

PIERS 2011 Marrakesh

Progress In Electromagnetics Research Symposium

Program

March 20 - 23, 2011
Marrakesh, MOROCCO

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Session 3A1**Rogue Waves in Nature and Extreme Events**

Tuesday AM, March 22, 2011

Room A

Organized by Majid Taki, Stefania Residori

Chaired by Majid Taki, Stefania Residori

- 08:20 Rogue Waves in Superfluid ^4He
V. B. Efimov (Institute of Solid State Physics, RAS, Russia); A. N. Ganshin (Cornell University, USA); G. V. Kolmakov (Pittsburgh University, USA); P. V. E. McClintock (Lancaster University, UK); L. P. Mezhov-Deglin (Institute of Solid State Physics, RAS, Russia);
- 08:40 Emergence of Rogue Waves from Optical Wave Turbulence
K. Hammani (Université de Bourgogne, France); Bertrand Kibler (Université de Bourgogne, France); C. Michel (Université de Bourgogne, France); Christophe Finot (University of Bourgogne, France); G Millot (Université de Bourgogne, France); Antonio Picozzi (Université de Bourgogne, France);
- 09:00 Rogue Waves in a Multistable Fiber Laser
Alexander N. Pisarchik (Centro de Investigaciones en Optica, Mexico); Majid Taki (Université des Sciences et Technologies de Lille, France);
- 09:20 From Supercontinuum to Optical Rogue Waves and Localized Structures
Goery Genty (Tampere University of Technology, Finland); Miro Erkintalo (Tampere University of Technology, Finland); John M. Dudley (University of Franche-Comte, France);
- 09:40 Granularity and Nonlocality Are the Joint Generators of Rogue Wave Phenomena
F. Tito Arecchi (Università di Firenze, Italy); U. Bortolozzo (Université de Nice Sophia-Antipolis, France); A. Montina (Perimeter Institute for Theoretical Physics, Canada); Stefania Residori (Université de Nice Sophia-Antipolis, France);
- 10:00 **Coffee Break**
- 10:20 Energy Concentration in Arrays of Nonlinear Waveguides by Exciting Rogue Waves
Yuliy V. Bludov (Universiade do Minho, Campus de Gualtar, Portugal); Vladimir V. Konotop (Universidade de Lisboa, Campo Grande, Portugal); Nail Akhmediev (The Australian National University, Australia);

- 10:40 Rogue Waves in Crossing Seas
Miguel Onorato (Università di Torino, Italy);
- 11:00 Compact Model for Water Waves
Alexander I. Dyachenko (Landau Institute for Theoretical Physics, RAS, Russia); V. E. Zakharov (University of Arizona, USA);
- 11:20 Optical Rogue Waves: New Developments
Majid Taki (Université des Sciences et Technologies de Lille, France); Arnaud Mussot (Université des Sciences et Technologies de Lille 1, France); A. Kudlinski (Université des Sciences et Technologies de Lille 1, France); Mikhail I. Kolobov (Université des Sciences et Technologies de Lille 1, France); E. Louwergneau (Université des Sciences et Technologies de Lille 1, France); Nail Akhmediev (The Australian National University, Australia);
- 11:40 Supercontinuum Seeding and Optical Rogue Waves
D. R. Solli (University of California at Los Angeles, USA); Bahram Jalali (University of California at Los Angeles, USA); Claus Ropers (University of Göttingen, Germany);

Session 3A2**Microwave and Millimeter Wave Circuits and Devices, CAD**

Tuesday AM, March 22, 2011

Room B

Organized by Yong Fan

Chaired by Thottam S. Kalkur

- 08:20 Adaptive RF Power Amplifier Tuned with Ferroelectric BST Varactor
Yulan Zhang (University of Colorado at Colorado Springs, USA); Thottam S. Kalkur (University of Colorado at Colorado Springs, USA);
- 08:40 Practical Use of the Kramers-Kronig Relation at Microwave Frequencies. Application to Photonic Like Lines and Left Handed Materials
Jérôme Lucas (ESPCI-Paris Tech, France); Emmanuel Géron (ESPCI-Paris Tech, France); Thierry Ditchi (ESPCI-Paris Tech, France); Stephane Holé (ESPCI-Paris Tech, France);

