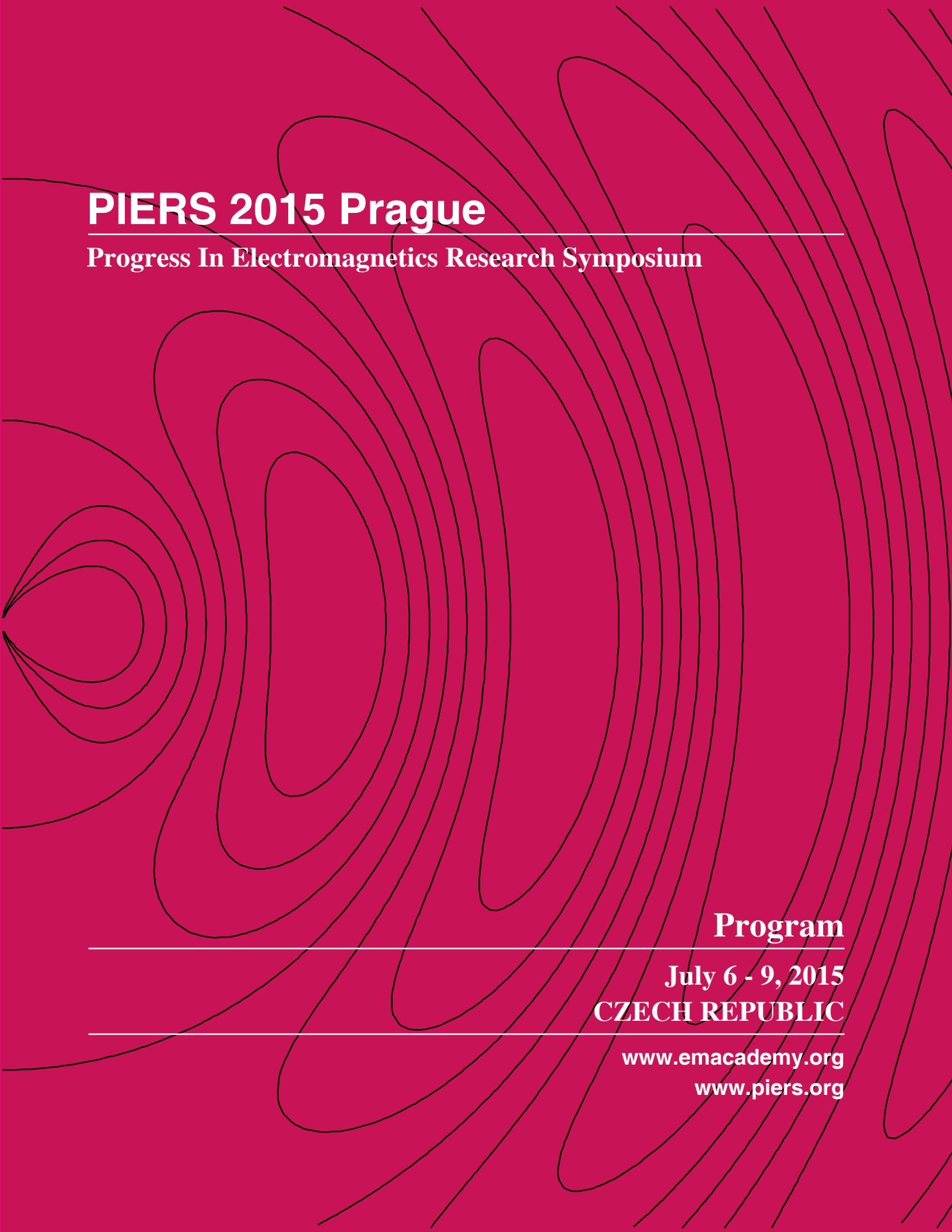
PIERS 2015 Prague

Progress In Electromagnetics Research Symposium



Program

July 6 - 9, 2015

CZECH REPUBLIC

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18:00 Graphene Plasmonics for Light Trapping and Absorption Engineering
Jianfa Zhang (*National University of Defense Technology, China*); *Zhihong Zhu* (*National University of Defense Technology, China*); *Wei Liu* (*National University of Defense Technology, China*); *Xiao-Dong Yuan* (*National University of Defense Technology, China*); *Shiqiao Qin* (*National University of Defense Technology, China*);

