

2008 International Conference on Mathematical Methods in Electromagnetic Theory

**Odesa, Ukraine
29 June- 2 July 2008**



IEEE Catalog Number:
ISBN 13:

CFP08761-PRT
978-1-4244-2284-5

Table of Contents

Plenary Sessions (invited papers)

1.	SHORT-WAVE ELECTROMAGNETIC ASYMPTOTICS OF OPEN SYSTEMS V. Kaloshin	16
2.	DESENSITIZATION OF UNSTRUCTURED TRANSMISSION LINE MODELING SIMULATIONS TO MESH CHARACTERISTICS P. Sewell, T.M. Benson, C. Christopoulos, D. W. P. Thomas, A. Vukovic, J. G. Wykes	21
3.	SPECIAL THEORY OF RELATIVITY AND UNIVERSAL BOUNDARY CONDITIONS ON UNIFORMLY MOVING SURFACES M. Idemen	24
4.	EXTRAORDINARY OPTICAL TRANSMISSION PHENOMENA TO THE LIGHT OF MICROWAVE FIELD THEORY F. Medina, F. Mesa, D. C. Skigin, R. Marques	31
5.	ENHANCED TRANSMISSION PHENOMENON FROM THE EIGENOSCILLATION POINT OF VIEW A. Kirilenko, N. Don, A. Perov	36
6.	NUMERICAL TECHNIQUES FOR THE EIGENANALYSIS OF ARBITRARY CURVED AND OPEN WAVEGUIDING STRUCTURES G. Kyriacou, C. Lavranos, P. Allilomes	40
7.	CONVERGENCE AND OSCILLATIONS IN THE METHOD OF AUXILIARY SOURCES G. Fikioris, I. Psarros	53
8.	SIMULATIONS OF NANOMETRIC OPTICAL CIRCUITS BY SURFACE PLASMON POLARITON GAP WAVEGUIDE K. Tanaka, M. Tanaka, K. Katayama	59
9.	SUB-WAVELENGTH PHOTONICS - CHALLENGES AND RESEARCH OPPORTUNITIES M. Marciniak	65
10.	GUIDED WAVE PROBLEMS: PROPAGATION MODELLING AND EIGENVALUE EXTRACTION L. Sevgi	67
11.	FANO RESONANCE OF WAVES IN PERIODIC SLABS N. Ptitsyna, S. P. Shipman, S. Venakides	73
12.	MODE SOLVERS AND MODE EXPANSION METHODS FOR INTEGRATED PHOTONICS J. Čtyroký	79
13.	WIENER-HOPF ANALYSIS OF GROOVED COAXIAL WAVEGUIDE A. Büyükkaksoy, F. Hacivelioglu, G. Uzgoren	85
14.	MODELLING OF TRANSIENTS IN MICROCAVITIES WITH TIME-VARYING MATERIAL PROPERTIES N. Sakhnenko, A. Nerukh, T. Benson, P. Sewell	92
15.	MATHEMATICAL MODELING OF MULTIMODE OPTICAL FIBRE SENSORS S. Khotiaintsev	96
16.	PLASMA OSCILLATIONS IN FIELD-EFFECT TRANSISTOR ARRAYS V. Popov, M. Shur, D.V. Fateev	101
17.	COUPLED MODE MODELING IN GUIDED-WAVE PHOTONICS: A VARIATIONAL, HYBRID ANALYTICAL-NUMERICAL APPROACH M. Hammer	107
18.	RADIATION CONDITION IN MODAL METHODS: NUMERICAL IMPLEMENTATION BY MEANS OF COMPLEX COORDINATES TRANSFORMATIONS G. Granet	113
19.	PLASMONIC METAMATERIALS: FROM MODELLING TO APPLICATIONS A. Zayats	114

