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Xiuzhang Cai, Kamal Sarabandi, University of Michigan, United States

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Peng Luo, Yuehui Cui, RongLin Li, South China University of Technology, China

MOP-A1.5P.4: BROADBAND HYBRID DIPOLE ANTENNA 1797
Changjiang Deng, Yue Li, Zhijun Zhang, Zhenghe Feng, Tsinghua University, China

MOP-A1.5P.5: A NOVEL RECONFIGURABLE BROADBAND ANTENNA FOR COGNITIVE RADIO SYSTEMS 1799
Seyyedehelnaz Ershadi, Imam Khomeini International University, Iran; Ahmed Abdelrahman, Min Liang, Xiaoju Yu, Hao Xin, University of Arizona, United States

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| MOP-A1.5P.6: A LOW-PROFILE VERTICAL POLARIZED OMNIDIRECTIONAL RADIATED AND BROADBAND PRINTED ANTENNA | 1801 |
| <i>Shu Lin, Guan-Jun Liu, Yu-Wei Zhang, Hua Zong, Shuang Qiu, Shengchang Lan, Alexander Denisov, Harbin Institute of Technology, China</i> | |
| MOP-A1.5P.7: HEXAGONAL SUPER WIDEBAND FRACTAL ANTENNA | N/A |
| <i>Sarthak Singhal, Amit Kumar Singh, Indian Institute of Technology(BHU), Varanasi, India, India</i> | |
| MOP-A1.5P.8: A WIDEBAND CIRCULARLY POLARIZED PRINTED DIPOLE ANTENNA COMPOSED OF RIGHT-ANGLED TRAPEZOIDS | 1805 |
| <i>Kyoichi Iigusa, Fumihide Kojima, National Institute of Information and Communications Technology, Japan</i> | |
| MOP-A1.5P.9: ANALYSIS OF E-PATCH ANTENNA PERFORMANCE OVER VARIOUS DIELECTRIC MATERIALS AT 2.4 GHZ | 1807 |
| <i>Cheng Qi, Muhammad Akbar, Gregory Durgin, Georgia Institute of Technology, United States</i> | |
| MOP-A1.5P.10: DESIGN OF MINIATURIZED FRACTAL QUASI-SELF COMPLIMENTARY ANTENNA FOR UWB APPLICATIONS | 1809 |
| <i>Mohamed Wahab, Arab Academy for Science, Technology & Maritime Transport, Egypt; Anwer Sayed Abd El-Hameed, Egypt-Japan University of Science and Technology(E-JUST), Egypt; Wael Swelam, Mohamed Abd El-Azeem, Arab Academy for Science, Technology & Maritime Transport, Egypt</i> | |
| MOP-A1.6P: SLOT BASED BROADBAND/ULTRA-WIDEBAND ANTENNAS | |
| MOP-A1.6P.1: AN X-BAND CIRCULARLY POLARIZED SUBSTRATE INTEGRATED WAVEGUIDE SLOT ANTENNA | 1811 |
| <i>Pushkar Kulkarni, Daniel van der Weide, University of Wisconsin-Madison, United States</i> | |
| MOP-A1.6P.2: GAIN ENHANCEMENT OF UWB HORIZONTALLY POLARIZED SLOT ANTENNA | N/A |
| <i>Raj Kumar, ARDE, India</i> | |
| MOP-A1.6P.3: A PLANAR UWB ANTENNA WITH QUAD NOTCHED BANDS USING RAKE-SHAPED RESONATOR AND L-SHAPED SLOTS | 1815 |
| <i>Kai Yu, Yingsong Li, Xianping Luo, Xiaomin Liu, Harbin Engineering University, China</i> | |
| MOP-A1.6P.4: A Y- SLOT WIDEBAND CIRCULARLY POLARIZED ANTENNA FOR NON-CONTACT HEALTH MONITORING APPLICATIONS | 1817 |
| <i>Mehrdad Nosrati, Negar Tavassolian, Stevens Institute of Technology, United States</i> | |
| MOP-A1.6P.5: COMPACT SIZE UWB ANTENNA WITH MULTI-BAND NOTCHED CHARACTERISTICS FOR WIRELESS APPLICATIONS | 1819 |
| <i>Ahmed Ibrahimi, Minia University, Egypt; Mahmoud Abdalla, MTC College, Egypt</i> | |
| MOP-A1.7P: TRAVELLING WAVE ULTRA-WIDEBAND ANTENNAS | |
| MOP-A1.7P.1: WIDEBAND DUAL-MODE MONOSTATIC SIMULTANEOUS TRANSMIT AND RECEIVE ANTENNA SYSTEM | 1821 |
| <i>Ehab Etellisi, Mohamed Elmansouri, Dejan Filipovic, University of Colorado Boulder, United States</i> | |
| MOP-A1.7P.2: A WIDE-BAND SPIRAL BASED AMPLITUDE-ONLY AZIMUTH DIRECTION FINDING SYSTEM | 1823 |
| <i>Gregor Lasser, University of Colorado, United States; Dejan Filipovic, University of Colorado Boulder, United States</i> | |
| MOP-A1.7P.3: CONICAL LOG SPIRAL ANTENNA DEVELOPMENT FOR THE UWBRAD ICE SHEET INTERNAL TEMPERATURE SENSING | 1825 |
| <i>Domenic Belgiovane, Chi-Chih Chen, Joel Johnson, The Ohio State University, United States</i> | |

