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¹Irán Univ. of Science & Tech, UC Irvine, Iran; ²University of California, Irvine, USA

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S. Karan, V. B. Erkork, Bilkent University, Turkey

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J. A. Tobon Vasquez1, F. Vipiana1, J. L. Araque Quijano2, M. Sabbadini3, G. Vecchi2
1Politecnico di Torino, Italy; 2Universidad Nacional de Colombia, Colombia; 3ESA/ESTEC, The Netherlands

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H. Yang, S. Jiang, Z. Mu, College of Applied Sciences, Beijing University of Technology, China
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**Session Chairs:** Keith Whites, Christopher Holloway

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503. Cognitive radio: improvements through the integration of electromagnetic and communications theory

Session Chairs: Natasha Devroye, Agostino Monorchio
Session Organizers: Daniela Tuninetti, Natasha Devroye, Agostino Monorchio

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503.6 Reconfigurable Null Scanning Antenna for Spatial Filtering in Cognitive Radios 1881
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Session Chairs: Edward Rothwell, Ryan Adams

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1CSIR, South Africa; 2University of Pretoria, South Africa

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1Applied Electromagnetics Ltd, Israel; 2Ben-Gurion University of the Negev, Israel; 3Goji Israel Ltd, Israel

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M. Tanaka, K. Tanaka, Gifu University, Japan

504.4 Characterization of Gyromagnetic Material Using a Reduced Aperture Waveguide  N/A
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1Universidad Politécnica de Madrid, Spain; 2Universidad Autónoma de Madrid, Spain

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1University of California, Davis, United States; 2Sacramento State University, United States

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Session Chairs: Wen-Shan Chen, Kin-Lu Wong

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505.2 A Multi-Line Monopole with a Meandered Loop Antenna for 4G Mobile System 1891
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505.3 A Reconfigurable PIFA Using a PIN-Diode for LTE/GSM850/GSM900/DCS/PCS/UMTS 1893
J. H. Lee, Y. Sung, Kyonggi University, South Korea

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K. Zhao1,2, S. Zhang1,2, Z. Ying1, T. Bolin1, S. He1
1KTH Royal Institute of Technology, Sweden; 2Sony Ericsson Mobile Communication AB, Sweden

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1McGill University, Canada; 2Research In Motion, Canada

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M. Yousef, Mazandaran Telecommunication Company, Iran; H. R. Dallili Oskoei, University of Aeronautical Science & Technology (Shahid Sadargi), Iran
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Session Chairs: Amir Boag, Jin-Fa Lee

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G. Wen, Fudan University, China
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Session Chairs: Benjamin Braaten, Hualiang Zhang

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M. Jenning, D. Plettmeier, Technische Universität Dresden, Germany

007.2 Near-Field Focussed Array with Two Simultaneous and Independent Spots 1905
G. Leon, J. J. Tomas, M. Arrebola, F. Las-Heras, Universidad de Oviedo, Spain

007.3 Steerable Antenna Array at 24 GHz Using Butler Matrices & MEMS-Switches 1907
M. Arias-Campo, W. Simon, R. Baggen, IMST GmbH, Germany

007.4 Metamaterial-Line Based Feed-Networks for Wideband Circularly Polarized Antennas 1909
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007.5 Design of a Passive Multifaceted Phased Array for Hemispherial Coverage 1911
W. Wang, A. Cao, S. Ye, X. Liang, Q. Guo, W. Li, R. Jin, J. Geng, Shanghai Jiao Tong University, China

007.6 Planar Single-Wire Antennas at Millimeter-Wave Frequencies 1913
D. Sanchez-Escudero, M. Ferrando-Bataller, J. I. Herranz, A. Berenguer, Universitat Politècnica de València (UPV), Spain

007.7 Design of High Gain Microstrip Yagi Array Antenna for Avalanche Radar 1915
F. N. Mohd Isa 1,2, P. V. Brennan 1
1University College London, United Kingdom; 2International Islamic University Malaysia, Malaysia