M11 NME – Nano & Micro Electromagnetics

1.	ELECTROMAGNETIC THEORY OF NANODIMENSIONAL ANTENNAS FOR TERAHERTZ, INFRARED AND OPTICAL REGIMES (invited paper) <u>G. Slepyan</u> , M. Shuba, A. Nemilentsau, S. Maksimenko	118
2.	A COMBINATION OF DIRICHLET TO NEUMANN OPERATORS AND PERFECTLY MATCHED LAYERS AS BOUNDARY CONDITIONS FOR OPTICAL FINITE ELEMENT SIMULATIONS <u>R. Stoffer</u> , A. Sopaheluwakan, M. Hammer, E. van Groesen	124
3.	ELECTRODYNAMIC ANALYSIS OF CARBON NANOTUBE ANTENNA A. Kleschenkov, A. Lerer, <u>V. Makhno</u> , P. Makhno, O. Labunko	127
4.	OPTIMISED COMPACT 90° OPTICAL WAVEGUIDE BEND <u>A. Vukovic</u> , P. Sewell, T. Benson	130
5.	INFLUENCE OF ANOMALOUS DISPERSION LAYER THICKNESS AND POSITION ON OPTICAL ABSORPTION AND QUANTUM EFFICIENCY IN THE RESONANT-CAVITY DETECTOR <u>S. Gryshchenko</u> , A. Dyomin, V. Lysak, I. Sukhoivanov	133

M12 INP – Inverse & Nonlinear Problems

1.	DEVELOPMENT OF A NEW EFFICIENT NUMERICAL METHOD, CREATION OF PACKAGE OF PROGRAM AND MAKING EXPERIMENTAL SETUP FOR RECOGNITION OF LATENT OBJECTS <u>R. Zaridze</u> , D. Kakulia, V. Tabatadze, D. Mazmanov, G. Saparishvili, N. Uzunoglou	138
2.	RECONSTRUCTION OF PERMITTIVITY PROFILE FOR STRATIFIED DIELECTRIC MATERIAL: GEL'FAND-LEVITAN AND NEWTON-KANTOROVICH METHODS <u>S. Alexin</u> , O. Drobakhin, V. Tkachenko	141
3.	CFAR ROBUST DETECTION OF MOVING TARGET IN PRESENCE OF FLUCTUATING BACKGROUND V. Golikov, A. Castillejos, O. Lebedeva, <u>V. Ponomaryov</u> , M. Cruz-Irisson	144
4.	SUPERRESOLUTION VIA EXTRAPOLATION WITH CONSTRAINTS ON SIGNAL DURATION <u>O. Antropov</u> , V. Borulko, O. Drobakhin, S. Vovk	147
5.	ESTIMATION OF THICKNESS OF SUBSURFACE AIR LAYER BY NEURON NETWORK TECHNOLOGY APPLICATION TO REFLECTED MICROWAVE SIGNAL O. Drobakhin, <u>A. Doronin</u>	150
6.	EXCITATION AND OBSERVATION OF BALL-LIGHTNING TYPE SPHERICAL FORMATIONS A. Bulgakov, B. Yefimov, E. Khutoryan, M. Khorunzhiy, <u>A. Kuleshov</u>	153

M13 WGC – Waveguide Circuits

1.	S-MATRIX OF A TWO-PORT WAVEGUIDE JUNCTION WITH TRIANGULAR CONNECTING CAVITY <u>V. Vashchenko</u> , V. Chumachenko	158
2.	ASYMPTOTIC EXPANSION OF THE ELECTROMAGNETIC FIELD IN THE VICINITY OF DOMAIN'S BORDERS V. Ostapenko	161
3.	TWO NOTCHED BAND TWO POST WAVEGUIDE SECTION A. Kirilenko, D. Kulik, <u>L. Mospan</u> , L. Rud	164
4.	SHARP STEP BENDED BAR IN A WAVEGUIDE AS A TWO-APERTURE IRIS N. Don, A. Kirilenko, <u>S. Prikolotin</u>	167
5.	CALCULATION OF THE REFLECTION MATRIX IN THE PLANE WAVEGUIDE BY SCANNING SCREEN METHOD <u>I. Aleksandrova</u> , N. Pleshchinskii	170

6.	RESONANCE ABSORPTION IN A NONSYMMETRICAL LOSSY DIELECTRIC INSERT PARTIALLY FILLING A RECTANGULAR WAVEGUIDE L. Rud	173
7.	BAND-PASS FILTERS ON THIN DIAPHRAGMS IN WAVEGUIDES OF COMPLEX CROSS SECTION G. Zargano, <u>V. Zemlyakov</u> , O. Labunko	176
8.	TRANSVERSE RESONANCE TECHNIQUE APPLICATION FOR THE RECTANGULAR SLOT LINE BEND V. Krizhanovski, <u>Yu. Rassokhina</u>	179