18:20 Propagation of Quasi-TEM Waves in a Graphene Parallel Plate Waveguide Involving Discontinuities
Sinan Aksimsek (*Istanbul Kultur University, Turkey*);

18:40 Surface Corrugations Influence Nonstationary Processes in Monolayer Graphene, 2 Examples
Natalie E. Firsova (*Russian Academy of Sciences, Russia*);

Session 3P_12
Antennas and RF Devices Based on Superconductors and Other Advanced Materials

Wednesday PM, July 8, 2015

Room L

Organized by Malay Ranjan Tripathy, Daniel Ronnow

Chaired by Daniel Ronnow, Malay Ranjan Tripathy

13:20 Reconfigurable Antenna Design
Yahya Salameh Hassan Khraisat (*Al-Balqa' Applied University/Al-Huson University College, Jordan*); *Ahmad H. N. Qubaia* (*Al-Balqa' Applied University/Al-Huson University College, Jordan*);

13:40 A Utility Maximization Approach to MAC Layer Channel Access and Forwarding
Sunil Kumar (*Amity University, India*); *Priya Ranjan* (*Amity University, India*); *Malay Ranjan Tripathy* (*Amity University, India*);

14:00 Superconducting Receive-only 7 Tesla Antennas for High Resolution Magnetic Resonance Imaging
Jarek Wosik (*University of Houston, USA*); *Krzysztof Nesteruk* (*Institute of Physics of Polish Academy of Sciences, Poland*); *Kuang Qin* (*University of Houston, USA*); *Tan I-Chih* (*The University of Texas Health Science Cente, USA*); *Kurt Bockhorst* (*University of Texas Health Science Center, USA*); *Ponnada A. Narayana* (*University of Texas Health Science Center, USA*);

14:20 Long Range Induction between Josephson Junction Arrays via Microwave Photon Emission and Absorption
Wei-Chen Chien (*National Chung Hsing University, Taiwan*); *Cheng-An Jiang* (*National Chang-Hua University of Education, Taiwan*); *Jia-Yu Hong* (*National Chang-Hua University of Education, Taiwan*); *Yung-Fu Chen* (*National Central University, Taiwan*); *Cen-Shawn Wu* (*National Chang-Hua University of Education, Taiwan*); *Hiroshi Shimada* (*University of Electro-Communications, Japan*); *Watson Kuo* (*National Chung Hsing University, Taiwan*);

14:40 Multi Band Metamaterial Based Bowtie Antenna for Wireless Applications
Rajesh Kumar (*Amity University, India*); *Malay Ranjan Tripathy* (*Amity University, India*); *Daniel Ronnow* (*University of Gavle, Sweden*);

15:00 Effect on Lefthandedness from SRR Rotational Disorder
Daniel Ronnow (*University of Gavle, Sweden*); *M. Shahbazali* (*University of Gavle, Sweden*); *W. Baki* (*University of Gavle, Sweden*); *Malay Ranjan Tripathy* (*Amity University, India*);

15:20 **Coffee Break**

15:40 Bandpass-to-allstop Switchable Filter with Broadband Harmonics Suppression
Phirun Kim (*Chonbuk National University, Republic of Korea*); *Junhyung Jeong* (*Chonbuk National University, Republic of Korea*); *Girdhari Chaudhary* (*Chonbuk National University, Republic of Korea*); *Yongchae Jeong* (*Chonbuk National University, Republic of Korea*); *Jongsik Lim* (*Soonchunhyang University, Republic of Korea*);

16:00 Design and Analysis of Metafractal Antenna for Wireless Applications
Malay Ranjan Tripathy (*Amity University, India*); *Rajesh Kumar* (*Amity University, India*); *Daniel Ronnow* (*University of Gavle, Sweden*);

