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[1]*Georgia Institute of Technology, United States;* [2]*South China University of Technology, China;* [3]*Frederick University, Cyprus*

10:40 201.2 5:1 Wideband High-Power Spiral-Helix Antenna
J. Bargeron, M. Radway, D. S. Filipovic, *University of Colorado, United States*

11:00 201.3 Flexible Spiral Antenna with Microstrip Tapered Infinite Balun for Wearable Applications
H. Lee[1], J. Geiger[2], M. M. Tentzeris[1]
[1]*Georgia Institute of Technology, United States;* [2]*IEEE, Germany*

11:20 201.4 Quasi Frequency Independent High Power Sinuous Antenna
R. Sammeta, D. Filipovic, *University of Colorado Boulder, United States*

11:40 201.5 A Study on Conical Spiral Antennas for UHF SATCOM Terminals
A. I. Zaghloul[1,2], T. K. Anthony[1], W. O. Coburn[1]
[1]*US Army Research Laboratory, United States;* [2]*Virginia Tech, United States*

Tuesday, July 10 | 10:20-12:00 | Huron
Session 202 | AP-S/URSI

Dosimetry and EM Exposure Assessment

Session Chairs: John Volakis, Francisco Falcone

10:20 202.1 SAR Sensitivity Analysis Using Polynomial Chaos Expansions
A. Ghanmi, N. Varsier, A. Hadjem, E. Conil, J. Wiart, *Orange Labs, France*; O. Picon, *Université Paris_Est, France*

10:40 202.2 Analysis of Dosimetry Estimation in Large Enclosed Vehicles
J. Arpon[1], E. Aguirre[1], L. Azpilicueta[1], V. Ramos[2], F. Falcone[1]
[1]*Universidad Publica de Navarra, Spain;* [2]*Instituto de Salud Pública Carlos III, Spain*

11:00 202.3 SAR in a Human Head Phantom Analyzed under 3T MRI
E. Colebeck, R. Bertucci, K. Sharp, E. Topsakal, *Mississippi State University, United States*

11:20 202.4 Specific Absorption Rate (SAR) Distribution in Human Tissue with Magnetic Resonance
O. Jonah, S. Georgakopoulos, *FIU, United States*

11:40 202.5 An Antenna for Dynamic Environment
S. Seran, J. P. Donohoe, E. Topsakal, *Mississippi State University, United States*

Tuesday, July 10 | 10:20-12:00 | Michigan A
Session 203 | AP-S/URSI

Electronic Devices, Circuits, and Applications II

Session Chairs: Vitaliy Lomakin, Meysam Moallem

10:20 203.1 A Size-Reduced Ring Hybrid Using Common DGS
J. Lim[1], J. Lee[1], K. Kwon[1], Y. Jeon[1], Y. Jeong[2], K. Choi[1], S.-M. Han[1], D. Ahn[1]
[1]*Soonchunhyang University, South Korea;* [2]*Chonbuk National University, South Korea*

10:40 203.2 A Broadband Micromachined Cavity-Backed CPW to Rectangular Waveguide Transition for J-Band Applications
M. Moallem, K. Sarabandi, *University of Michigan, United States*

11:00 203.3 Electromagnetic Design of Heat-Assisted Magnetic Recording System
Q. Ding, M. Escobar, R. Chang, M. Lubarda, S. Li, V. Lomakin, *University of California, San Diego, United States*

11:20 203.4 A Waveguide-Microstrip Structure for Millimeter-Wave Spatial Power Combining
D. Sun, Z. Chen, Y. Yu, *Dalhousie University, Canada*; B. Zhang, *University of Electronic Sci. and Tech. of China, China*

11:40 203.5 A Compact LTCC-Based Multi-Layer Ultra Wideband (UWB) Bandpass Filter Composed of E-Shaped Electrodes
T. Kaneko, Y. Horii, *Kansai University, Japan*

Tuesday, July 10 | 10:20-12:00 | Michigan B
Session 204 | URSI

Scattering and Diffraction

Session Chairs: Makoto Ando, Alberto Toccafondi

10:20 204.1 Scattering by a Finite Cylinder
F. Schettino, F. Di Murro, M. D. Migliore, *University of Cassino, Italy*

10:40 204.2 High-Frequency Scattered Field Computations of Complex NURBS Surfaces
M. Balasubramaian, *Fraunhofer Institute for High Frequency Physics and Radar Techniques, Germany*; A. Toccafondi, S. Maci, *University of Siena, Italy, Italy*

11:00 204.3 Electromagnetic Scattering from an Array of Cylindrical Rods with Statistically Varying Lengths
K. Chatterjee, *Space Dynamics Laboratory, United States*; R. Mittra, *Pennsylvania State University, United States*

11:20 204.4 Miniaturized-Element Frequency Selective Surfaces for Radar Cross Section Reduction
A. Edalati, K. Sarabandi, *University of Michigan, United States*

11:40 204.5 Scattering of Electromagnetic Waves from a Homogeneous Dielectric Cylinder Using Volume Integral Equations
B. K. Minhas, *King Saud University, Saudi Arabia*

Tuesday, July 10 | 10:20-12:00 | Superior A
Session 205 | URSI

Electromagnetic Environment and Interference

Session Chairs: Gregory Tait, ANDREAS CANGELLARIS

10:20 205.1 Noise Source for Electromagnetic Compatibility Testing of New Wireless Communications Networks
G. Tait, M. Slocum, *Naval Surface Warfare Center Dahlgren, United States*

10:40 205.2 Application of Team-Based Learning in Electromagnetic Compatibility Education
D. G. Michelson, *University of British Columbia, Canada*