007.8 Design of Wideband Low Profile Ku Band Antenna Array 1917
M. M. Bilgic, K. Yegin, Yeditepe University, EE Eng. Dept., Turkey; T. Turkkan, M. Sengiz, Neta Electronic Equipment Ind. Corp., Turkey

007.9 A Parallel Feeding Omnidirectional Array Antenna 1919
C. Ma, Z. Kuai, X. Zhu, C. Liu, southeast university, China

007.10 Broadband Dual-Polarized Omnidirectional Antennas 1921
X. Quan, R. Li, South China University of Technology, China
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Session Chairs: Hao Ling, Qing Liu

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508.2 Revised Range Point Migration Method for Rapid 3-D Imaging with UWB Radar  1925
   T. Sakamoto1, T. G. Saveliev2, P. J. Aubry2, A. G. Yarovoy3
   1Kyoto University, Japan; 2Delft University of Technology, Netherlands

508.3 3D Whole Body Imaging for Detecting Explosive-Related Threats  1927
   Y. Alvarez1, B. Gonzalez-Valderas2, J. A. Martinez-Lorenzo3, C. M. Rappaport3, F. Las-Heras1
   1Universidad de Oviedo, Spain; 2Northeastern University, USA

508.4 Analysis of Scattered Fields by an Impedance Discontinuity of a Planar Surface by Using Helmholtz-Kirchhoff Integral Theorem  1929
   T. Kawano, K. Goto, T. Ishihara, NATIONAL DEFENSE ACADEMY, Japan

508.5 Optimized Design of a Low-RCS Patch Antenna Using a Frequency Selective Surface  1931
   E. Sarbazi, Z. Mostaani, M. Dehmollaian, University of Tehran, Iran

508.6 Reducing Complexity in Electromagnetics Problems  1933
   E. Garcia Garcia, C. Delgado Hita, M. F. Catedra Perez, Universidad de Alcala, Spain

508.7 Analytical Modeling of Radiation Patterns for a Bond-Wire Antenna  1935
   M. V. T. Westende, U. Johannesen, B. Smolders, Eindhoven University of Technology, Netherlands

508.8 Near Field Far Field Transformation : Calculation and Application  1937
   R. Cariou, DGA/MI, France; P. Massaloux, CEA/CESTA, France

508.9 Analytical Solution of Scattering by a PEMC Cylinder Coated with Anisotropic Media  N/A
   N. Montaseri, V. Nayeri, A. Abdolali, M. Soleimani, Iran University of Science and Technology, Iran
509. Frequency Configurable Antennas II

Session Chairs: Prem Chahal, Satish Sharma

509.1 A Miniature Broadband Printed Reconfigurable Antenna for Cognitive Radio 1939
A. M. Yadav, C. J. Panagamuwa, R. D. Seager, Loughborough University, United Kingdom

509.2 Embedding a Reconfigurable Band-Pass/Band-Stop Filter into an Antenna 1941
M. Zamudio, Y. Tawk, C. G. Christodoulou, University of New Mexico, United States; J. Costantine, California State University Fullerton, United States

509.3 Ka-Band Frequency Tunable Patch Antenna 1943
C. Fritzsch, S. Bildik, R. Jakoby, Technische Universitaet Darmstadt, Germany

509.4 A Novel Tunable Frequency Dipole-Yagi Antenna for Wireless Body Area Network (WBAN) Applications 1947
1Universiti Teknologi Malaysia, Malaysia; 2Universiti Malaysia Perlis, Malaysia

509.6 An Experimental Setup for Measuring the Tuning Time of an Optically Pumped Frequency Reconfigurable Antenna System 1949
Y. Tawk, S. Hemmady, C. Christodoulou, University of New Mexico, United States; J. Costantine, California State University Fullerton, United States

509.7 A Modified Split Ring Resonator Loaded Miniaturized Reconfigurable Antenna 1951
N. Wiwatcharagoses, K. Y. Park, P. Chahal, Michigan State University, United States

509.8 Frequency Agile Mechanical Antenna for Low-Cost Millimeter-Wave Applications 1953
Y. Orlic, B. Lacroix, V. Preobrazhensky, P. Pernod, P. Coquet, J. Papapolymerou
1IEMN, UMR CNRS 8520, PRES Lille Nord de France, ECLille, France; 2Georgia Institute of Technology, USA