M14 SCD – Scattering & Diffraction

1.	SPECTRAL REPRESENTATIONS FOR RAPID EVALUATION OF PERIODIC GREEN'S FUNCTIONS (invited paper) <u>V. Lomakin</u> , D. Van Orden	184
2.	USE OF QUANTUM PHYSICS METHODS FOR STUDY OF PROPAGATION OF ELECTROMAGNETIC WAVE IN PERIODIC MEDIA <u>J. Chandezon</u> , G. Granet	187
3.	QUATERNIONIC APPROACH TO ELECTROMAGNETIC THEORY V. Kravchenko	188
4.	ON THE SOLUTIONS OF THE ELECTRICAL IMPEDANCE EQUATION, APPLYING QUATERNIONIC ANALYSIS AND PSEUDOANALYTIC FUNCTION THEORY <u>M. Ramirez Tachiquin</u> , V. Sanchez Nava, A. Fleiz Jaso	190
5.	CALCULATION METHOD FOR NON-IDEALLY CONDUCTING OBJECT WITH THIN DIELECTRIC ENVELOPE <u>V. Vasilets</u> , O. Sukharevsky	193
6.	MINIATURIZATION OF THE FOLDED DIPOLE ANTENNA <u>A. Harmouch</u> , H. Al Sheikh	196
7.	CIRCULAR POLARIZED RECTANGULAR DIELECTRIC RESONATOR ANTENNA USING SINGLE PROBE FEEDS <u>S. Malekabadi</u> , S. Moghadasi	199

M21 DLR – Dielectric Lenses & Resonators

1.	INTERPLAY BETWEEN THE RAY AND MODE EFFECTS IN ELECTROMAGNETIC BEHAVIOUR OF SMALL-SIZE HEMIELLIPTIC DIELECTRIC LENSES (invited paper) <u>A. Boriskin</u> , R. Sauleau, A. Nosich	204
2.	APPLICATION OF MAS AND FDTD FOR THE DESIGN OF 2-D EBG RESONATOR ANTENNAS AND DIELECTRIC/GUIDED LENSES A. Rolland, D. Kakulia, V. Petoiev, R. Sauleau, V. Tabatadze, <u>R. Zaridze</u> , A. Nosich	208
3.	EXCITATION OF A DIELECTRIC SPHERE BY A RADIAL ELECTRIC DIPOLE TAKING INTO ACCOUNT THE SPATIAL DISPERSION <u>Yu. Filipov</u> , Yu. Prokopenko, V. Yakovenko	211
4.	COMPLEX RESONANT FREQUENCIES OF MULTI-LAYERED SPHERICAL MICROSTRIP ANTENNAS C. Valagiannopoulos, <u>N. Tsitsas</u>	213
5.	MODELING THE SCATTERING CHARACTERISTICS OF COMPLEX-SHAPED DIELECTRIC BODIES BY THE PATTERN EQUATIONS METHOD A. Kyurkchan, <u>E. Skorodumova</u>	216
6.	THE INFLUENCE OF AN IMPEDANCE SURFACE ON EIGENFREQUENCY OF A HEMISPHERICAL QUASI-OPTICAL DIELECTRIC RESONATOR Yu. Filipov, Yu. Prokopenko, <u>I. Shipilova</u>	219
7.	FOCUSING PROPERTIES OF THE ELLIPTICAL TYPE FRESNEL LENSES <u>T. Tsaliev</u> , Z. Veliev	222

M22 EMT – Electromagnetic Theory

1.	FRACTIONAL BOUNDARY CONDITIONS IN SCATTERING PROBLEMS <u>M. Ivakhnychenko</u> , T. Ahmedov, E. Veliev	226
2.	FRACTIONAL DUAL PARABOLIC CYLINDRICAL REFLECTOR <u>A. Hussain</u> , M. Faryad, Q. Naqvi	229
3.	ON TRANSMITTING OF ELECTROMAGNETIC WAVE THROUGH ANISOTROPIC LAYER <u>A. Bourganov</u> , N. Pleshchinskii	232
4.	SCATTERING PATTERN CALCULATION IN FAR ZONE WITH USE OF THE METHOD OF GENERALIZED EIKONAL M. Vesnik	235
5.	RADIATION PATTERN CALCULATION OF FLANGED REFLECTOR ANTENNAS A. Zvyagintsev, <u>A. Ivanov</u>	238
6.	ELECTROMAGNETIC AXIALLY SYMMETRIC EXCITATION OF A FINITE CONE BY THE RING SLOT O. Trishchuk	241
7.	REGULARIZATION OF COMPLEX BEAMS R. Mahillo-Isla, <u>M. González-Morales</u> , C. Dehesa-Martínez	242
8.	CIRCULAR POLARIZED RECTANGULAR LOOP ANTENNA OVER A MUSHROOM-LIKE EBG SURFACE <u>S. Malekabadi</u> , S. Moghadasi	245

