

2019 Thirteenth International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials 2019)

Rome, Italy
16 – 21 September 2019



IEEE Catalog Number: CFP19MEV-POD
ISBN: 978-1-7281-0478-2

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP19MEV-POD
ISBN (Print-On-Demand):	978-1-7281-0478-2
ISBN (Online):	978-1-7281-0477-5

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

FREQUENCY RECONFIGURABLE BASED ANTENNA UTILIZING CODING META-SURFACE FOR FUTURE 5G APPLICATIONS	1
<i>I. H. Abdelazeem ; A. A. Ibrahim ; M. A. Abdalla</i>	
WIDE BAND POLARIZATION CONVERTER GRAPHENE METASURFACE FOR MID-INFRARED BAND.....	4
<i>Ahmed A. Abdel Aziz ; Ahmed A. Ibrahim ; Mahmoud A. Abdalla</i>	
SYMMETRIES AND ANGULAR SCATTERING PROPERTIES OF METASURFACES	7
<i>K. Achouri ; O. J. F. Martin</i>	
WAVE PROPAGATION IN PERO-ELASTIC MATERIALS USING A SHIFTED CELL METHOD FOR THEORY OF BIOT	14
<i>S. Ahsani ; E. Deckers ; C. Claeys ; W. Desmet</i>	
UTILIZATION OF Al₂O₃/PVP NANOCOMPOSITE AS AN INTERFACIAL LAYER FOR SCHOTTKY STRUCTURES	17
<i>Buket Akin ; Gh. Pirgholi-Givi ; Javid Farazin ; Y. Azizian-Kalandaragh ; Semsettin Altindal</i>	
ALL-DIELECTRIC METASURFACES WITH TOROIDAL MULTIPOLE RESONANCES AT SUB-THZ.....	20
<i>J. F. Algorri ; D. C. Zografopoulos ; A. Ferraro ; Pedro Martín-Mateos ; B. García-Cámarra ; Aldo Moreno-Oyervides ; Viktor Krozer ; Pablo Acedo ; R. Becccherelli ; J. M. Sánchez-Peña ; R. Vergaz</i>	
HIGH-PERFORMANCE 50µM SILICON-BASED ON-CHIP ANTENNA WITH HIGH PORT-TO-PORT ISOLATION IMPLEMENTED BY METAMATERIAL AND SIW CONCEPTS FOR THZ INTEGRATED SYSTEMS	23
<i>Mohammad Alibakhshikenari ; Bal S. Virdee ; Chan H. See ; Raed A. Abd-Alhameed ; Francisco Falcone ; Ernesto Limiti</i>	
SILICON-BASED 0.450-0.475 THZ SERIES-FED DOUBLE DIELECTRIC RESONATOR ON-CHIP ANTENNA ARRAY BASED ON METAMATERIAL PROPERTIES FOR INTEGRATED-CIRCUITS.....	26
<i>Mohammad Alibakhshikenari ; Bal S. Virdee ; Chan H. See ; Raed A. Abd-Alhameed ; Francisco Falcone ; Ernesto Limiti</i>	
A METASURFACE BASED MODE CONVERTER.....	29
<i>F. Alsolamy ; A. Grbic</i>	
DESIGN OF A COMPACT AND MULTIFUNCTIONAL RADIATING STRUCTURE EXPLOITING THE MANTLE CLOAKING TECHNIQUE	32
<i>F. Andreau ; M. Barbuto</i>	
THIN FILM METAMATERIAL SPLIT RING RESONATORS AT MICROWAVE FREQUENCIES	35
<i>Nees Paul ; Sikha K. Simon ; C. Bindu ; Jolly Andrews ; V. P. Joseph</i>	
A SINGLE-LAYER DIELECTRIC METASURFACE ENABLING WAVE INCIDENCE DIRECTION CONTROL	38
<i>Muhammad Afnan Ansari ; Muhammad Qasim Mehmood ; Inki Kim ; Muhammad Hamza Waseem ; Tauseef Tauqueer ; Selcuk Yerci ; Junsuk Rho</i>	
LEFT-HANDED METAMATERIALS MATCHED TO FREE SPACE THROUGH MECHANICAL TUNING	44
<i>J. D. Baena ; A. C. Escobar ; A. Sayanskiy ; S. B. Glybovski</i>	
REFLECTIONLESS PERFECT ABSORBER WITH LOW ANGULAR AND POLARIZATION SENSITIVITY	47
<i>J. P. Del Risco ; A. Sayanskiy ; J. D. Ortiz ; S. B. Glybovski ; J. D. Baena</i>	
