



## Editor-in-Chief: Scanning the Issue

Dear members and readers,

The December issue of Microwave Review journal (Vol. 30, No. 2) presents the results of twenty research papers by authors from different Universities and countries.

The first paper relates to ***Compressed Sensing Image Communication in Rayleigh Fading Channel Using Polar Code*** by authors Arti Kumari and Sanjeet Kumar who are with the Birla Institute of Technology, India. In this work, the advantages of compressed sensing are used to significantly reduce the amount of data by exploiting sparsity of the standard images. The polar code is applied, known for its superior error correction capabilities, to protect the compressed data from channel induced errors.

The second paper, ***Meta-Material Inspired Circularly Polarized Semi-Circled Fractal Boundary Antenna for Broadband and Multiband Applications***, focuses on a simulation and experiments on a meta-material loaded circularly polarized semi-circled fractal antenna for at WLAN - 2.45 GHz frequency and Wi-MAX 3.4 GHz applications. The paper authors are Venkateshwar Reddy, Suman Nelaturi, Rama Sanjeev B R, and Sulakshana N from four different institutions from India: the Kakatiya Institute of Technology and Science, the Vignan's Foundation for Science, Technology & Research, the BV Raju Institute of Technology, and the Vardhaman College of Engineering.

The authors of the third paper entitled ***Lotus-Shaped Triple-Tuned Antenna with SRR Quadruplets for SDARS and Weather RADAR*** are Sanjay Singh, Vipul Sharma, and Atul Varshney with the Faculty of Engineering & Technology, Gurkula Kangri (Deemed to be University), and Narinder Sharma with the Amritsar College of Engineering and Technology, India. In this paper, a new type of modified rectangular patch antenna with seven arms lotus-shaped parasitic Split Ring Resonator loading is analysed, fabricated, and tested.

The fourth paper written by Prem Nath Suman and Gajendra Kant Mishra with the Birla Institute of Technology, India is ***Linearly Polarized High Gain Antennas with Dynamic Polarization Control***. This research introduces a microstrip antenna capable of complete polarization reconfiguration between horizontal and vertical polarization orientations at a fixed resonating frequency, by strategic placement of two p-i-n diodes within the slot.

The fifth paper title is ***Design and Analysis of a Defected Ground Structure T-Shaped Patch Antenna for IMT, WLAN, 5G, and 6G Applications*** by authors Yamiko Daniel Banda, Anupam Kumar Yadav, Manish Kumar, and Sandeep Kumar Singh, who are with the Sharda University, India. The article presents a compact penta-band antenna incorporating stacked T-shaped radiating elements, which parameters are tailored for the multiband applications such as in International Mobile Telecommunication, Wireless Local Area Networks, as well as 5th and 6th Generation mobile networks.

The sixth paper in Microwave Review includes design, fabrication, and experimental verification of the ultra-wideband monopole antenna with a low profile, compact size, low cross-polarization level, and more proficient radiation characteristics. The paper titled ***Compact Ultra-wideband Printed Monopole Antenna with Improved Radiation Characteristics*** is written by authors P. K. Mishra, T. K. Patnaik, R. K. Mishra with the GIET University, and Bhavani Prasad Pand with the Dept. of Physics, Chikiti Mohavidlaya, India.

The authors of the seventh paper - ***Performance Optimisation of Modified Multiband Apollonian Gasket Fractal Antenna Using Artificial Neural Network*** are Abdelbasset Azzouz, Rachid Bouhmidi and Mohammed Chetoui with the Faculty of Technology, Saida University, Algeria. This paper analyzes a unique structure of a modified apollonian gasket fractal antenna that was designed and its performance was optimized using artificial neural networks that enables a genuine analysis of its behaviour and performances.

The eighth paper entitled ***Comparative Analysis of OCGA-Based Sparse K/Ka Band Horn Antenna Structures at Different Frequencies*** is the results of the researchers Manh Tuan Nguyen, Adnan F. Alhaj Hasan, Talgat R. Gazizov with the Tomsk State University of Control Systems and Radioelectronics, Russian Federation. This paper considers different approaches (OCGA, EOCGA and NCOCGA) for generating the sparse structures and investigates the influence of the choice of frequency in the K/Ka band at which the horn antenna sparse structure is obtained on its resulting characteristics.

The ninth paper titled ***Efficiency Enhanced Sneezewort Plant Inspired Antenna for mm-wave Applications*** describes a five elements sneezewort plant-inspired antenna with efficiency above 98%, wide bandwidth, and consistent gain at mm-wave frequencies from 28 GHz to 160 GHz. The breadth of the branches and the number of elements in the design follow the Fibonacci pattern and the golden ratio. The authors of this paper are Tapan Nahar with the Marwadi University, Sanyog Rawat with the Central University of Rajasthan, Pallav Rawal with the Swami Keshvanand Institute of Technology, Management & Gramothan, and Vishal Das with the Manipal University, all from India.

The title of the tenth paper is ***Miniaturization Techniques for High-Performance Antenna Arrays in Cognitive Radio-Enabled IoT Devices***. The authors are Mohammed Z. Baba-ahmed, Mohammed A. Rabah, Rahma D.Taleb, and Fayza Bousalah

with different institutions from Algeria: the Faculty of Technology at Abou-bekr Belkaid University, and the Satellite development center at Algerian Space Agency. They investigate four-element antenna arrays in hybrid and parallel structures at 5.8 GHz, for IoT communications and cognitive radio.