M23 NCE – Nonclassical Electromagnetics

1.	DESCRIPTION OF OPEN QUANTUM SYSTEMS IN NON-HERMITIAN QUANTUM MECHANICS H. Geyer, F. Scholtz, <u>K. Zloshchastiev</u>	250
2.	DIELECTRIC FUNCTION IN SEMI-EMPIRICAL TIGHT-BINDING THEORY APPLIED TO CRYSTALLINE DIAMOND A. Miranda, V. Ponomaryov, L. Niño de Rivera, R. Vázquez, <u>M. Cruz-Irisson</u>	253
3.	MAXWELL FIELD EQUATIONS ARE GALILEO COVARIANT FOR ALL KINEMATIC REFERENCE SYSTEMS A. Potjekhin	256
4.	GREEN FUNCTION FOR THE MAXWELL SYSTEM IN CHIRAL MEDIA USING QUATERNIONIC ANALYSIS K. Khmelnytskaya	259
5.	FIELD OSCILLATORS IN LINEAR ELECTROMAGNETIC THEORY OF PLASMA <u>A. Sokolovsky</u> , A. Stupka	262
6.	CONDUCTIVITY OF SOLID IN A STRONG NONUNIFORM STATE S. Sokolovsky	265
7.	NUMERICAL MODELING OF DYNAMICS OF POPULATIONS IN HYDROGEN ATOM UNDER THE ACTION OF ULTRA-SHORT LASER PULSES V. Derbov, <u>N. Teper</u>	268
8.	CORRELATION PROPERTIES OF ELECTROMAGNETIC FIELD GENERATED BY EMITTERS WITH RANDOM ORIENTATION <u>S. Lyagushyn</u> , Yu. Salyuk, A. Sokolovsky	271

M24 TDE – Time-Domain Electromagnetics

1.	TWO WAYS FOR CALCULATION OF FIELD EVOLUTION IN DIELECTRIC WAVEGUIDE: VIA BRILLOUIN- OR EIGEN-WAVES <u>A. Nerukh</u> , H. Semenova, N. Sakhnenko	276
2.	EXPOFUNCTIONAL EXCITATION IN CLASSICAL ELECTRODYNAMICS A. Ivanitckiy	279

3.	REGULARIZATION OF SPACE-TIME INTEGRAL EQUATIONS FOR THE PROBLEM OF DIFFRACTION OF ELECTROMAGNETIC PULSES ON SLITS <u>E. Golovacheva</u> , A. Lerer ¹ , V. Lerer, P. Makhno	282
4.	ELECTROMAGNETIC PULSE SCATTERING BY DIELECTRIC LAYER <u>A. Rykshin</u> , P. Zatsepin, S. Komarov	285
5.	SOLUTION OF THE PROBLEM OF ELECTROMAGNETIC PULSES' DIFFRACTION BY VARIABLE SEPARATION METHOD E. Gribnikova, A. Lerer, <u>V. Makhno</u> , G. Sinavsky	288
6.	SOME EXACT SOLUTIONS OF TRANSIENT PROBLEMS OF ELECTRODYNAMICS IN SPHERICAL COORDINATE SYSTEM OBTAINED BY SYMMETRY ANALYSIS OF KLEIN-GORDON-FOCK EQUATION <u>B. Kochetov</u> , A. Butrym	291
7.	EVOLUTION OF RADIOPULSES RADIATED BY HERTZ'S DIPOLE IN VACUUM <u>V. Naydenko</u> , S. Piltyay	294
8.	CONTROLLED TRANSIENT RADIATION FROM THE OPEN END OF CIRCULAR WAVEGUIDE <u>O. Dumin</u> , O. Dumina, V. Katrich	298