NON-LINEAR HIGH PERMITTIVITY ARTIFICIAL DIELECTRIC	50
<i>J. P. Del Risco ; J. D. Baena</i>	
QUASI-ISOTROPIC HUYGENS RESONANT SCATTERER IN MICROWAVES	53
<i>A. C. Escobar ; Andrey Sayanskiy ; J. L. Araque-Quijano ; S. B. Glybovski ; J. D. Baena</i>	
ANTIREFLECTIVE COATINGS FOR HIGH IMPEDANCE JUMPS.....	56
<i>J. D. Mateus ; H. Vincen Posada ; J. D. Baena</i>	
TOPOLOGICAL DESIGN FOR ANTENNA PATTERN SHAPING	59
<i>M. Barbuto ; M.-A. Miri ; A. Alú ; F. Bilotto ; A. Toscano</i>	
TOPOLOGICAL ROBUSTNESS OF PHASE SINGULARITIES AT MICROWAVE FREQUENCIES	62
<i>A. Bassotti ; M. Barbuto ; A. Alú ; F. Bilotto ; A. Toscano</i>	

ENHANCED MAGNETO-OPTIC RESPONSE OF THE ULTRATHIN IRON-GARNET FILMS	68
<i>O. V. Borovkova ; M. Levy ; A. A. Voronov ; M. A. Kozhaev ; A. Chakravarthy ; H. Hashim ; B. Blasiola ; D. Karki ; C. Sheidler ; F. Jomard ; S. A. Dagesyan ; E. Popova ; N. Keller ; V. I. Belotelov</i>	
TRANSVERSE MAGNETO-OPTICAL INTENSITY EFFECT IN NON-SYMMETRIC PLASMONIC NANOSTRUCTURES	71
<i>O. V. Borovkova ; D. O. Ignatyeva ; A. A. Voronov ; A. N. Kalish ; M. A. Kozhaev ; H. Hashim ; S. A. Dagesyan ; A. N. Shaposhnikov ; V. N. Berzhansky ; V. G. Achanta ; A. K. Zvezdin ; L. V. Panina ; V. I. Belotelov</i>	
VARACTOR-LOADED METAGRATINGS FOR THE DYNAMIC MANIPULATION OF THE DIFFRACTED WAVES	74
<i>A. Casolaro ; A. Toscano</i>	
FREE-SPACE LAYERED SHEET-ISOLATOR	77
<i>R. Kononchuk ; C. Pfeiffer ; N. Limberopoulos ; I. Anisimov ; I. Vitebskiy ; A. A. Chabanov</i>	
RESONANT TRANSMITTANCE OF ASYMMETRIC ARRAY OF OPTICAL CAVITIES	80
<i>R. Kononchuk ; I. Vitebskiy ; A. A. Chabanov</i>	
BROAD TERAHERTZ RADIAL PERFECTLY SYMMETRIC GRADIENT HONEYCOMB ALL-DIELECTRIC PLANAR LUNEBURG LENS	83
<i>Jin Chen ; Mingji Chen ; Daining Fang</i>	
QUASIPERIODIC COMPOSITES: MULTISCALE REITERATED HOMOGENIZATION	86
<i>E. Cherkaev ; S. Guenneau ; H. Hridurgi ; N. Wellander</i>	
RANDOM CHECKERBOARD METASURFACE FOR WIDEBAND RCS REDUCTION	89
<i>Shraddha Choudhary ; Kirankumar R. Hiremath</i>	
DESIGN OF WIDEBAND TRANSMISSION POLARIZATION CONVERTERS	92
<i>F. Costa ; M. Borgese</i>	
NON-SCATTERING MULTI-MIRROR SYSTEMS FOR FIELD LOCALIZATION	95
<i>F. S. Cuesta ; V. S. Asadchy ; M. S. Mirmoosa ; S. A. Tretyakov</i>	
ADVANCED CONTROL OF INVISIBLE CAVITY RESONATORS WITH BIANISOTROPIC METASURFACES	98
<i>F. Cuesta ; J. Li ; A. Díaz-Rubio ; V. Asadchy ; S. Cummer ; S. Tretyakov</i>	
COMPREHENSIVE DESCRIPTION OF SPACETIME CRYSTAL BANDGAPS	104
<i>Zoë-Lise Deck-Léger ; Christophe Caloz</i>	
EXPLORATION OF MICROWAVE EDGE MODES ON A METASURFACE WITH GLIDE SYMMETRY	107
<i>J. D. De Pineda ; A. P. Hibbins ; J. R. Sambles</i>	
ULTRASENSITIVE EXCEPTIONAL POINT CIRCUIT FOR ENHANCED PHYSIOLOGICAL SENSING	110
<i>Z. Dong ; J. S. Ho</i>	
DIPLEXER BASED ON SURFACE PLASMON POLARITON-LIKE PROPAGATION INDUCED BY STRUCTURAL DISPERSION OF SUBSTRATE INTEGRATED WAVEGUIDE	113