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| MOP-A1.7P.4: AN E-TEXTILE EDGE-FED SPIRAL ANTENNA FOR FLEXIBLE WEARABLE APPLICATIONS | 1827 |
| <i>Meenakshi Kohli, Chris G. Bartone, Ohio University, United States</i> | |
| MOP-A1.7P.5: AN ARCHIMEDEAN SPIRAL ANTENNA LOADED WITH SUPERSTRATE AND BACKED BY 3D PRINTED GROUND STRUCTURE FOR DIRECTIONAL PATTERNS | 1829 |
| <i>Phu Tran, Satish Sharma, San Diego State University, United States</i> | |
| MOP-A1.7P.6: COMPUTATIONAL STUDY OF FREQUENCY STEERED HELICAL ANTENNAS FOR HIGH POWER APPLICATION | 1831 |
| <i>S. Nickolas, J. Roos, P. Collins, J. Petrosky, Andrew Terzuoli, IEEE, United States</i> | |
| MOP-A1.7P.7: LOW PROFILE, MINIMALLY ABSORPTIVE CAVITY BACKED NON-COMPLIMENTARY SINUOUS ANTENNA | 1833 |
| <i>Timothy Samson, Thomas Cencich, Lockheed Martin Space Systems, United States</i> | |
| MOP-A1.7P.8: DESIGN OF A TAPERED SLOT-LINE ANTENNA FOR WIDEBAND SAR IMAGING | 1835 |
| <i>Matthew Horst, Mohammad Tayeb Ghasr, Reza Zoughi, Missouri University of Science and Technology, United States</i> | |
| MOP-A1.8P: DIRECTIONAL ULTRA-WIDEBAND ANTENNAS | |
| MOP-A1.8P.1: FLUSH-MOUNTABLE VIVALDI ARRAY ANTENNA | 1837 |
| <i>Elie Tianang, Mohamed Elmansouri, Dejan Filipovic, University of Colorado Boulder, United States</i> | |
| MOP-A1.8P.2: MODELING AND DESIGN OF K/Ka/V-BAND HIGH POWER FEED FOR THE LUNEBURG LENS | 1839 |
| <i>Maxim Ignatenko, Brian Simakauskas, Dejan Filipovic, University of Colorado Boulder, United States</i> | |
| MOP-A1.8P.3: LOW COST ULTRA-WIDEBAND MILLIMETER-WAVE ARRAY | 1841 |
| <i>Markus Novak, The Ohio State University, United States; Félix Miranda, NASA Glenn Research Center, United States; John Volakis, The Ohio State University, United States</i> | |
| MOP-A1.8P.4: FISH-EYE SHAPED DIELECTRIC FLAT LENS DESIGN UTILIZING 3-D PRINTING TECHNOLOGY | 1843 |
| <i>Ashutosh Patri, Jayanta Mukherjee, Indian Institute of Technology Bombay, India</i> | |
| MOP-A1.8P.5: MOLDED INTERCONNECT DEVICE (MID) DESIGN FOR BASE STATION ANTENNA ELEMENTS | 1845 |
| <i>Susanne Schilliger Kildal, Technische Universität München, Germany; Nadine Pfuhl, Roberto Flamini, Bruno Biscontini, Huawei Technologies Duesseldorf GmbH, Germany</i> | |
| MOP-A1.8P.6: DISTRIBUTION PROFILES FOR TRANSVERSE PERMITTIVITY GRADIENT SUPERSTRATES IN EXTREMELY WIDEBAND RESONANT CAVITY ANTENNAS | 1847 |
| <i>Raheel Maqsood Hashmi, Karu P. Esselle, Macquarie University, Australia</i> | |
| MOP-A1.8P.7: A BROADBAND MAGNETOELECTRIC DIPOLE ANTENNA WITH STABLE WIDE BEAMWIDTH | 1849 |
| <i>Wenbin Qiu, Chang Chen, Weidong Chen, University of Science and Technology of China, China</i> | |
| MOP-A1.9P: ANTENNAS FOR ULTRA-WIDEBAND APPLICATIONS | |
| MOP-A1.9P.1: DISPERSION CODE MODULATION FOR ENHANCED SPECTRAL EFFICIENCY IN WIRELESS COMMUNICATIONS | 1851 |
| <i>Lianfeng Zou, Shulabh Gupta, Christophe Caloz, Polytechnique Montréal, Canada</i> | |

