



Editor-in-Chief: Scanning the Issue

Dear members and readers,

The current December issue of the *Microwave Review* journal (Vol. 26, No. 2) contains six research papers. These papers present ongoing research and developments achieved by researchers in different areas and countries.

Ultra-wideband antennas have been key components in developing the wireless communication systems. The first paper titled ***RCS Reduction of Ultra-Wideband Koch Fractal Slot Antenna*** presents an effective way to reduce the radar cross section (RCS) of a microstrip slot antenna. Koch fractal slot and rectangular loop feed-in patch are applied to reduce the RCS. The Koch fractal is applied to the outer perimeter of the Koch fractal slot antenna. As a result, the bandwidth of the Koch fractal slot antenna is wider than bandwidth of the initial square slot antenna. The paper is written by Besharat Rezaei Shookooh, Alireza Monajati and Hamid Khodabakhshi from Iran.

The demands of circularly polarized (CP) antennas are increasing nowadays because of their potential to alleviate problems like interference, multipath fading and immune to polarization rotation effect of the electromagnetic waves. A coplanar waveguide (CPW) fed corner truncated square slot antenna loaded with a split ring resonator (SRR) for soil moisture sensor application is described in the second paper. ***Compact Wideband Circularly Polarized SRR Loaded Slot Antenna for Soil Moisture Sensor Application*** is the title of the paper written by authors from India: Puneeth Kumar T. R., Karthik R. and Krishnamoorthy K.. The wideband performance is obtained by combining slot and SRR mode resonances. The bands are tuned independently to achieve optimized wide axial ratio bandwidth. The measured impedance bandwidth of 2.53 GHz and 3-dB axial ratio bandwidth of 0.9 GHz is achieved. The proposed antenna is useful for soil moisture sensing, military, radar and microwave sensing application where CP is essential.

In third paper titled ***A Simplified Design Methodology for Hybrid Antenna for S-band Application*** a simplified design methodology for hybrid antenna representing a combination between the simple patch and Yagi-Uda antennas is presented. The hybrid antennas are easy and cheap for design and manufacturing with easy realization of linear or circular polarization and allow integration of other microwave devices into them. The practical realization and the measured results prove that the designed hybrid antenna is of reduced dimensions, with sufficient bandwidth and amplification comparable to those of Yagi antennas. These type antennas can find wide application on different radio communications systems: WiFi, base station for mobile communications – 3G and 4G. The authors are Ivaylo Nachev and Ilia Iliev from Bulgaria.

The fourth paper is titled ***Wave Approach to the Noise Modeling of a GaAs HEMT under Optical Illumination*** and written by authors from Serbia and Italy¹: Vladica Đorđević, Emanuele Cardillo¹, Zlatica Marinković, Olivera Pronić-Rančić, Alina Caddemi¹ and Vera Marković. GaAs-based HEMTs can be successfully

employed in modern integrated communication systems as optically controlled devices. Therefore, for performing an accurate and effective noise analysis of their performance under optical illumination, an accurate noise model is needed. The wave approach has been employed for the modeling of a GaAs HEMT exposed to an optical radiation and the noise wave parameters are modeled by applying artificial neural networks.

The day-to-day technological development of wireless communication, RADAR and millimeter wave applications has increased the need of planar circuits like MMIC, MIC to connect with waveguide section horn antennas with transmitter/receivers section and the time demands a low loss transition interconnect between microstrip line and waveguide. In this fifth paper titled *A Comparative Study of Microwave Rectangular Waveguide-to-Microstrip Line Transition for Millimeterwave, Wireless Communications and Radar Applications* a detailed study of a microwave rectangular waveguide-to-microstrip line transition has been presented in tabulated format for easy understanding of transitions along with their merits, demerits and coupling methodology used to design transitions and the results in terms of insertion loss (IL), return loss (RL) and fractional obtained bandwidth have also been presented. The specific applications of the designed transitions for RADAR, millimeter wave and wireless communications, etc. are displayed in the table. The paper is written by Indian researchers: Atul Varshney and Vipul Sharma.

The last sixth paper titled *ECG De-noising based on the Selection of Cascaded FIR Filter Configuration* is written by Abdenour Allali and Arres Bartil from Algeria. An alternative method for building a cascaded FIR filters in order to enhance the ECG signal quality through two stages is presented. In the first stage, the three desired windows are selected according to high measurements of SNR and low MSE, in which focus is mainly concentrated on configuring one FIR filter as LPF, BSF then HPF separately via different windowing techniques. In the second stage, the above selected windows are then used on the cascaded algorithm. The resulting best configuration was drawn from comparisons of the SNR's outputs and MSE's performances. Actually, the PTB database supplying the raw ECG signal records are contaminated by PLI and BLW noises. In addition, the WGN has been added to get the entire noisy signals. The derived best configuration proved a successful de-noising action. This approach will certainly provide an efficient additional tool in ECG signal analysis.

Associate professor Zlatica Marinković, chair of the IEEE MTT-S Chapter of Serbia and Montenegro, gives a report about chapter activities in 2020.

All involved people in this journal: Editor-in-Chief, Associate Editor and reviewers contribute as volunteers. Selection of submitted papers for publication in journal is a very hard work. There may be a phase of high load where reviewers cannot find time to work on papers, and because of that a processing time make take several months.

I am very grateful for the contribution all valued anonymous reviewers have made to *Microwave Review* journal by providing their reviews in 2020. I would like to show my appreciation for the time and effort that they give to the assessment of submitted manuscripts.

Wishing you Happy Holidays and a wonderful New Year!

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