5. Department Coordinator at ABES-IT Ghaziabad (U.P), India, for 1 year.

#### PERSONAL DETAILS

<b>Father's Name:</b>	Late Shri Balu Singh Sharma
<b>Date of Birth:</b>	March 26, 1977
<b>Permanent Address:</b>	Punjabi Colony, Miranpur, Distt. Muzaffarnagar (U.P), 251315, INDIA
<b>Place of Birth:</b>	Muzaffarnagar (U.P), INDIA
<b>Religion/Caste:</b>	Sanatan Hindu/Brahmin
<b>Category:</b>	General
<b>Nationality:</b>	Indian

#### STRENGTHS

Innovative, Self motivation and Positive Attitude

#### INTEREST AND HOBBIES

Reading, Writing, Yoga and Research

#### REFERENCES

1. Prof. N. Kalyanasundaram, Department of Electronics & Communication Engineering, PES University, Bangalore-560085, India, Mob. +919910711944, Email-n.kalyanasundaram@yahoo.com.
2. Prof. Geetam Singh Tomar, Director, Rajkiya Engineering College, Sonbhadra (Uttar Pradesh), INDIA, Contact: +919425744440, E-mail: gstomar@ieee.org.
3. Dr. Suresh Kumar, Professor, Skill University, Sonapat (Haryana) INDIA, Contact: +918171491177, E-mail: skjesm@gmail.com.

(Tarun Kumar)

Date: July 16, 2022

Place: Bangalore(Karnataka),INDIA