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| MOP-A1.9P.2: INITIAL PHANTOM MEASUREMENTS OF THE DOPPLER EFFECT DURING RESPIRATION IN BAN | 1853 |
| <i>Ruben-Gregorio Garcia-Serna, Jose-Maria Molina-Garcia-Pardo, Leandro Juan Llacer, Universidad Politécnic de Cartagena, Spain; Concepcion Garcia-Pardo, Narcis Cardona, Universidad Politécnic de Valencia, Spain</i> | |
| MOP-A1.9P.3: WIDEBAND DUAL-POLARIZED BI-STATIC SIMULTANEOUS TRANSMIT AND RECEIVE ANTENNA SYSTEM | 1855 |
| <i>Prathap Valale Prasannakumar, Mohamed Elmansouri, Dejan Filipovic, University of Colorado Boulder, United States</i> | |
| MOP-A1.9P.4: DIRECTION FINDING USING AN ANTENNA WITH DIRECTION DEPENDENT IMPULSE RESPONSE | 1857 |
| <i>Heinrich Foltz, University of Texas Rio Grande Valley, United States; Obadiah Kegege, Serhat Altunc, NASA Goddard Space Flight Center, United States</i> | |
| MOP-A1.9P.5: BROADBAND DUAL-POLARIZED OVAL-SHAPED ANTENNA FOR BASE-STATION APPLICATIONS | 1859 |
| <i>Dong-Hua Huang, Qing-Xin Chu, South China University of Technology, China</i> | |
| MOP-A1.9P.6: VHF ANTENNA FOR AIRFOIL STRUCTURAL INTEGRATION | 1861 |
| <i>David Zeppettella, Air Force Research Laboratory, United States; Mohammad Ali, University of South Carolina, United States</i> | |
| MOP-A1.9P.7: DESIGN OF AN ULTRA-WIDEBAND ANTENNA USING FLEXIBLE GRAPHENE-BASED CONDUCTOR SHEETS | 1863 |
| <i>Sajid Asif, Adnan Iftikhar, Benjamin Braaten, North Dakota State University, United States; Muhammad Saeed Khan, University of Padova, Italy</i> | |
| MOP-A1.9P.8: DESIGN OF A DUAL-BAND PRINTED SLOT ANTENNA WITH UTILIZING A BAND REJECTION ELEMENT FOR THE 5G WIRELESS APPLICATIONS | 1865 |
| <i>Mohamed Mamdouh, Osama Haraz, Assiut University, Egypt; Saleh Alshebeili, King Saud University, Saudi Arabia</i> | |
| MOP-A1.9P.9: 3:1-BANDWIDTH MILLIMETER-WAVE PUMA ARRAY | 1867 |
| <i>Rick Kindt, Rashmi Mital, Naval Research Laboratory, United States; Marinos N. Vouvakis, University of Massachusetts Amherst, United States</i> | |
| MOP-A1.9P.10: BROADBAND RECTENNA ARRAY FOR RF ENERGY HARVESTING | 1869 |
| <i>Mahima Arrawatia, Maryam Shojaei Baghini, Girish Kumar, Indian Institute of Technology Bombay, India</i> | |
| TUP-A1.1P: ANTENNA THEORY I | |
| TUP-A1.1P.1: APPLICATION OF AUTOCORRELATION PRINCIPLES TO DETERMINE RADIATED POWER OF A LINE SOURCE RADIATOR WITH A COSINE-ON-A-PEDESTAL DISTRIBUTION | 1871 |
| <i>Christopher Wilson, Jeffrey Young, Oklahoma State University, United States</i> | |
| TUP-A1.1P.2: SYNTHESIS OF LOW SIDE LOBE PLANAR ARRAYS | 1873 |
| <i>Ahmad Safaai-Jazi, Warren Stutzman, Virginia Polytechnic Institute and State University, United States</i> | |
| TUP-A1.1P.3: EFFECT OF SPIRAL FLARE RATE ON CP PERFORMANCE OF A DUAL CIRCULAR-POLARIZED SPIRAL ANTENNA | 1875 |
| <i>Ali M. Mehrabani, Lotfollah Shafai, University of Manitoba, Canada</i> | |
| TUP-A1.1P.4: NUMERICAL VALIDATION OF ARECIBO-BASED ANALYTICAL HAT ANTENNA THEORY USING CANONICAL PEC/PMC STRIP GRIDS | 1877 |
| <i>Per-Simon Kildal, Chalmers University of Technology, Sweden; Abolfazl Haddadi, AmirKabir University of Technology, Iran; Jian Yang, Chalmers University of Technology, Sweden</i> | |
| TUP-A1.1P.5: SUPPRESSION OF SURFACE WAVE IN PRINTED ANTENNAS BY USING A UNIAXIALLY CONDUCTING COVER LAYER | 1879 |
| <i>Teerapong Orankitanun, Nirod Das, Tandon School of Engineering, New York University, United States</i> | |