- 09:00 Coaxial Quasi-elliptic Filter Using a Suspended Resonator and Vertically Stacked Coaxial Lines
Aline Jaimes-Vera (Technical University of Catalonia, Spain); Ignacio Llamas-Garro (Centre Tecnològic de Telecomunicacions de Catalunya, Spain); Alonso Corona-Chavez (National Institute of Astrophysics, Optics and Electronics (I.N.A.O.E.), Mexico);
- 09:20 Asymmetric Microstrip Right/Left-handed Line Coupler with Variable Coupling Ratio
Emmanuel Géron (ESPCI-Paris Tech, France); Thierry Ditchi (ESPCI-Paris Tech, France); Jérôme Lucas (ESPCI-Paris Tech, France); Stephane Holé (ESPCI-Paris Tech, France);
- 09:40 A Directional Coupler Using Back-to-back Microstrip Lines and Common Defected Ground Window Structures
Jongsik Lim (Soonchunhyang University, Republic of Korea); Jaehoon Lee (Soonchunhyang University, Republic of Korea); Jun Lee (Soonchunhyang University, Republic of Korea); Bokyun Kim (Soonchunhyang University, Republic of Korea); Yongchae Jeong (Chonbuk National University, South Korea); Sang-Min Han (Soonchunhyang University, Korea); Dal Ahn (Soonchunhyang University, Korea);
- 10:00 **Coffee Break**
- 10:20 Multi-mode Cavities for a High-gradient Two-beam Particle Accelerator Structure
Y. Jiang (Yale University, USA); S. V. Kuzikov (Omega-P, Inc., USA); S. Yu. Kazakov (Omega-P, Inc., USA); Jay L. Hirshfield (Yale University, USA);
- 10:40 A Dual-band Wilkinson Power Divider Utilizing EBG Structure
Hsin-Hao Chen (National University of Kaohsiung, Taiwan); Yi-Hsin Pang (National University of Kaohsiung, Taiwan);
- 11:00 Large Scale Measurement of Microwave Electric Field Using Infrared Thermography and Electromagnetic Simulation
Daniel Prost (ONERA — The French Aerospace Lab, France); F. Issac (ONERA — The French Aerospace Lab, France); P. Reulet (ONERA — The French Aerospace Lab, France);
- 11:20 Numerical Study of a Coplanar Zeroth-order Resonator on YIG Thin Film
Aziza Zermane (Université de Lyon, France); Bruno Sauviac (Université de Lyon, France); Bernard Bayard (Université de Lyon, France); Abdelmadjid Benghalia (Université Mentouri de Constantine, Algeria);

Session 3A3**Electromagnetic Wave Propagation in Dissipative Media**

Tuesday AM, March 22, 2011

Room C

Organized by Gregory V. Morozov

Chaired by Gregory V. Morozov

- 08:20 Transfer Matrix Method for Electromagnetic Waves in 1D Inhomogeneous Media with Dissipation
Gregory V. Morozov (University of the West of Scotland, United Kingdom); Frank Placido (University of Western Scotland, UK); Donald W. L. Sprung (McMaster University, Canada);
- 08:40 Metallic Absorptivity at Normal Incidence above Far-infrared
Francisco Eugenio Mendonca Da Silveira (Universidade Federal do ABC, Brazil);
- 09:00 Enhanced SBS Instability Growth Rate of Extraordinary Electromagnetic Waves in Strongly Coupled, Magnetized Plasma
Muhammad S. Bawa'aneh (Khalifa University of Science, Technology and Research, United Arab Emirates); Ibrahim Y. Abualhaol (Khalifa University of Science, Technology and Research, United Arab Emirates); Feras Al-Dweri (The Hashemite University, Jordan);
- 09:20 Thin Films and Multilayers Grown on Insulating Bulk Substrates as Nanoelectromechanical Resonators
Farkhad G. Aliev (Universidad Autonoma de Madrid, Spain); V. V. Pryadun (Moscow State University, Russia);
- 10:00 **Coffee Break**
- 10:20 Strange Solutions of Maxwell Equations: Loop Modes Induced by Thermal Tuning
Didier Albert Camill Stuerger (Universite de Bourgogne, France); Christophe Lohr (NAXAGORAS Technology, France); Pierre Pribetich (University de Bourgogne, France);
- 10:40 Loss Effects on the Surface Plasmon Resonance in Kretschmann Configuration
Atef Shalabney (Ben-Gurion University of the Negev, Israel); Ibrahim Abdulhalim (Ben-Gurion University of the Negev, Israel);
- 11:00 On the Electrodynamic of Counter Propagating Transverse-electric and Transverse-magnetic Waves in the Absorbing Plate in a Waveguide
Eduard A. Gevorkyan (Moscow State University of Economics, Statistics and Informatics, Russia);