T11 ANT – Antennas

1.	MATHEMATICAL MODEL FOR SPIRAPHASE-TYPE INFINITE REFLECTIVE ARRAY BASED ON SLOT RING RESONATORS WITH PIN DIODE SWITCHES <u>A. Martynyuk</u> , J. Rodriguez-Cuevas, O. Romero Aroche, J. Martinez-Lopez	302
2.	ON THE IDEAL GAIN OF A RADIATING ELEMENT IN A PLANAR ARRAY S. Skobelev	305
3.	DETERMINATION OF ANTENNA CHARACTERISTICS VIA SYSTEM OF S-PARAMETERS <u>S. Nesteruk</u> , M. Protsenko	308
4.	PHYSICAL PROPERTIES OF NARROW SLOTS IN A RECTANGULAR WAVEGUIDE WITH DIELECTRIC LAYER <u>L. Yatsuk</u> , A. Lyakhovsky, N. Blinova, A. Lyakhovsky	311
5.	A SURFACE WAVE EXCITATION BY A FINITE PHASED PLANE WAVEGUIDE ARRAY WITH AN IMPEDANCE FLANGE S. Komarov, <u>V. Scherbinin</u>	314
6.	MATHEMATICAL SIMULATION OF RADIATION FOR REFLECTOR-TYPE ANTENNA WITH A NON-PLANAR EDGE <u>S. Nechitaylo</u> , I. Sukharevsky, O. Sukharevsky	317
7.	ON THE RADIATION EFFICIENCY OF A DENSE ARRAY ANTENNA SHAPING A SECTOR RADIATION PATTERN S. Skobelev	320
8.	ANALYSIS OF AN ARBITRARY PROFILE REFLECTOR ANTENNA HAVING RESISTIVE-TYPE SURFACE – H-POLARIZATION CASE T. Oğuzer, <u>A. Altintas</u> , A. Nosich	323

T12 IET – Integral Equation Techniques

1.	PSEUDOHARMONIC MIDDLE-DOMAIN FUNCTIONS WITH SMOOTH ENVELOPE IN MOMENT METHOD FOR QUASIPERIODIC OPEN STRUCTURES V. Borulko	328
2.	A DIFFERENT APPROACH TO THE SINGULARITY PROBLEM OF BOUNDARY INTEGRAL EQUATIONS E. Korkmaz	331
3.	NUMERICAL METHOD OF RESONANCE-SIZE AIR OBJECT SCATTERING CHARACTERISTIC CALCULATION BASED ON INTEGRAL EQUATION SOLVING <u>G. Zalevsky</u> , O. Sukharevsky	334

4.	T-MATRIX METHOD AND SINGULARITIES OF ANALYTICAL CONTINUATION OF WAVE FIELD <u>A. Kyurkchan</u> , V. Smirnov, N. Smirnova	337
5.	APPLICATION OF SPACE DOMAIN INTEGRAL EQUATION APPROACH FOR ELECTRO- MAGNETIC ANALYSIS OF MICROSTRIP STRUCTURES <u>M. Andriychuk</u> , S. Hemour	340
6.	BOUNDARY INTEGRAL REPRESENTATION FOR TIME-HARMONIC MAXWELL'S EQUATIONS M. Yas'ko	343
7.	INTEGRAL AND INTEGRODIFFERENTIAL EQUATIONS FOR UNBOUNDED PSEUDOPERIODIC STRUCTURES M. Davidovich	346
8.	USING METHOD OF INTEGRAL EQUATION ON THE BASE OF CROSS REGION TO SOLVING THREE-DIMENSIONAL DIFFRACTION PROBLEMS <u>V. Morozov</u> , V. Magro, V. Marmer	349