509.9 Tuning of Reconfigurable Antennas by Motion Detection 1955
J. Costantine, E. Funicari, A. Kajikawa, M. Shiva, California State University Fullerton, United States; Y. Tawk, C. G. Christodoulou, University of New Mexico, United States

509.10 A Tunable Filter Antenna for Cognitive Radio Systems 1957
M. Al-Hussen, A. Ramadan, A. El-Hajj, K. Y. Kabalan, American University of Beirut, Lebanon
510. Wideband Antennas

Session Chairs: Amir Zaghloul, Mauro Ettorre

510.1 Two Designs for Dual/triple Band Patch Antennas N/A
K. F. Lee, C. S. R. Kaipa, University of Mississippi, United States; K. M. Luk, City University of Hong Kong, Hong Kong

510.2 Miniaturized Multimode Dielectric Resonator Antenna with Consistent Radiation Patterns for Wideband Applications N/A
A. Rashidian1, D. M. Klymyshyn2, L. Shafai3
1University of Manitoba, Canada; 2University of Saskatchewan, Canada

510.3 Novel Multiport Non-Foster Loading Technique for Wide Band Antennas N/A
E. A. Elghannai, R. G. Rojas, The Ohio State University, United States

510.4 Short-Time Pulses on Leaky-Wave Antennas N/A
J. T. Williams, L. I. Basilio, J. J. Borchardt, W. L. Langston, Sandia National Laboratories, United States

510.5 An Optically Transparent, Wideband UHF Antenna and Ground Plane System for Radio Communication N/A
M. Kashanianfard, K. Sarabandi, University of Michigan, United States

510.6 Effect of Layer-Misalignment on the Performance of Double-Layer Planar UWB Monopole Antennas N/A
A. Mohamed, L. Shafai, University of Manitoba, Canada

510.7 The Planar Lateral Wave Antenna 1959
F. Tokan, N. Türker Tokan, A. Neto, TU Delft, Netherlands

510.8 A CMOS Switching-Based UWB Impulse Transmitter with Oscillator Leakage Cancelling Technique N/A
J.-F. Kiang, Y.-T. Lo, C.-C. Yui, National Taiwan University, Taiwan

510.9 Exponentially Curved Aperture Antenna for Broadband Circular Polarization Operation 1961
F.-Y. Chao, HTC Corporation, Taiwan; S.-K. Lin, Y.-C. Lin, National Taiwan University, Taiwan

510.10 A Ku Band Dual Frequency Aperture Coupled Microstrip Antenna with a Wideband EBG N/A
M. Sorous, Semnan University, Iran
511. Multi-Frequency Antennas: Design and Analysis #1

Session Chairs: Herbert Aumann, Wonbin Hong

511.1 Multifunction Solar Panel Antenna for Cube Satellites 1963
O. C. Fawole, R. Bakhtur, Utah State University, United States

511.2 Tunable Compact Printed Monopole Antenna for Passive UHF RFID Tags 1965
A. E. Abdulhadi, R. Alhafari, McGill University, Canada

511.3 12/21GHz Dual-Band Feed for Circularly Polarized Satellite Broadcasting Receiving Antenna 1967
M. Nagasaka, S. Nakazawa, S. Tanaka, Japan Broadcasting Corporation, Japan

511.4 A New Compact Antenna Combination with High Efficiency for Reception of SDARS- and GPS Signals 1969
J. Kammerer, S. Lindenmeier, Universität der Bundeswehr München, Germany

511.5 Broadband Dual-Frequency and Dual-Polarized Antennas for GSM/3G/LTE Base Stations 1971
Y. Cui, R. Li, South China University of Technology, China

511.6 Dual Band CPW-Fed Butterfly-Shaped Slot Antenna 1973
Y.-W. Liu, P. Hsu, National Taiwan University, Taiwan

511.7 An Asymmetrical Dipole Tag with Optimum Harmonic Conversion Efficiency 1975
H. Aumann1, E. Kus1, B. Cline1, N. W. Emanetoglu1
1University of Maine, United States; 2University of Maine, United States