A Directional Coupler Using Back-to-Back Microstrip Lines and Common Defected Ground Window Structures

*Jongsik Lim, *Jaehoon Lee, *Jun Lee, *Bokyun Kim, **Yongchae Jeong, *Sang-Min Han, and *Dal Ahn
 *Soonchunhyang University, Republic of KOREA
 **Chonbuk National University, Republic of KOREA

Abstract

A new directional coupler structure using defected ground window structures between back-to-back microstrip lines is described in this paper. Directional couplers have been designed and fabricated conventionally with planar substrate structures such as microstrip line (Fig. 1) and striplines. Even though a few three-dimensional (3-D) directional couplers have been proposed previously as extremely exceptional cases, but the required costs are too expensive because semiconductor fabrication processes should be provided for fabrication. In order to overcome the cost problem and propose a new solution for 3-D directional couplers with cheap microstrip lines, the authors propose a directional coupler, which consists of back-to-back microstrip lines and a defected ground window structure on the common ground plane. The side view of Fig. 2 shows the structure of back-to-back microstrip lines with the common ground plane. If the line from port1 to port2 is placed on the top plane, while the other one from port3 to port4 bottom plane, and if the long rectangular area called defected ground window structure (DGWS) is removed on the ground plane with a good alignment for the coupling section, a 3-D directional coupler is designed with cheap microstrip structure as shown in Fig. 3. It is noted that the coupling coefficient depends on not only the line width and dielectric media as general cases, but also the dimensions of DGWS strongly. Fig. 4 shows the S-parameters of the proposed directional coupler when the dielectric constant and thickness of the microstrip substrate are 2.2 and 31 mils, respectively. In Fig. 4, the coupling coefficient (S_{41}) in this case is 15dB with an excellent isolation property (S_{31}). The advantages of the proposed coupler structures are; 1) reduced size 2) improved directivity than conventional design, 3) coupling coefficients are also controlled by the dimensions of DGWS, 4) more flexible design, 4) possibility for providing better density of integration because additional high frequency circuits can be realized on both sides of microstrip line, and so on.

Acknowledgement : This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (MEST) (KRF-2009-220-D00074).

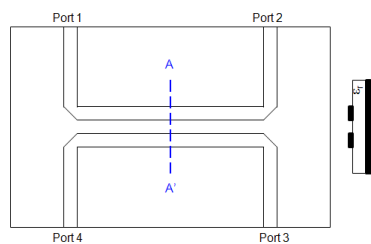


Fig. 1

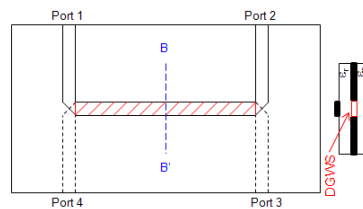


Fig. 2

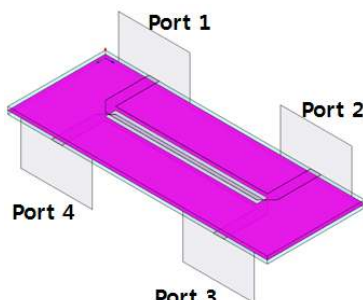


Fig. 3

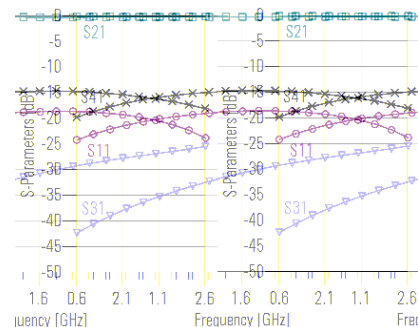


Fig. 4