T13 GRS – Geoscience & Remote Sensing

1.	THROUGH FLATTENING–BOUNDARIES METHOD TO NEW SQUARE-GRADIENT MECHANISM OF SURFACE SCATTERING (invited paper) M. Rendón, N. Makarov, F. Izrailev	354
2.	POLARIZATION SIGNAL COMPONENTS ESTIMATE IN WEATHER RADAR <u>Y. Averyanova</u> , A. Averyanov, F. Yanovsky	360
3.	MATHEMATICAL MODELING OF DISPERSIVE DISTORTIONS OF THE WIDEBAND CHIRP SIGNAL DURING ITS PROPOGATION IN THE IONOSPHERIC RADIOCHANNEL N. Ilyin, <u>V. Khakhinov</u>	363
4.	CLASSIFICATION ALGORITHMS FOR WEATHER RADAR Y. Ostrovsky, V. Marchuk, <u>Y. Averyanova</u> , F. Yanovsky	366
5.	FEATURES OF DIURNAL VARIABILITY OF AEROSOL OPTICAL DEPTH OVER BLACK SEA <u>D. Yakovleva</u> , G. Tolkachenko	369
6.	IMPROVED METHOD OF REMOTE SENSING RETRIEVAL OF SEA WATER CHLOROPHYLL <u>E.N. Korchemkina</u> , E.B. Shybanov, M.E. Lee	372
7.	TWO ASPECTS IN LOSSY COMPRESSION OF HYPESPECTRAL AVIRIS IMAGES <u>V. Lukin</u> , N. Ponomarenko, M. Zriakhov, A. Kaarna	375

T14 CT – Computational Techniques

1.	MODELLING OF SHIELDING EFFECTIVENESS USING SMALL SAMPLES OF TESTED MATERIALS (invited paper) <u>A. Vasylenko</u> , V. Volski, W. De Raedt, G. Vandenbosch	380
2.	SOLUTION OF THE STATIC MAXWELL SYSTEM FOR INHOMOGENEOUS MEDIA USING GENERALIZED ANALYTIC FUNCTION THEORY K. Khmelnytskaya, V. Kravchenko, <u>H. Oviedo</u>	383
3.	USE OF WEB-SPLINES OF ARBITRARY DOMAIN FOR WAVEGUIDES <u>G. Apaydin</u> , N. Ari	385
4.	DETERMINATION OF PARAMETERS OF FRACTIONAL-RATIONAL MODEL USING METHOD OF QUASISOLUTION SEARCHING M. Andreev, <u>V. Borulko</u>	389
5.	MODE BASIS METHOD FOR OPEN DIELECTRIC WAVEGUIDES <u>M. Legenkiy</u> , A. Butrym	392
6.	CYLINDRICAL FRESNEL LENSES <u>T. Tsaliyev</u> , Z. Veliev	395

7.	A COMPARISON BETWEEN THE FDTD CONVOLUTIONAL PML AND RERADIATING BOUNDARY CONDITIONS FOR SIMPLE 3D TEST PROGRAM <u>I. Scherbatko</u> , G. Churyumov, M. Ustyantsev, I. Maksymov	398
8.	AN IMPROVED ADI-FDTD METHOD WITH LOWER SPLITTING ERROR <u>G. Liu</u> , G. Zhang, B. Hu	401

W11 SP – Signal Processing

1.	VIDEO PROCESSING FUZZY ALGORITHM DETECTING MOVEMENT AND SUPPRESSING NOISE IN REMOTE SENSING APPLICATIONS <u>V. Ponomaryov</u> , A. Rosales-Silva, F. Gallegos-Funes, L. Nino-de-Rivera	406
2.	NUMERICAL CALCULATION OF THE LYAPUNOV EXPONENT FOR THE LOGISTIC MAP E. Ibarra Olivares, <u>R. Vázquez-Medina</u> , M. Cruz-Irisson, J. L. Del-Río-Correa	409
3.	APPLICATION OF OPTIMAL SPATIAL FILTERING TO MEASURING MAGNETIC FIELDS OF LOCAL SOURCES <u>A. Butrym</u> , Yu. Durneva, S. Shulga	412
4.	INTRAOCULAR PRESSURE SYSTEM INSIDE VITREOUS HUMOR A. Rendón-Nava, <u>L. Niño-de-Rivera</u> , V. Ponomaryov, M. Cruz - Irisson, R. Vazquez	415
5.	ADAPTATION OF SAMPLE MYRIAD TUNABLE PARAMETER TO CHARACTERISTICS OF S _α S DISTRIBUTION V. Lukin, <u>A. Roenko</u> , S. Abramov, I. Djurovic	418
6.	INTERPOLATION ALGORITHMS OF THE NON GAUSSIAN PROCESS AT THE OUTPUT OF THE NON LINEAR NON INERTIAL CONVERTER <u>V. Kazakov</u> , M. Sedeño	421
7.	ONE APPROACH TO PARAMETERS IDENTIFICATION <u>Yu. Menshikov</u>	424
8.	STEGANOGRAPHIC COMMUNICATION CHANNEL USING AUDIO SIGNALS S. Hernández-Garay, <u>R. Vázquez-Medina</u> , L. Niño de Rivera, V. Ponomaryov	427