511.8 Double-Band Backfire Antenna for Low-Terahertz Frequencies 1977
H. D. Hristov, H. E. Carrasco, Universidad Técnica Federico Santa María, Chile

511.9 Dipole Excited Wideband Circularly Polarized Slot Antenna 1979
A. R. Harish, T. Kumar, Indian Institute of Technology Kanpur, India

511.10 Novel X+Ku Dual Band Monopulse Array Antenna 1981
D. R. Jahagirdar, Research Center Imarat, India
512. Satellite Communication Antennas

Session Chairs: Rainee Simons, Lorenzo Lo Monte

512.1 A Planar Passive Dual Band Array Feed Antenna for Ku Band Satellite Communication Terminals 1983
Z. Yang, K. F. Warnick, Brigham Young University, United States

512.2 A Deployable Quadriphilar Helix Antenna for CubeSat 1985
J. Costantine, D. Tran, M. Shiva, California State University Fullerton, United States; Y. Tawk, C. G. Christodoulou, University of New Mexico, United States; S. E. Barbin, Polytechnic University of Sao Paulo, Brazil

512.3 A X/Ka Bands Feeder Antenna for a Planetary Exploration High Gain Reflector Antenna 1987
K. Kagoshima, S. Takeda, K. Ikeda, Ibaraki University, Japan; T. Kobayashi, Y. Kato, H. Iijima, Tokyou Denki University, Japan; A. Tomiki, T. Toda, Japan Aerospace Exploration Agency, Japan

512.4 A Deployable Conical Log-Spiral Antenna Design for CubeSat Applications 1989
A. J. Ernest, Y. Tawk, C. G. Christodoulou, University of New Mexico, United States; J. Costantine, California State University Fullerton, United States

512.5 Volumetric Ring Array for Uniform Global Coverage in Satellite Applications 1991
A. Reyna, University of Tamaulipas UAT, Mexico; M. A. Panduro, C. Del Rio, Public University of Navarra, Spain

512.6 A Ground-Based Polarization-Forming Technique for Polarization-Tracking-Free Ku-Band Mobile Satellite Communication Systems 1993
Y. Suzuki, T. Sugiyama, NTT Access Network Service Systems Laboratories, Japan

512.7 Q-Band (37-41 GHz) Satellite Beacon Architecture for RF Propagation Experiments 1995
R. N. Simons, E. G. Wintucky, NASA Glenn Research Center, United States

512.8 A Broadband Soft Horn Antenna with Inhomogeneous Metasurface Coatings 1997
Q. Wu, C. P. Scarbrough, D. H. Werner, The Pennsylvania State University, United States; E. Lier, R. K. Shaw, Lockheed Martin, United States

512.9 A Ring Probe Fed Metallic Cavity Antenna for Circular Polarization 1999
K. Wei, Z. Zhang, Z. Feng, Tsinghua Univ., China

512.10 A New Corrugated Dielectric Loaded Expo-Profiled Conical Feed Horn N/A
S. M. Razavi zadeh, IRIB University, Iran
513. Theoretical and Nonlinear Electromagnetics

Session Chairs: George Hanson, Ioannis Besieris

513.1 EM Wave Scattering by Objects Moving on Bowditch-Lissajous Trajectories  N/A
D. Censor, Ben–Gurion University of the Negev, Israel

513.2 Airy Beams in the Presence of Inhomogeneities  N/A
I. M. Besieris, Virginia Polytechnic, United States

513.3 Rules for Parameter Selection in a Complex Point Beam Expansion  N/A
E. Martini, S. Maci, University of Siena, Italy

513.4 Electromagnetic Transmission Through a Slit Surrounded with Grooves in a Conducting Plane  N/A
D. Y. Na, J. H. Kim, Y. B. Park, Ajou University, South Korea; K.-Y. Jung, Hanyang University, South Korea

513.5 A Novel Non-Local Polarizabilities Model for Accurate Homogenization of Metamaterials  N/A
D. L. Sounas, C. Caloz, École Polytechnique de Montréal, Canada