<i>M. Drljaca ; Z. Sakotic ; N. Cselyuszka ; V. Crnojevic Benigin ; N. Jankovic</i>	
WAVEGUIDE TAPERING USING CONFORMAL TRANSFORMATION OPTICS FOR IDEAL TRANSMISSION	116
<i>Hossein Eskandari ; Amir Reza Attari ; Mohammad Saeed Majedi ; Tomáš Tyc</i>	
REALIZATION OF ACHROMATIC MICROWAVE METASURFACE LENSES	122
<i>Ashif A. Fathnan ; David A. Powell</i>	
SPECTRAL SINGULARITIES IN NON-HERMITIAN CYLINDRICAL GEOMETRIES	125
<i>M. Moccia ; G. Castaldi ; A. Alù ; V. Galdi</i>	
SPACE-TIME-CODING DIGITAL METASURFACES	128
<i>L. Zhang ; X. Q. Chen ; S. Liu ; Q. Zhang ; J. Zhao ; J. Y. Dai ; G. D. Bai ; X. Wan ; Q. Cheng ; G. Castaldi ; V. Galdi ; T. J. Cui</i>	
NONLOCAL AND NON-HERMITIAN TRANSFORMATION OPTICS	131
<i>M. Moccia ; G. Castaldi ; V. Galdi</i>	
SOME IDEAS FOR NON-HERMITIAN DOPING OF EPSILON-NEAR-ZERO MEDIA	134
<i>M. Coppolaro ; M. Moccia ; G. Castaldi ; N. Engheta ; V. Galdi</i>	
ENHANCEMENT OF WEAK NONLOCALITY IN APERIODICALLY ORDERED MULTILAYERED DIELECTRIC METAMATERIALS	137
<i>M. Coppolaro ; G. Castaldi ; V. Galdi</i>	
INVESTIGATION OF SURFACE WAVES ON ANISOTROPIC SELF-COMPLEMENTARY METASURFACES	140
<i>V. Lenets ; A. Sayanskiy ; S. Glybovski ; E. Martini ; J. Baena ; S. Maci</i>	
THE RAYLEIGH HYPOTHESIS FOR METASURFACE OPTIMIZATION: ANOMALOUS GRAZING REFRACTION BY CORRUGATED SILICON	143
<i>Maxim V. Gorkunov ; Alexander A. Antonov</i>	

ABLATION OF DEEP-SEATED BRAIN TUMORS USING METASURFACES	146
<i>Mohamad-Javad Hajji-Ahmadi ; Reza Faraji-Dana ; Christophe Caloz</i>	
TOPOLOGICAL TUNING OF A DISPERSION CURVE BY CONTROLLING LOCATIONS OF IMPURITIES WITH EQUIVALENT CIRCUIT MODEL	149
<i>A. Haegawa ; T. Hisakado ; A. Islam ; O. Wada</i>	
USING OPTICAL TWEEZERS TO ASSEMBLE MICRO-SPHERES WITHIN METAMATERIALS THAT ACHIEVE ENGINEERED WAVE PROPAGATION PROPERTIES	152
<i>L. A. Shaw ; S. Chizari ; M. Lim ; M. Porter ; S. Austin ; J. B. Hopkin</i>	
AN ACOUSTIC FREQUENCY SELECTIVE CURTAIN COMPOSED OF THICKER AND THINNER MEMBRANES AND PERIODICALLY CONNECTED ELASTIC PILLARS	155
<i>Y. Horii ; W. Hong ; A. Tamaki ; T. Kitamura</i>	
BOUND STATES, REFLECTION, AND TOPOLOGY	158
<i>S. A. R. Horsley</i>	
MINIATURIZATION OF UNIT CELL OF SELF-OSCILLATING NON-FOSTER METASURFACE	161
<i>S. Hrabar ; K. Cavar ; M. Miksic ; L. Tomic ; L. Vincelj</i>	
TOWARDS EXPERIMENTAL VERIFICATION OF ZERO-REFLECTION FROM TIME-VARYING CAPACITOR	164
<i>S. Hrabar ; B. Jelacic ; L. Mandic ; J. Papak</i>	
DETECTING THE CHIRP SIGNALS ON THE SURFACE OF THE TRANSFORMATION MATERIALS GRIN LENS	166
<i>Jiang-Chao Shi ; Jin Hu</i>	
HIGH-SENSITIVITY LABYRINTH METASURFACE WORKING AT THZ FOR THIN-FILM SENSING	172
<i>I. Jáuregui-López ; P. Rodriguez-Ulibarri ; A. Urrutia ; S. Kuznetsov ; M. Beruete</i>	
NONSTANDARD FDTD REALIZATION OF RADIATION BEHAVIOUR OF EPSILON NEGATIVE METAMATERIAL CORNER REFLECTOR ANTENNA	178