W12 AR – Analytical Regularization

1.	PULSE ELECTROMAGNETIC FIELD SCATTERING ON A CONE SURFACE WITH SLOTS V. Doroshenko, <u>Y. Shimuk</u>	432
2.	WAVE DIFFRACTION BY CONICAL STRUCTURES <u>D. Kuryliak</u> , Z. Nazarchuk	435
3.	RESONANT SCATTERING OF ELECTROMAGNETIC WAVES BY A PEC STRIP GRATING PLACED AT THE BOUNDARY OF ANISOTROPIC DIELECTRIC A. Brovenko, P. Melezhik, A. Poyedinchuk, <u>N. Yashina</u>	436
4.	NUMERICAL MODELING OF ELECTROMAGNETIC SCATTERING BY PERFECTLY CONDUCTING SURFACES OF REVOLUTION S. Nechitaylo, <u>I. Sukharevsky</u> , A. Altintas, O. Sukharevsky	438
5.	ANALYTICAL REGULARIZATION FOR DIFFRACTION PROBLEM: PEN SHELL OF REVOLUTION <u>S. Panin</u> , Yu. Tuchkin	441
6.	ELECTRODYNAMICS ANALYSIS OF SUBSTRATE INTEGRATED WAVEGUIDE <u>I. Donets</u> , S. Tsvetkovskaya	444
7.	ARBITRARY SHAPED HOLLOW RESONATORS AND WAVEGUIDES MODELING. ANALYTICAL REGULARIZATION METHOD <u>O. Suvorova</u> , Yu. Tuchkin, F. Dikmen	447
8.	ON EIGENMODES OF A SPHERICAL-MIRROR OPEN RESONATOR Yu. Svishchov	450

W13 LM – Layered Media

1.	NEW CLOSED FORM EXPRESSIONS FOR LAYERED MEDIA GREEN'S FUNCTIONS <u>F. Medina</u> , R. Boix, F. Mesa	454
2.	ONE-DIMENSIONAL ANISOTROPIC PHOTONIC CRYSTALS BASED ON ANISOTROPIC POROUS SILICON <u>V. Fesenko</u> , I. Sukhoivanov, S. Shulga	457
3.	THE 2×2 -MATRIX METHOD FOR TWO-DIMENSIONAL PARAMETRIC SYSTEM <u>K. Vytovtov</u> , Yu. Tarasenko	460
4.	ELECTRODYNAMIC PROPERTIES OF A SEMICONDUCTOR PERIODIC LAYERED RESONATOR O. Shramkova	463
5.	INVESTIGATION OF COMPLEX WAVE PROPAGATION IN THE SEMICONDUCTOR LAYERED PERIODIC WALLS A. Bulgakov, V. Kononenko, <u>O. Kostylyova</u>	466
6.	PERIODICITY DEFECT INFLUENCE ON THE ELECTROMAGNETIC PROPERTIES OF A SEQUENCE WITH BI-ISOTROPIC LAYERS V. Kazanskiy, <u>V. Tuz</u>	469
7.	REFLECTION AND TRANSMISSION OF TRANSVERSE – MAGNETIC WAVES FROM ANISOTROPIC MAGNETOACTIVE PLATE IN A WAVEGUIDE E. Gevorkyan	472
8.	OPTICS OF A FERROMAGNETIC SUPERLATTICE: DEPENDENCE OPTICAL CHARACTERISTICS ON THE ANGLE BETWEEN THE MAGNETIZATION VECTORS, WAVE NONRECIPROCITY <u>A. Bukhanko</u> , A. Sukstanskii	475