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| TUP-A1.1P.6: ON USING THE ELECTRICAL CHARACTERISTICS OF CARBON MICROFIBERS FOR DESIGNING A MONOPOLE ANTENNA | 1881 |
| <i>Sajid Asif, Adnan Iftikhar, Jacob Parrow, Benjamin Braaten, North Dakota State University, United States; Muhammad Saeed Khan, University of Padova, Italy</i> | |
| TUP-A1.1P.7: ANALYSIS OF THE POLARIZATION PROPERTIES OF DUAL POLARIZED INVERTED VEE DIPOLE ANTENNAS OVER A GROUND PLANE | 1883 |
| <i>Rene Baelemans, International Centre for Radio Astronomy Research(ICRAR), Netherlands; Adrian Sutinjo, Peter Hall, Curtin University, Australia; Bart Smolders, Eindhoven University of Technology, Netherlands</i> | |
| TUP-A1.1P.8: LOW PROFILE CIRCULARLY-POLARIZED MICROSTRIP CROSSED ANTENNA WITH WIDE BEAMWIDTH | 1885 |
| <i>Ya-Qing Wen, Bing-Zhong Wang, Zhi-Shuang Gong, Qiang Gao, University of Electronic Science and Technology of China, China</i> | |
| TUP-A1.1P.9: NEW FORMULAS FOR NEAR FIELDS ON-AXIS OF CIRCULAR APERTURE WITH TAPERED DISTRIBUTIONS | 1887 |
| <i>Vladimir Chtcherbakov, ASMAR, Chile</i> | |
| TUP-A1.2P: ANTENNA THEORY II | |
| TUP-A1.2P.1: PREDICTING THE STARTING DISTANCE OF THE FAR FIELD | 1889 |
| <i>Mohammad Abdallah, Tapan K. Sarkar, Syracuse University, United States; Magdalena Salazar-Palma, Universidad Carlos III de Madrid, Spain; Vikass Monebhurrn, EXPOSE/PIEM, GeePs Group of electrical engineering, France</i> | |
| TUP-A1.2P.2: DEFINITION OF EFFECTIVE AREA SHAPE AND GUIDE FOR SUPERDIRECTIVE ANTENNA DESIGN USING POYNTING STREAMLINES ANALYSIS | 1891 |
| <i>Junming Diao, Karl Warnick, Brigham Young University, United States</i> | |
| TUP-A1.2P.3: AN OVERVIEW OF DUAL POLARIZED ISOLATED ANTENNAS | 1893 |
| <i>Mirhamed Mirmozafari, University of Oklahoma, United States; Shaya Karimkashi, Guifu Zhang, Space X, United States</i> | |
| TUP-A1.2P.4: PRELIMINARY RESULTS ON CYLINDRICAL ANTENNAS FOR UNDERWATER COMMUNICATION | 1895 |
| <i>Andrea Massaccesi, Paola Pirinoli, Politecnico di Torino, Italy</i> | |
| TUP-A1.2P.5: METHOD TO GENERATE ELECTROMAGNETIC FIELD WITH ORBITAL ANGULAR MOMENTUM IN CIRCULAR WAVEGUIDE | 1897 |
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| <i>Yu Yao, Xianling Liang, Xudong Bai, Zheng Peng, Yang Qian, Junping Geng, Ronghong Jin, Shanghai Jiao Tong University, China</i> | |
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| <i>Timothy Sleasman, Mohammadreza F. Imani, Jonah N. Gollub, David R. Smith, Duke University, United States</i> | |
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| TUP-A1.2P.9: A PLATFORM-AWARE APPROACH TO THE DESIGN OF ASYMMETRIC ARRAYS FOR UAVS BASED ON GA OPTIMIZATION | 1905 |
| <i>Luca Scorrano, Libero Dinoi, Elettronica ELT, Italy</i> | |