<i>Jovia Jose ; Sikha K. Simon ; Joe Kizhakooden ; Jolly Andrews ; V. P. Joseph</i>	
QUANTUM EMITTER INTERACTING WITH A WS₂ LAYER IN THE STRONG COUPLING REGIME	181
<i>V. Karanikolas ; N. Iliopoulos ; D. Stefanatos ; E. Paspalakis</i>	
EXPERIMENTS ON THE EXTERNAL COUPLING CONTROL OF A DIRAC CONE METASURFACE FOR EXTRAORDINARY TRANSMISSION	184
<i>Y. Kato ; A. Sanada</i>	
COMBINING CHIRALITY AND PT-SYMMETRY IN METAMATERIALS	187
<i>I. Katsantonis ; S. Droulias ; C. M. Soukoulis ; E. N. Economou ; M. Kafesaki</i>	
THEORY OF PERIODICALLY TIME-VARYING INDUCED EXCEPTIONAL POINTS OF DEGENERACY	190
<i>H. Kazemi ; M. Y. Nada ; R. Marosi ; T. Mealy ; A. Abdelshafy ; F. Capolino</i>	
TSUNAMI LENS	193
<i>Sang-Hoon Kim</i>	
SCALABLE PIEZOELECTRIC EFFECT IN SILICON DOPED HAFNIUM OXIDE FOR ACOUSTIC WAVE APPLICATIONS	197
<i>S. Kirbach ; K. Kühnel ; W. Weinreich</i>	
FREQUENCY TUNABLE MONPOLE PATCH ANTENNA USING BROADSIDE COUPLED SPLIT RING RESONATOR FOR WIRELESS COMMUNICATION APPLICATIONS	200
<i>K. Joe ; J. Jovia ; P. Nees ; J. Andrews ; V. P. Joseph</i>	
COHERENT CONTROL OF SCATTERING IN NON-HERMITIAN PT-SYMMETRICAL SYSTEMS	203
<i>Z. Sakotic ; A. Krasnok ; N. Cselyuszka ; N. Jankovic ; A. Alí</i>	
ANGLE-INDEPENDENT NONGYROTROPIC METASURFACES	209
<i>G. Lavigne ; C. Caloz</i>	
NONRECIPROCAL PHASE GRADIENT METASURFACE: PRINCIPLE AND TRANSISTOR IMPLEMENTATION	212
<i>G. Lavigne ; C. Caloz</i>	
HOW THIN MULTILAYER HYPERBOLIC METAMATERIAL CAN BE?	215
<i>J. Sukham ; M. Mahmoodi ; S. Sychev ; A. Bogdanov ; O. Takayama ; S. H. Tavassoli ; R. Malureanu ; A. V. Lavrinenko</i>	
ACTIVE METASURFACES AS A PLATFORM FOR CAPACITIVE WIRELESS POWER TRANSFER SUPPORTING MULTIPLE RECEIVERS	227
<i>F. Liu ; P. Jayathurathnage ; S. A. Tretyakov</i>	

A HIGH-POWER WIRELESS CHARGING SYSTEM BASED ON FANO RESONANCE	230
<i>Yu Liu ; Yewen Zhang ; Jun Jiang ; Kai Fang ; Kejia Zhu ; Keqiang Lv ; Yunhui Li</i>	
BOUNDS ON HOTSPOTS IN UNIDIRECTIONAL WAVEGUIDES AND PHOTONIC TOPOLOGICAL INSULATORS FOR STRONG, BROADBAND LIGHT-MATTER INTERACTION	236
<i>S. A. Mann ; A. Mekkawy ; A. Alù</i>	
ENGINEERING STRUCTURAL AND OPTICAL PROPERTIES OF 3D CHIRAL DIELECTRIC NANOSTRUCTURES	239
<i>M. Manoccio ; M. Esposito ; V. Tasco ; M. Cuscan ; A. Passaseo</i>	
METASURFACE-BOUNDED OPEN CAVITIES SUPPORTING VIRTUAL ABSORPTION: FREE-SPACE ENERGY ACCUMULATION IN LOSSLESS SYSTEMS	242
<i>A. Marini ; D. Ramaccia</i>	
CHIRAL PROPERTIES OF LIGHT IN MATERIAL SYSTEMS	245
<i>J. Enrique Vázquez-Lozano ; Alejandro Martínez</i>	
A NUMERICAL METHOD FOR COMPUTING THE SCATTERING MATRIX BY THE BOUNDARY ELEMENT METHOD WITH APPLICATIONS TO PHONONIC BAND ANALYSIS	248
<i>K. Matsushima ; H. Isakari ; T. Takahashi ; T. Matsumoto</i>	
ANALYSIS OF RESONANCES IN PERIODIC METASURFACES THROUGH THE CONCEPT OF SELF-COUPLING MODE	251
<i>K. Müller</i>	
HOMOGENIZATION OF ALL-DIELECTRIC METASURFACES: THEORY AND APPLICATIONS	257