16:20 Low Power WSN and Cloud Infrastructure for Remote Lake Water Quality Monitoring
Shailendra Singh (*Yuktix Technologies, India*); *Priya Ranjan* (*Amity University, India*); *Rajeev Jha* (*Yuktix Technologies, India*); *Malay Ranjan Tripathy* (*Amity University, India*);

Bandpass-to-allstop Switchable Filter with Broadband Harmonics Suppression

Phirun Kim[1], **Junhyung Jeong**[1], **Girdhari Chaudhary**[1], **Yongchae Jeong**[1], **and Jongsik Lim**[2]

[1]Chonbuk National University, Republic of Korea
[2]Soonchunhyang University, Republic of Korea

Abstract— A microwave switchable filter is one of key circuits in wireless communication systems. A challenging bandpass filter design are tunable, good selectivity characteristics, low insertion loss, and compact size. In this paper, a switchable bandpass to all stopped filter with broad stopband is proposed (Fig. 1). The bandpass filter consists of a hairpin resonator and three capacitors at the ends of resonator with capacitive coupling feed lines. As shown in Fig. 1, two upper capacitances, C_1, are fixed and lower capacitance C_2 is varied The main function of C_1 is used to attenuate the stopband The capacitor C_2 is used to tune the bandpass to all stopped filter by changing DC voltage The proposed filter provides a good selectivity and compact sized. For experimental validation of proposed structure, the bandpass to all stop filter is proposed at an operating frequency of 2.6 GHz The filter is designed on a substrate with a thickness (h) of 31 mil and dielectric constant (ε_r) of 2.2. The fabricated circuit is shown in Fig. 2. The circuit size is $8 \times 25\,\text{mm}^2$ The SMV1233-040LF varactor diode is used for the capacitance variation. The passband is occurred when bias voltage 1.7 V ($C_2 = 3$ pF) From experiment, the passband is shifted to lower frequency compare to EM simulation that is because of the effect of parasitic of the varactor diode and the fabrication error (Figs. 3 and 4). In the simulation, the ideal capacitor C_1 and C_2 are used. The insertion loss in the passband is 1.4 dB and the return loss is better than 15 dB at 2.42 GHz Since transmission zeros near to the passband are obtained at 1.85 GHz and 2.84 GHz it provides a good selectivity characteristic. The 3 dB fractional bandwidth is 6.3%. The upper stopband is suppressed higher than 17 dB from 2.67 GHz to 9 GHz. The lower transmission zero is moved to the passband when bias voltage 3.7 V ($C_2 = 1.55$ pF) providing all attenuated as shown in Fig. 4.

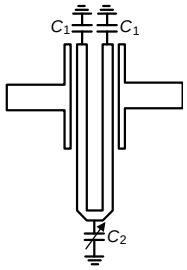

Figure 1.

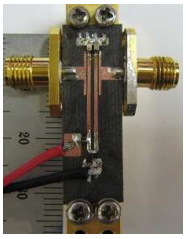

Figure 2.

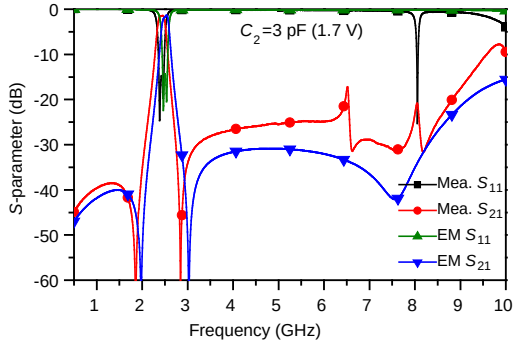

Figure 3.

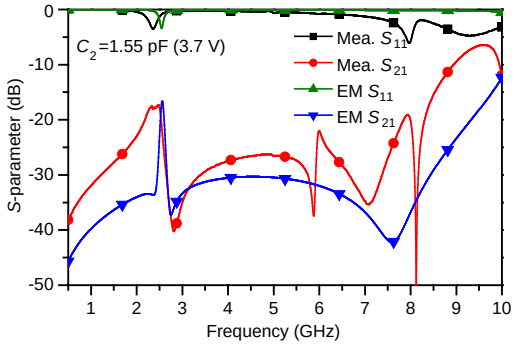

Figure 4.