513.6 Analytic Computation and Computer Simulations of Radiated Power and Surface Wave Power for a Hertzian Dipole over Planar Stratified Media  N/A
S. Weiss, Army Research Laboratory, United States

513.7 Electromagnetic Modeling of Nonlinear, Spatially-Dispersive Materials  N/A
G. Hanson, University of Wisconsin, Milwaukee, United States

513.8 Evolutionary Approach to Electromagnetics as an Alternative to the Time-Harmonic Field Method  N/A
O. A. Tretyakov, Gebze Institute of Technology, Turkey; F. Erden, University of Illinois at Urbana-Champaign, USA

513.9 Nonlinear Wave Scattering by Semiconductor Periodic Structure with Defect  N/A
O. V. Koptyuga, Institute of Radiophysics and Electronics of NAS of Ukraine, Ukraine; O. V. Shramkova, Queen’s University Belfast, UK

513.10 Electromagnetic Fields Generated by a Point Charge Moving with Uniform Velocity  N/A
S. R. Seshadri, 4502 Phyllis Court, Livermore, California 94550-7284, USA, United States
514. Analysis of Propagation and Radiation in Complex Media

Session Chairs: Ahmad Hoorfar, Muhammad Dawood

514.1 The Electromagnetic Field Structure in a Ferrite-Filled Transversely-Magnetized Waveguide 2001
A. K. Halley, R. S. Adams, The University of North Carolina at Charlotte, United States

514.2 Microstrip Dipoles Printed on Biaxial Substrates 2003
J. W. Graham, SRC, United States; J. K. Lee, Syracuse University, United States

514.3 RFID Performance in High-Voltage Corona 2005
M. M. Morys, G. D. Durgin, Georgia Institute of Technology, United States

514.4 RF Power Harvesting for Underground Sensors 2007
S. Jiang, S. Georgakopoulos, O. Jonah, Florida International University, United States

514.5 Analysis of Inhomogeneous Chiral Slab Using Taylor’s Series Expansion 2009
D. Zarifi, M. Soleimani, A. Abdolali, V. Nayyeri, Iran University of Science and Technology, Iran

514.6 Brillouin Precursors Through Concrete Walls for Through-the-Wall Imaging at Microwave Frequencies 2011
M. Dawood, Z. Zeeshan, New Mexico State University, United States; A. V. Alejos, University of Vigo, Spain

514.7 Microwave Pulse Optimization for Low Attenuation in Lossy Dispersive Media 2013
G. K. Zhu, S. V. Hum, C. D. Sarris, University of Toronto, Canada

514.8 A Simple Procedure to Evaluate Sommefeld Integrals in Layered Media Problems 2015
S. M. Rao, Naval Research Laboratory, United States; D. Chatterjee, University of Missouri Kansas City (UMKC), United States

514.9 Electric Dipole Radiation in Proximity of a Wall and a Ground Plane 2017
K. Hosseini, Tarbiat Modares University, Tehran; M. Dehmollaian, University of Tehran, Iran

514.10 Power Transmission for Sensors Embedded in Reinforced Concrete Structures 2019
S. Jiang, S. Georgakopoulos, O. Jonah, Florida International University, United States
IF51 MIMO Communication Strategies

Session Chairs: Jon Wallace, Hai Deng

IF51.1 Optimization of Antenna Excitation Phases for Transmit Beam Nulling with MIMO Radar 2021
L. Guo, T. Ma, H. Deng, Florida International University, United States

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Y. Huang, Montana State University, United States; C. Wang, The Cooper Union for the Advancement of Science and Art, United States

IF51.4 Increased Interference-Limited MIMO Capacity with Parasitic Reconfigurable Aperture Antennas 2025
R. Mehmood, J. W. Wallace, Jacobs University Bremen, Germany

IF51.5 A Hardware Demonstration of Wireless Power Transmission Based on Retro-Reflective Beamforming 2027
S. Sha, M. Lu, University of Texas at Arlington, United States