<i>A. Monti ; A. Alù ; A. Toscano ; F. Bilotti</i>	
OPTICAL SECOND HARMONIC GENERATION IN COBALT NANOLAYERS INFLUENCED BY NONMAGNETIC HEAVY METALS	263
<i>I. A. Kolmychek ; E. E. Shalygina ; K. A. Lazareva ; N. S. Guzev ; E. A. Karashtin ; A. A. Fraerman ; T. V. Murzina</i>	
BROADBAND HELICITY SWITCHING FOR TERAHERTZ WAVES USING ANISOTROPICALLY DEFORMED CHECKERBOARD METASURFACE WITH VANADIUM DIOXIDE	266
<i>T. Nakanishi ; Y. Nakata ; Y. Urade ; K. Okimura</i>	
A GYRO-ELASTIC DEVICE FOR CLOAKING OF ELASTIC WAVES IN MICRO-STRUCTURED MATERIALS	269
<i>M. Garau ; M. J. Nieves ; G. Carta ; M. Brun</i>	
ENHANCED TRANSMISSION IN NON-HERMITIAN ONE-DIMENSIONAL PHOTONIC CRYSTALS UNDER THE BAND INVERSION	272
<i>V. B. Novikov ; T. V. Murzina</i>	
PT-SYMMETRIC MULTILAYER SYSTEMS: HOMOGENIZATION AND BEAM PROPAGATION	275
<i>A. Novitsky ; D. V. Novitsky ; A. S. Shalin</i>	
OVERCOMING THE DIFFRACTION LIMIT WITH HIGH-INDEX DIELECTRIC PARTICLES	278
<i>V. Pacheco-Peña ; M. Beruete</i>	
CONTROLLING THE DIRECTION OF PROPAGATION OF SURFACE PLASMONS VIA GRADED INDEX EFFECTIVE DIELECTRIC MEDIA	281
<i>V. Pacheco-Peña ; M. Beruete</i>	
CONFORMAL TRANSFORMATION IN BOWTIE NANOANTENNAS AND NANOCAVITIES: UNVEILING HIDDEN SYMMETRIES	284
<i>V. Pacheco-Peña ; Rúben Alves ; M. Navarro-Cía</i>	
CONTROLLING SURFACE ACOUSTIC WAVES VIA MAGNETICALLY-MODULATED CONTACT RESONANCES	287
<i>A. Palermo ; Y. Wang ; P. Celli ; C. Daraio</i>	
DESIGN OF INVISIBILITY DEVICES THROUGH ARTIFICIAL MATERIALS: FURTHER POSSIBLE TOOLS FROM THE INVERSE SCATTERING PERSPECTIVE	290
<i>R. Palmeri ; M. T. Bevacqua ; T. Isernia</i>	
SENSING BIOLOGICAL FLUIDS USING RESONATING SURFACE PLASMON POLARITONS IN THE THZ RANGE	293
<i>G. P. Papari ; C. Koral ; A. Andreone</i>	
METAMATERIALS FOR GENERATING SPACE-TIME COUPLED FEW-CYCLE PULSES	297
<i>A. Zdagkas ; H. Fang ; T. Pu ; V. Savinov ; N. Papasimakis ; N. I. Zheludev</i>	
CONDUCTIVITY EFFECT ON BROADBAND DIPOLE ANTENNA WITH SPLIT RING RESONATORS	299
<i>Kam Eucharist Kedze ; Heesu Wang ; Ikmo Park</i>	

POLARIZING BEAMPLITTER GRATING BASED ON ASYMMETRIC SLOT WAVEGUIDE SCATTERER	302
<i>A. Patri ; S. Kéna-Cohen ; C. Caloz</i>	
METAMATERIAL SPLIT RING RESONATORS MADE OF POLYANILINE - POLYTETRAFLUOROETHYLENE AT MICROWAVE FREQUENCIES	305
<i>Nees Paul ; Joe Kizhakoden ; Jovia Jose ; Jolly Andrews ; V. P. Joseph</i>	
DESIGN OF FREQUENCY SELECTIVE DEVICES FOR THE THZ DOMAIN WITH APPLICATIONS ON STRUCTURAL HEALTH MONITORING	309
<i>J. P. Pavia ; M. A. Ribeiro ; N. Souto</i>	
ELECTROMAGNETIC WAVES THROUGH METAMATERIAL SUPERLATTICES	312
<i>P. Pereyra ; F. Assaoui</i>	
SUPERDIRECTIVE ANTENNAS OF COUPLED HELICAL ELEMENTS	315
<i>P. Petrov ; A. P. Hibbins ; J. R. Sambles</i>	
VISUALIZATION OF ISO FREQUENCY CONTOURS OF GUIDED MODES IN ALL-DIELECTRIC HYPERBOLIC-LIKE METASURFACE	318