W21 OWG – Open Waveguides

1.	ENTIRE DOMAIN INTEGRAL EQUATION ANALYSIS OF PERIODIC DIELECTRIC WAVEGUIDES (invited paper) N. Tsitsas	480
2.	MODELING OF LONG-PERIOD FIBER GRATINGS WITH BOTH REFRACTIVE INDEX AND DIAMETER MODULATION <u>I. Palma-Quiroz</u> , I. Flores-Llamas, R. Osorio-Comparan, S. Khotiaintsev, V. Svyryd	486
3.	SURFACE WAVES IN TRAPEZOIDAL CORRUGATED STRIP LINE <u>E. Arsenyeva</u> , V. Kalinichev, V. Kaloshin	489
4.	EIGEN WAVES OF SEMI-OPENED WAVEGUIDE STRUCTURES <u>K. Vdovina</u> , I. Pleshchinskii, N. Pleshchinskii, D. Tumakov	492
5.	A VECTORIAL VARIATIONAL MODE SOLVER AND ITS APPLICATION TO PIECEWISE CONSTANT AND DIFFUSED WAVEGUIDES <u>O. Ivanova</u> , R. Stoffer, M. Hammer, E. van Groesen	495
6.	ELECTROMAGNETIC EIGENWAVES OF PLANAR LAYERED METAL-DIELECTRIC STRUCTURE <u>M. Vidil</u> , S. Prosvirnin	498
7.	NUMERICAL METHOD FOR CALCULATION OF THE GENERALIZED NATURAL MODES OF AN INHOMOGENEOUS OPTICAL FIBER E. Karchevskiy	501

W22 MM – Metamaterials

1.	ANALYTIC-NUMERICAL SOLUTION FOR 2D VESELAGO LENS S. Bankov	506
2.	MATHEMATICAL MODEL OF THE MATERIAL WITH NEGATIVE REFRACTION INDEX A. Goloborodko	509
3.	CHARACTERIZATION AND ANALYSIS OF LEFT-HANDED CHIRAL MATERIALS C. Sabah	512
4.	TRAPPED-MODE RESONANCES IN OPTICAL PLANAR METAMATERIALS WITH METAL ELEMENTS V. Khardikov, E. Yarko, S. Prosvirnin	515
5.	LAYERED STRUCTURE BASED FILTER WITH METAMATERIAL LAYERS A. Arkhipov	518
6.	TRANSMISSION LINE MODELLING METHOD FOR PLANAR BOUNDARIES CONTAINING POSITIVE AND NEGATIVE INDEX MEDIA C. Sabah	521
7.	SPECTRA FOR 1D MAGNETO-PHOTONIC CRYSTAL WITH TRI-LAYER CELL INTERFACED WITH METALLIC STRUCTURES AT MICROWAVE BAND M. Khodzitskiy, S. Tarapov	524
8.	HOMOGENIZATION OF PERIODIC METAMATERIALS M. Davidovich, J. Stephuk	527

W23 DPG – Double Periodic Grating

1.	GUIDED MODES AND ANOMALOUS SCATTERING BY A PERIODIC LATTICE N. Ptitsyna, S. Shipman	532
2.	ELECTROMAGNETIC WAVE DIFFRACTION BY A DOUBLE-LAYER PERIODIC GRATING OF CURVILINEAR STRIPS P. Mladyonov, S. Prosvirnin	535
3.	THEORETICAL STUDY OF GUIDED-MODE RESONANCES IN PLANAR DOUBLY-PERIODIC DIELECTRIC STRUCTURES N. Sydorчук	538
4.	GEOMETRY OPTIMIZATION OF PERIODIC SCREEN CELL WITH TWO ORTHOGONAL RECTANGULAR WAVEGUIDES S. Boruhovich, A. Gribovsky	541
5.	ON THE EFFICIENT COMPUTATION OF THE GREEN'S FUNCTION FOR DOUBLY PERIODIC STRUCTURES BY USING THE KUMMER'S METHOD OF HIGHER ORDERS M. Ivanishin, S. Skobelev	544
6.	MATHEMATICAL MODEL OF THE MICROSTRIP PHASED ARRAY OF LONGITUDINAL PRINTED RADIATORS WITH ADEQUATE SIMULATION OF STRIP FEED LINES A. Kasyanov	547
7.	SCATTERING BY PARALLEL CONDUCTING RODS FOR CYLINDRICAL WAVE INCIDENCE USING FLOQUET MODES A. Mehdipour, A. Parsa	550