The eleventh paper is *Development of Software Package for Radiation Pattern and Beam Sensing with Conformal Array Analysis* by authors Pinku Ranjan, Amit Sahu, Jayant Kumar Rai, and Rakesh Chowdhury with Department of Electrical and Electronics Engineering, ABV Indian Institute of Information Technology and Management, India. This paper presents a novel concept for creating a Graphical User Interface tool for analyzing the beamforming behavior and sensing the radiation pattern of planar-phased array antennas.

This twelfth paper entitled *5G Millimeter Wave Range Capacitive Feed Printed Dipole Antenna Array* proposes the electrodynamic model of the printed dipole array element with capacitive feed that can be used for wideband applications in 5G communication systems. The author of this paper is Armen V. Gevorkyan with the Southern federal university, Russia.

The thirteenth paper entitled *Microwave and mm-Wave Band-wise Microstrip Line-to-Waveguide Transitions: A Review* is written by Atul Varshney with the Faculty of Electronic and Communication Engineering Department, Gurukula Kangri (Deemed to be University), India. This study presents a detailed comparative review of microwave and mm-wave band-wise microstrip-to-waveguide transitions for MMIC/MIC as interconnects for transmitters and receivers, power dividers, combiners, detectors, etc. in microwave, mm-wave, and sub-mm-wave applications.

The fourteenth paper titled *Microwave Sensors for Arsenic Detection Using Folded Complementary Circular Ring Resonator* focuses on design, fabrication and testing of microwave sensor operating at around 2.4 GHz Wi-Fi frequency for rapid detection of arsenite/arsenate ions in water. The paper is written by authors with the Birla Institute of Technology, India: Sanyatjeet Pawde and Nisha Gupta.

The fifteenth paper, written by authors from Algeria: Ilhem Mired and Mohammed Debbal with the University of Ain Temouchant, and Hicham Chikh-Bled with the University of Tlemcen, is entitled *Photonics Crystal Fiber for Salinity Sensing Applications with A Large Negative Dispersion*. In this paper, a numerical evaluation of a novel Photonics Crystal Fiber (PCF) sensor, which was comprised of four rings, where the first ring is filled with seawater, is performed by varying the diameter in order to demonstrate that this PCF sensor represents a viable option for compensating dispersion in optical communication links.

The main result of the sixteenth paper entitled *Design and Development of a Quality-of-Service IHM for Wireless Optical Networks* is a quality-of-service software for wireless optical networks, which provides instantaneous prediction, long-term prediction, and considers the case where the Free-Space Optics units are implemented behind windows. The authors Mehdi Rouissat, Riad A. Borsali, Mohammed Belkheir, Allel Mokaddem are with the Nour Bachir University Center El-Bayadh, and the University Aboubekr Belkaid from Algeria.

The seventeenth paper *Designing Cross-Coupled Microstrip Bandpass Filter Based Coupling Matrix Optimization Technique* is based on the design and development of a cross-coupled bandpass filter, which operates at 1.2 GHz, by using an RLC resonator combined with a TL transmission line excited by a symmetrical microstrip feed line. The authors Damou Mehdi, Chetoui Mohammed, Boudkhil Abdelhakim, and Gouni Slimane are with the University of Saida Dr Moulay Tahar, Algeria, while Mustafa Secmen is with the Yasar University, Turkey.

The eighteenth paper *Optimized Multi-target Localization in UHF RFID Systems: Leveraging Wavelet Neural Network and Non-Linear Filtering Techniques* is written by authors: Anand Vardhan Bhalla, Agya Mishra with the Jabalpur Engineering College, India. The proposed indoor multi-target localization and tracking method, combining Wavelet Neural Network and Extended Kalman Filter, employs received signal strength indicator and phase as feature input vectors, enhancing accuracy and outperforming conventional approaches.

The paper under the title *CMOS Instrumentation Amplifier: Comparative Analysis and Design for Enhanced Performance in Diverse Applications* - the nineteenth paper in Microwave Review, explores diverse CMOS instrumentation amplifier designs for industrial and biomedical applications, including augmented version with enhanced characteristics-high gain, exceptional common-mode rejection ratio, and improved gain bandwidth. The authors of this paper are Divya Sharma, and Vijay Nath with the Birla Institute of Technology, India.

The researchers Rashmi Pandey, Kuldeep Pandey, A. K. Shankwar, Rajeev Gupta with the Parul University, BCE, HBTU, and Graphic Era Hill University, India are authors of the eighth paper entitled *High-Efficiency Multiband Rectifier for RF Energy Harvesting Applications*. It introduces a novel design of a multiband rectifier with a simple circuit structure that provides sufficient energy and higher conversion efficiency for powering the sensors in wireless sensor networks and many other low-power electronic devices operating in 1.28 GHz, 1.8 GHz, 2.44 GHz, 3.5 GHz, and 5 GHz frequency bands.

I would like to stress the great effort and dedicated time of the Reviewers, which improved the papers' quality and the Microwave review journal.

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