<i>D. Pidgayko ; I. Sinev ; D. Permyakov ; S. Sychev ; F. Heyroth ; V. Rutckaia ; J. Schilling ; A. Lavrinenko ; A. Bogdanov ; A. Samusev</i>	
INSTANTANEOUS CONTROL OF SCATTERING FROM A TIME-MODULATED META-ATOM	321
<i>G. Ptitsyn ; M. S. Mirmoosa ; S. A. Tretyakov</i>	
NONRECIPROCAL METAGRATINGS	324
<i>Y. RaDi ; Andrea Alù</i>	
FREQUENCY-SHIFTED REFLECTION ACHIEVED THROUGH TIME-VARYING METASURFACES	327
<i>Davide Ramaccia ; Dimitrios L. Sounas ; Andrea Alù ; Alessandro Toscano ; Filiberto Bilotti</i>	
PLANE WAVE DIFFRACTION BY PEC - DNG METAMATERIAL JUNCTIONS IN NON-PLANAR ARRANGEMENTS	333
<i>G. Gennarelli ; G. Riccio</i>	
TAILORING NON-RECIPROCITY IN DISCRETELY MODULATED PLATES	336
<i>E. Riva ; G. Cazzulani ; M. Di Ronco ; F. Braghin</i>	
TOPOLOGICAL EDGE MODES AND ELASTIC WAVE PUMPING LEVERAGING PHONONICS WAVEGUIDES	339
<i>E. Riva ; M. I. N. Rosa ; M. Ruzzene ; G. Cazzulani</i>	
META-OPTICS INSPIRED CONFIGURATIONS FOR MAGNETIC RESONANCE IMAGING APPLICATIONS	342
<i>C. Rizza ; M. Fantasia ; E. Palange ; A. Galante ; M. Alecci</i>	
TOWARDS VIBRATIONAL WAVES VIA HIGH-ORDER TOPOLOGICAL INVARIANTS IN MECHANICAL STRUCTURES	345
<i>D. Z. Rocklin</i>	
QUASI-OPTICAL EXCITATION OF MODULATED METASURFACE ANTENNAS	348
<i>J. Ruiz-García ; D. González-Ovejero ; M. Faenzi ; A. Mahmoud ; M. Ettorre ; P. Potier ; P. Pouliquen ; R. Sauleau</i>	
EDGE STATES AND TOPOLOGICAL PUMPING IN SPATIALLY MODULATED ELASTIC LATTICES	351
<i>M. Ruzzene ; M. Rosa</i>	
MULTIPOLE ANALYSIS OF BOUND STATES IN THE CONTINUUM SUPPORTED BY A PERIODIC ARRAY OF SPHERES	354
<i>Z. Sadrieva ; K. Frizyuk ; M. Petrov ; Y. Kivshar ; A. Bogdanov</i>	
PT-SYMMETRIC CLADDING LAYERS FOR HIGH-Q BREWSTER MODES AND EMBEDDED EIGENSTATES	357
<i>Z. Sakotic ; A. Krasnok ; N. Cselyuszka ; N. Jankovic ; A. Alù</i>	
TIME-VARYING NANOANTENNA METAMATERIALS	360
<i>M. M. Salary ; H. Mosallaei</i>	
FLOQUET ANALYSIS OF A TIME-MODULATED METASURFACE	363
<i>F. Salas ; Z. Wu ; C. Scarborough ; A. Grbic</i>	
HIGH GAIN RESONANT CAVITY ANTENNA INTEGRATED WITH FREQUENCY SELECTIVE SURFACE RADOME ABSORBER	366
<i>Subekti Ari Santoso ; Sofian Hamid ; Suramate Chalermwisutkul ; Dirk Heberling</i>	
SELF-COMPLEMENTARY METASURFACES AS EFFICIENT TOOLS FOR POLARIZATION SENSITIVE CONTROL OF THZ BEAMS	369
<i>A. Sayanskiy ; V. Lenets ; S. Kuznetsov ; S. Glybovski ; J. D. Baena</i>	
LOW-LOSS HEXAFERRITE SELF-BIASED MICROSTRIP AND CPW CIRCULATORS	372
<i>S. Joseph ; R. Lebourgeois ; Y. Huang ; L. Roussel ; A. Schuchinsky</i>	

NONLINEAR DISTORTION OF MULTITONE WAVE PACKETS BY LOSSY CONDUCTORS	375
<i>A. Schuchinsky ; M. Steer</i>	
ROTATION SENSOR BASED ON NEAR FIELD PERTURBATIONS OF METAMATERIAL SPLIT RING RESONATOR	378
<i>Anju Sebastian ; Sreedevi P. Chakyar ; C. Bindu ; V. P. Joseph ; Jolly Andrews</i>	
EXTRAORDINARY TRANSPARENT METASURFACES COMPOSED OF TRANSVERSE SCATTERERS	381