IF51.6 Effect of Metal Wire on Channel Capacity in Near-Field MIMO System 2029
D. Zhang, T. Hori, M. Fujimoto, University of Fukui, Japan

IF51.7 DOF of Indoor MIMO Systems 2031
J. Xu, Loyola Marymount University, United States

IF51.8 Multiple Polarization Communications 2033
R. B. Dybdal, S. J. Curry, F. Lorenzelli, D. J. Hinshilwood, The Aerospace Corporation, United States

IF51.9 A High-Rate MIMO Receiver in an FPGA 2035
M. Véstias, INESC-ID/ISEL/IPL, Portugal; P. Pinho, Instituto de Telecomunicações, Portugal

IF51.10 Compensation of Undesired Effects in MIMO Wireless Transceivers 2037
M. Cabarkapa¹, M. Božić¹, N. Neskovic², A. Nesković², D. Rudimº
¹Westminster University, United Kingdom; ºUniversity of Belgrade, Serbia
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Session Chairs: Ashwin Iyer, Marco Antoniades

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H.-L. Nguyen, A. K. Iyer, University of Alberta, Canada

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D. L. Sounas1, T. Kodera2, C. Caloz1
1École Polytechnique de Montréal, Canada; 2Yamaguchi University, Japan

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C. Guclu, S. Campione, S. H. Sedighy, F. Capolino, University of California, Irvine, USA

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A. Shahvarpour, S. Couture, C. Caloz, Ecole Polytechnique de Montreal, Canada

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S. Hrabar, I. Krois, A. Kirichenko, I. Bonic, University of Zagreb, Croatia

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F. Chen, X. Wang, E. Semouchkina, Michigan Technological University, United States

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A. P. Slobozhanyuk1, D. S. Filonov1, M. Lapine1, I. V. Shadrivov2, P. A. Belov1, Y. S. Kivshar2
1National Research University of Information Technologies, Mechanics and Optics (ITMO), Russian Federation; 2Australian National University, Australia

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P. Pa1, K. Duncan2, R. McCauley1, S. Yarlagadda1, M. Mirotznik1
1University of Delaware, United States; 2US Army, United States

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A. A. Gheethan, G. Mumcu, University of South Florida, United States

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Shanghai Jiao Tong University, China; ²University of Arizona, USA

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S. Kokic, E. Korkmaz, Fatih University, Turkey

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J. A. Bossard, D. H. Werner, The Pennsylvania State University, United States

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N. Burford, M. El-Shenawee, University of Arkansas, United States

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P. Y. Chen, A. Ali, University of Texas at Austin, United States

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H. Rajagopalan, T. J. Brockett, Y. Rahmat-Samii, University of California, Los Angeles, United States

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M. A. Salem, H. Bagci, King Abdullah University of Science and Technology, Saudi Arabia

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J. Larsen, B. A. Lail, Florida Institute of Technology, United States

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     1University of Arkansas at Little Rock, United States; 2Concordia University, Canada

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H.-T. Hsu, S.-C. Lin, T.-J. Huang, Yuan Ze University, Taiwan

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J.-P. Chen, P. Hsu, National Taiwan University, Taiwan

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Y. Li1,2, S. Sun1, L. Jiang2, T.-T. Ye1
1University of Electronic Science and Technology of China, China; 2The University of Hong Kong, China

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A. Hasan, Georgia Institute of Technology, United States; C. Zhou, J. D. Griffin, Disney Research Pittsburgh, United States

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M. He1,2, H. Sun1, Z. Zhong1, Y.-X. Guo1, M.-Y. Xia2
1National University of Singapore, Singapore; 2Peking University, China

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J. Choo, D. Kim, KAIST, South Korea; J. Ryoo, LS Industrial Systems, South Korea

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X. Li, Z. Sun, Beijing University of Posts and Telecommunications, China

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1NTT Microsystem Integration Laboratories, Japan; 2NTT Network Innovation Laboratories, Japan

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1Frederick University Cyprus (FUC), Cyprus; 2University of Cyprus, Cyprus; 3SignalGenerix Ltd, Cyprus

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1Georgia Institute of Technology, United States; 2CNRS, France
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