TUP-A2.1P: HIGH-IMPEDANCE AND ARTIFICIAL MAGNETIC SURFACES FOR ANTENNA APPLICATIONS

TUP-A2.1P.1: A HIGH GAIN EBG BACKED MONOPOLE FOR MBAN OFF-BODY COMMUNICATION..... 1907
Muhammad Ali Babar Abbasi, Symeon Nikolaou, Frederick University, Cyprus; Marco A. Antoniadis, University of Cyprus, Cyprus

TUP-A2.1P.2: A THIN SWITCHED BEAM PARASITIC ANTENNA ARRAY ON PLANAR EBG FOR 2.4 GHZ 1909
WIRELESS APPLICATION
Nowrin Chamok, Mohammad Ali, University of South Carolina, United States

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IMPEDANCE SURFACES
Mikal Askarian Amiri, Constantine A. Balanis, Craig R. Birtcher, Arizona State University, United States

TUP-A2.1P.4: APPLICATIONS OF CIRCULARLY SYMMETRIC HIGH IMPEDANCE SURFACES FOR 1913
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Mikal Askarian Amiri, Constantine A. Balanis, Craig R. Birtcher, Arizona State University, United States

TUP-A2.1P.5: STUDY OF FREQUENCY OFFSET BEHAVIOR FOR ARTIFICIAL MAGNETIC 1915
STRUCTURE IN COMPACT MOBILE DEVICE
Chung-Yuan Liu, Chi-Kai Shen, Shih-Yuan Chen, Tzong-Lin Wu, National Taiwan University, Taiwan; Jinjia Chang, Bin-Chyi Tseng, Jackson Yen, ASUSTeK Computer Inc., Taiwan

TUP-A2.1P.7: DIPOLES SUPPORTING MULTIPLE UNIQUE RADIATING MODES ON TOP OF A 1917
HIGH IMPEDANCE SURFACE
Mohana Vamshi Komandla, Behrouz Babakhani, Satish Sharma, San Diego State University, United States

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CORRECTING STRUCTURE FOR ELECTROMAGNETIC BANDGAP RESONATOR ANTENNAS

TUP-A2.1P.10: PRELIMINARY RESULTS OF AN ARRAY OF RESONANT CAVITY ANTENNAS AT 60 1921
GHZ

TUP-A1.1P: ADVANCES IN COMPLEX ANTENNA SYSTEMS AND APPLICATIONS

TUP-A1.1P.1: DEDICATED STOCHASTIC FRAMEWORK FOR THE VARIABILITY ANALYSIS OF 1923
COMPRESSIBLE TEXTILE ANTENNAS
Marco Rossi, Sam Agneessens, Dries Vande Ginste, Hendrik Rogier, Ghent University, Belgium

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Zixuan Yi, Qi Zhu, University of Science and Technology of China, China