<i>H. Shamkhi ; K. Baryshnikova ; A. Sayanskiy ; P. Kapitanova ; P. Terekhov ; P. Belov ; A. Karabchevsky ; A. Evlyukhin ; Y. Kivshar ; A. Shalin</i>	
CHIRAL AND TOPOLOGICAL SURFACE WAVES AND LINE WAVES ON METASURFACES	387
<i>D. Bisharat ; S. Kandil ; X. Kong ; S. Singh ; Z. Xu ; D. Sievenpiper</i>	
DIRECT AMPLITUDE MODULATION TECHNIQUE USING METAMATERIAL BROADSIDE COUPLED SPLIT RING RESONATOR (BCSRR) STRUCTURE	390
<i>Sikha K. Simon ; Sreedevi P. Chakyar ; Anju Sebastian ; Jolly Andrews ; V. P. Joseph</i>	
GRAVITATIONALLY-SMALL GRAVITATIONAL ANTENNAS, THE CHU LIMIT, AND EXPLORATION OF VESELAGO-INSPIRED NOTIONS OF GRAVITATIONAL METAMATERIALS	393
<i>Thomas P. Weldon ; Kathryn L. Smith</i>	
METASURFACE FOR EXTENSION OF WIRELESS POWER TRANSFER DISTANCE	396
<i>M. Song ; P. Belov ; S. Glybovski ; C. Simovski ; P. Kapitanova</i>	
METAMATERIALS FOR WIRELESS POWER TRANSFER	399
<i>C. J. Stevens</i>	
A META-MATERIAL POSITION SENSOR BASED ON MAGNETO-INDUCTIVE WAVES	402
<i>C. J. Stevens ; J. Yan ; E. Shamonnaia</i>	
ACTIVE POLARIZED TUNING OF NEAR-FIELD IN HYBRID METAL/DIELECTRIC NANOSTRUCTURES UPON FEMTOSECOND LASER RESHAPING	408
<i>Y. Sun ; D. Zuev</i>	
ACOUSTO-OPTICAL LIGHT MODULATION AT 10.6 μm USING MULTILAYERED STRUCTURES	411
<i>I. M. Sopko ; G. A. Knyazev ; D. O. Ignatyeva ; D. A. Sylgacheva ; V. I. Belotelov</i>	
HIGHLY SENSITIVE MAGNETOMETRY METHOD BASED ON THE MAGNETOPLASMONIC CRYSTAL	414
<i>G. A. Knyazev ; D. A. Sylgacheva ; P. O. Kapralov ; N. A. Gusev ; A. N. Kalish ; P. M. Vetoshko ; S. A. Dagesyan ; A. N. Shaposhnikov ; V. N. Berzhansky ; A. K. Zvezdin ; V. I. Belotelov</i>	
PLASMONIC NANOANTENNAS FOR EXCITATION OF ULTRAFAST MAGNETIZATION DYNAMICS	417
<i>D. A. Sylgacheva ; M. A. Kozhaev ; D. M. Krichevsky ; V. I. Belotelov</i>	
CAVITY ENHANCED TRANSVERSE MAGNETO-OPTICAL KERR EFFECT OF AL\AAO BASED NANOSTRUCTURE ARRAYS	420
<i>W. Zhang ; D. A. Sylgacheva ; P. O. Kapralov ; Y. Song ; V. I. Belotelov</i>	
MIXER-ANTENNA MEDIUM	423
<i>Sajjad Taravati ; George V. Eleftheriades</i>	
DIFFRACTION THEORY OF SPATIOTEMPORALLY PERIODIC GRATINGS	426
<i>Sajjad Taravati ; George V. Eleftheriades</i>	
NUMERICAL METHOD TO STUDY THREE-DIMENSIONAL METAMATERIAL COMPOSITES	429
<i>T. Terao</i>	
SINGLE- AND MULTI-CHANNEL NONLINEAR PHENOMENA IN RESONANT STRUCTURES COMPRISING GRAPHENE	435
<i>O. Tsilipakos ; T. Christopoulos ; G. Sinatkaras ; E. E. Kriezis</i>	
CONTROLLING SEISMIC ELASTIC SURFACE WAVES VIA INTERACTING STRUCTURES	438
<i>B. Ungureanu ; S. Guenneau ; S. Brûlé ; R. V. Craster</i>	
SELF-ADAPTIVE INVISIBLE ANTENNA THROUGH WAVEFORM-DEPENDED MANTLE CLOAK	441
<i>S. Vellucci ; A. Monti ; M. Barbuto ; A. Toscano ; F. Bilotti</i>	
NON-IDEAL ‘NEGATION’ OF COMPLEX LOAD IN SELF-OSCILLATING NON-FOSTER STRUCTURES	444
<i>L. Vincelj ; S. Hrabar ; I. Krois</i>	
ENHANCEMENT OF MAGNETOOPTICAL EFFECTS IN NANOSTRUCTURED IRON-GARNET META-SURFACE	447