11:00 205.3 Transient Analysis of Driven Planar Interconnects in the Presence of Uncertainty in Routing and External Electromagnetic Interference
A. C. Cangellaris, A. Rong, *University of Illinois, Urbana-Champaign, United States*

11:20 205.4 Studies of Electromagnetic Susceptibility Inside a Large Platform Using the Domain Decomposition Methods
Y. Shao, J. Wang, B. Zhao, J.-F. Lee, *The Ohio State University, United States*

11:40 205.5 Calculation of Electric Fields Radiated from an Electrostatic Discharge Suppressor for IC Protection
H.-Y. Chen, C.-T. Kuo, *Yuan Ze University, Taiwan*

Tuesday, July 10 | 10:20-12:00 | Superior B
Session 206 | URSI

Radar and Imaging Systems

Session Chairs: Qing Liu, Michael Saville

10:20 206.1 Detection of Moving Target on a Moving Platform Using Doppler Radar
Y. Kim, *California State University at Fresno, United States*

10:40 206.2 Advances in Polarimetric Synthetic Aperture Radar
M. A. Saville, D. F. Fuller, *Air Force Research Lab, United States*; J. A. Jackson, *Air Force Institute of Technology, United States*

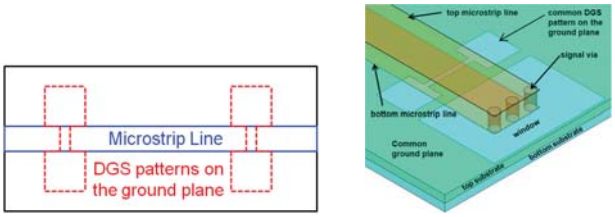
11:00 206.3 Simulation of High Resolution Image Reconstructed from Low Frequency Array
J.-F. Kiang, M.-M. Chiou, *National Taiwan University, Taiwan*

11:20 206.4 Inverse Source Solver with Phaseless Field Data Compatibility for High Resolution Near Field Scanner
Z. Yu[1], M. Chai[2], J. A. Mix[2], K. P. Slattery[2], Q. H. Liu[1]
[1]*Duke University, United States;* [2]*Intel Corporation, United States*

A Size-Reduced Ring Hybrid Using Common DGS

Jongsik Lim*(1), Jun Lee(1), Kyunghoon Kwon(1), Yuckhwan Jeon(1), Yongchae Jeong(2), Kwansun Choi(1),Sang-Min Han(1), and Dal Ahn(1)
(1) Soonchunhyang University, Asan, Choongnam, Rep. Of KOREA
(2) Chonbuk National University, Jeonju, Chonbuk, Rep. Of KOREA

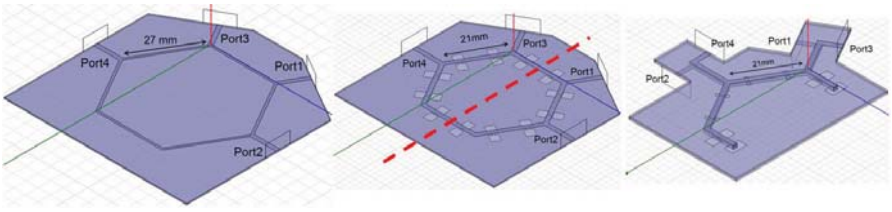
A size-reduced 180° ring hybrid coupler is described. A common defected ground structure (DGS) is adopted to reduce the coupler. Common DGS (CDGS) patterns are realized on the common ground plane of double-sided microstrip lines of which ground planes are attached to each other back-to-back (Fig. 1). Signal lines are connected through signal via-holes (F. Casares-Miranda et al., IEEE Microw. Wireless Compon. Lett., 16(7), 401-403, 2006). CDGS patterns seen by both microstrip lines play the role in size-reduction of microwave circuits due to the added equivalent inductive and capacitive elements.



(a) (b)

Fig. 1 (a) A microstrip line with DGS patterns and (b) 3-d view of the folded microstrip line

At first, an 180° ring hybrid coupler is designed relying on the basic theory and normal microstrip line (Fig. 2(a)). It has been widely known that modified ground structures (MGS) such as photonic bandgap (PBG) and defected ground structure (DGS) can be applied to microwave circuits to reduce the size. So, first try is done by inserting dumbbell-shaped DGS patterns to reduce the size (Fig. 2(b)). Finally, the circuit is folded and second effort is applied by inserting CGDS for the purpose of miniaturization (Fig. 2(c)). The S-parameters show that the proposed side-reduced ring hybrid coupler well operates with the expected power division and phase difference (Fig. 3).



(a) (b) (c)

Fig. 2 Three ring hybrid couplers (a)normal design (b)size-reduced one with DGS (c)miniaturized circuit by common DGS

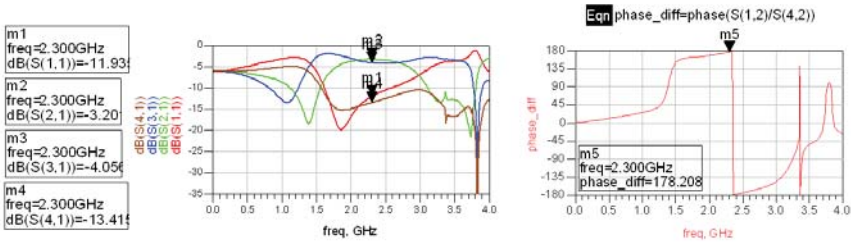


Fig. 3 S-parameter performances of the miniaturized ring hybrid with CDGS