TUP-A1.1P.4: DESIGN OF A COMPACT HIGH GAIN END-FIRE DIELECTRIC ROD ANTENNA 1929
Ru Meng, Qi Zhu, University of Science and Technology of China, China

TUP-A1.1P.5: A FLEXIBLE UWB LOW PROFILE ANTENNA FOR WEARABLE APPLICATIONS 1931
Sherif Zahran, Arab Academy for science and technology, Egypt; Mahmoud Abdalla, MTC Collage, Egypt; Abdel Hamid Gaafar, Arab Academy for Science, Technology & Maritime Transport, Egypt

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| TUP-A1.1P.6: ACTIVE IMAGING USING A METAMATERIAL-BASED COMPRESSIVE REFLECTOR ANTENNA | 1933 |
| <i>Ali Molaei, Juan Heredia Juesas, Gregory Allan, Jose Martinez-Lorenzo, Northeastern University, United States</i> | |
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| <i>Muhammad Akram Karimi, Atif Shamim, King Abdullah University of Science and Technology, Saudi Arabia</i> | |
| TUP-A1.1P.8: SPACE FILLING CURVES FOR ADDITIVE MANUFACTURING OF SPATIALLY GRADED DIELECTRIC STRUCTURES | 1937 |
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| <i>Pierre Basilo Almeida Fechine, Universidade Federal do Ceara, Brazil; Glauco Fontgalland, Federal University of Campina Grande, Brazil; Antonio Sergio Bezerra Sombra, Universidade Federal do Ceara, Brazil</i> | |
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| <i>Asimina Kiourti, The Ohio State University, United States; Roy B. V. B. Simorangkir, Syed Muzahir Abbas, Karu P. Esselle, Macquarie University, Australia; John Volakis, The Ohio State University, United States</i> | |
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| <i>Jingni Zhong, Asimina Kiourti, John Volakis, The Ohio State University, United States; Tom Sebastian, Yakup Bayram, PaneraTech, Inc., United States</i> | |
| TUP-A1.1P.12: A NOVEL DESIGN OF IMPLANTABLE MEDICAL STENT FOR REDUCING THE MRI RF-INDUCED HEATING | 1945 |
| <i>Dawei Li, Xiaohe Ji, Jianfeng Zheng, University of Houston, United States; Changwang Pan, Micro-Tech Co., Ltd., United States; Ji Chen, University of Houston, United States</i> | |
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| <i>Farnaz Foroughian, Ahmadreza Ghahremani, University of Tennessee, United States; Aly E. Fathy, University of Tennessee at Knoxville, United States; John Simpson, University of Tennessee, United States</i> | |
| TUP-A2.3P: METAMATERIALS FOR MICROWAVE APPLICATIONS: LENSES, SENSORS AND GUIDED-WAVE STRUCTURES | |
| TUP-A2.3P.1: TRANSFORMATION OPTICS-INSPIRED DISPERSION-CORRECTED GRADIENT-INDEX LENS DESIGN | 1949 |
| <i>Donovan Brocker, Sawyer D. Campbell, Jogender Nagar, Douglas Werner, The Pennsylvania State University, United States</i> | |
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| <i>Abdulbaset Ali, Omar Ramahi, University of Waterloo, Canada; Abdelisr Mooman, University of Rochester, United States</i> | |

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| <i>Jimmy G.D. Hester, Manos M. Tentzeris, Yunnan Fang, Georgia Institute of Technology, United States</i> | |
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| <i>Ladislau Matekovits, Politecnico di Torino, Italy; Aldo De Sabata, Politehnica University Timisoara, Romania; Ovidiu Lipan, University of Richmond, United States; Andrei Silaghi, Silviu Baderca, Adrian Buta, Politehnica University Timisoara, Romania</i> | |
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| <i>Saud M. Saeed, Constantine A. Balanis, Arizona State University, United States; Ahmet C. Durgun, Intel Corporation, United States</i> | |
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| <i>Kazuo Nishimura, Ryukoku University, Japan</i> | |
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| TUP-A2.3P.12: APPLICATION OF THE QCTO TECHNIQUE TO DESIGN FLAT FRESNEL GRIN LENSES | 1969 |
| <i>Xiande Wang, Douglas Werner, The Pennsylvania State University, United States</i> | |
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