<i>A. A. Voronov ; D. O. Ignatyeva ; D. Karki ; M. A. Kozhaev ; M. Levy ; V. I. Belotelov</i>	

SPECIALLY DESIGNED METAMATERIAL SPLIT RING RESONATOR FOR HIGH RESOLUTION IMAGING AT MICROWAVE FREQUENCIES.....	450
<i>C. Bindu ; Sreedevi P. Chakyar ; Anju Sebastian ; Jolly Andrews ; V. P. Joseph</i>	
WIDE BAND MICROWAVE ABSORBER USING FLEXIBLE BROADSIDE COUPLED SPLIT RING RESONATOR METAMATERIAL STRUCTURE.....	453
<i>K. S. Umadevi ; Sikha K. Simon ; Sreedevi P. Chakyar ; Jolly Andrews ; V. P. Joseph</i>	
THE ACCURATE MATHEMATIC MODEL BASED ON 2×2-MATRIX FOR ANISOTROPIC PHOTONIC CRYSTALS WITH METAMATERIAL LAYERS.....	456
<i>K. Vytovtov ; E. Barabanova ; V. Vishnevskiy</i>	
ANTENNA APPLICATIONS BASED ON WAVEFORM-SELECTIVE METASURFACES VARYING TIME-DOMAIN RESPONSES AT THE SAME FREQUENCY	459
<i>H. Wakatsuchi ; D. Ushikoshi ; S. M. Mahmood ; R. Higashiu ; C. Smartt ; C. Christopoulos</i>	
MENGER FRACTAL ACOUSTIC METAMATERIALS WITH DOUBLE-NEGATIVE PROPERTY.....	462
<i>Yu Liu ; Wenshuai Xu ; Meng Chen ; Heng Jiang ; Yuren Wang</i>	
SPACETIME-MODULATED METASURFACE FOR SPATIAL MULTIPLEXING COMMUNICATION	465
<i>Xiaoyi Wang ; Christophe Caloz</i>	
A WIDEBAND TRANSMISSION FREQUENCY SELECTIVE SURFACE RASORBER WITH LOW INSERTION LOSS.....	468
<i>Jianfeng Wei ; Wei Deng ; Yun He ; Zhipeng Lei ; Yutong Liu ; Yulu Zhang ; Chengli Li ; Jianjun Jiang</i>	
PHOTONIC TOPOLOGICAL INSULATOR EDGE MODES USING ALL-DIELECTRIC KAGOME PHOTONIC CRYSTALS.....	471
<i>S. Wong ; M. Saba ; O. Hess ; S. S. Oh</i>	
METAMATERIALS ON HELIX STRUCTURES WITH ABNORMAL DISPERSION	474
<i>A. A. Yelizarov ; A. S. Kukharenko ; A. A. Skuridin ; V. N. Karavashkina</i>	
INVESTIGATIONS OF A WIDEBAND METAMATERIAL-BASED MICROSTRIP MEANDER LINE WITH SLOTTED SCREEN	477
<i>A. A. Yelizarov ; A. S. Kukharenko ; A. A. Skuridin</i>	
BROADBAND DIELECTRIC METASURFACES USING CERAMIC STEREOLITHOGRAPHY	483
<i>S. Young ; L. Szymanski ; A. Grbic</i>	
WIDEBAND SKEWED GRID FREQUENCY SELECTIVE SURFACE ABSORBER FOR OBlique INCIDENCE	486
<i>Yulu Zhang ; Jianjun Jiang</i>	
TRANSMISSION ENHANCEMENT BY ANTIREFLECTIVE METASURFACE FOR GROUND PENETRATING RADAR APPLICATIONS	489
<i>W. A. Zheng ; T. Hao</i>	
EXPERIMENTAL OBSERVATION OF HIGH-ORDER TOPOLOGICAL CORNER STATES IN 2D PHOTONIC KAGOME LATTICE	492
<i>D. Zhirihin ; M. Li ; D. Filonov ; X. Ni ; A. Slobozhanyuk ; A. Alu ; A. B. Khanikaev</i>	
METAMATERIAL-INSPIRED SOLUTION TO LACKLUSTER ON-CHIP ANTENNA PERFORMANCE	495
<i>Richard W. Ziolkowski</i>	
MICROWAVE WAVEGUIDES LOADED WITH DIELECTRIC METASURFACES	498
<i>D. C. Zografopoulos ; J. F. Algorri ; A. Ferraro ; B. García-Cámarra ; J. M. Sánchez-Peña ; R. Becccherelli</i>	
ELLIPSOMETRIC STUDY OF FERRITIN CLUSTERS ADSORBED ON METASURFACE AND INFLUENCED BY UV IRRADIATION	501
<i>M. Tanovska ; M. Rahmani ; N. Zografov ; L. Vladimirova-Mihaleva ; D. Neshev</i>	
Author Index	