

10th International Workshop “Strong Microwaves and Terahertz Waves: Sources and Applications” 2017

EPJ Web of Conferences Volume 149 (2017)

Nizhny Novgorod, Russia
17 - 22 July 2017

Editor:

A.G. Litvak

ISBN: 978-1-5108-4640-1

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution license:
<http://creativecommons.org/licenses/by/2.0/>

You are free to:

Share – copy and redistribute the material in any medium or format.

Adapt – remix, transform, and build upon the material for any purpose, even commercial.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The copyright is retained by the corresponding authors.

Printed by Curran Associates, Inc. (2017)

For additional information, please contact EDP Sciences – Web of Conferences
at the address below.

EDP Sciences – Web of Conferences
17, Avenue du Hoggar
Parc d'Activité de Courtabœuf
BP 112
F-91944 Les Ulis Cedex A
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

contact-edps@webofconferences.org

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
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

NEW TRENDS IN GYROTRON DEVELOPMENT	1
<i>Denisov G.G.</i>	
RECENT ACTIVITIES OF ITER GYROTRON DEVELOPMENT IN QST	3
<i>Oda Y., Ikeda R., Takahashi K., Kajiwara K., Kobayashi T., Sakamoto K., Moriyama S., Darbos C., Henderson M.</i>	
ELECTRON CYCLOTRON RESONANCE ION SOURCES – PHYSICS, TECHNOLOGY AND FUTURE CHALLENGES	5
<i>Tarvainen O., Kalvas T., Koivisto H., Skalyga V., Izotov I., Mansfeld D.</i>	
POWERFUL NEUTRON GENERATORS BASED ON HIGH CURRENT ECR ION SOURCES WITH GYROTRON PLASMA HEATING	7
<i>Skalyga V.A., Golubev S.V., Izotov I.V., Lapin R.L., Razin S.V., Shaposhnikov R.A., Sidorov S.V., Tarvainen O.</i>	
ECRH SYSTEM, MICROWAVE DIAGNOSTICS AND EXPERIMENTAL RESULTS IN THE EAST TOKAMAK	9
<i>Liu F.K., Xu H.D., Wang X.J., Wu D.J., Li M.H., Zhang J., Liu Y., Zhang T., Zhang Q., Zhao Y.P., Li J.G., the EAST team</i>	
UPDATE ON THE DIII-D ECH SYSTEM: EXPERIMENTS, GYROTRONS, ADVANCED DIAGNOSTICS, AND CONTROLS	11
<i>Lohr John, Brambila Rigoberto, Cengher Mirela, Gorelov Yuri, Grosnickle William, Moeller Charles, Ponce Dan, Torrezan Antonio, Ives Lawrence, Reed Michael, Blank Monica, Felch Kevin, Parisuaña Claudia, LeViness Alexandra</i>	
MEDIUM SIZE TOKAMAK T-15MD AS A BASE FOR EXPERIMENTAL FUSION RESEARCH IN RUSSIAN FEDERATION	13
<i>Romannikov Alexander, Fusion research Centre team</i>	
DEVELOPMENT AND APPLICATIONS OF THZ GYROTRONS	15
<i>Glyavin M.Yu.</i>	
SUB-THZ TECHNOLOGY FOR DYNAMIC NUCLEAR POLARIZATION IN NUCLEAR MAGNETIC RESONANCE (DNP NMR): TRANSVERSE CONFINEMENT OF MICROWAVE PROPAGATION THROUGH HETEROGENEOUS SOLID DNP SAMPLES	17
<i>Engelke Frank, Porea Armin, Reiter Christian, Aussenac Fabien</i>	
CVD DIAMOND WITH BORON-DOPED DELTA-LAYERS DEPOSITED BY MICROWAVE PLASMA	19
<i>Vikharev A.L., Gorbachev A.M., Lobaev M.A., Radishev D.B., Isaev V.A., Bogdanov S.A., Drozdov M.N., Demidov E.V., Surovegina E.A., Shashkin V.I., Yunin P.A., Butler J.E.</i>	
ECRH ON CFETR - PHYSICS AND TECHNOLOGY NEEDED	21
<i>Li Jiangang, Liu F.K., Zhao Y.P., Wang X.J., Li M.H., Xu H.D.</i>	
ANOMALOUS ABSORPTION IN ECRH EXPERIMENTS DUE TO PARAMETRIC EXCITATION OF LOCALIZED UH WAVES	22
<i>Gusakov E., Popov A.</i>	
OPTICS FOR ELECTRON CYCLOTRON RESONANCE HEATING AND COLLECTIVE THOMSON SCATTERING AT THE STELLARATOR W7-X	24
<i>Kasperek W., Erckmann V., Laqua H.P., Stange T., Weißgerber M., Lechte C., Plaum B., Moseev D., Leipold F., Petelin M., Brunner K.J., Braune H., Marsen S., Schneider N., Wolf R.C., W7-X team</i>	
RELATIVISTIC MICROWAVE OSCILLATORS WITH HIGH POWER FLUX IN A FREE SPACE AND INTERACTION ZONE	26
<i>Yalandin M.I., Pedos M.S., Rostov V.V., Romanchenko I.V., Rukin S.N., Sharypov K.A., Shunailov S.A., Ulmaskulov M.R.</i>	
GENERATION OF SINGLE AND PERIODICALLY REPEATED POWERFUL ULTRASHORT MICROWAVE PULSES	28
<i>Ginzburg N.S., Zotova I.V.</i>	
EXPRESS IN-SITU MEASUREMENT OF SINGLE CRYSTAL DIAMOND GROWTH/ETCHING RATE IN MICROWAVE PLASMA: HOW TO PERFORM MULTIPARAMETRIC KINETICS STUDY IN ONE WORKING DAY	30
<i>Ralchenko V.G., Yurov V.Yu., Bushuev E.V., Bolshakov A.P., Ashkinazi E.E., Antonova I.A., Zavedeev E.V., Khomich A.A., Konov V.I.</i>	
MICROWAVE DISCHARGE IN LIQUID HYDROCARBONS	32
<i>Lebedev Yu.A., Averin K.A., Tatarinov A.V., Epstein I.L.</i>	

INFLUENCE OF CVD DIAMOND GROWTH CONDITIONS AND MISORIENTATION ANGLE ON NITROGEN INCORPORATION	34
<i>Lobaev M.A., Gorbachev A.M., Bogdanov S.A., Vikharev A.L., Radishev D.B., Isaev V.A., Chernov V.V., Drozdov M.N., Yunin P.A.</i>	
DIAMOND BRAGG SUPERLATTICE GROWN IN MICROWAVE GAS DISCHARGE FOR OBTAINING PHOTOLUMINESCENCE OF SINGLE DIAMOND COLOR CENTERS COMPRISING A DENSE 3D ENSEMBLE	36
<i>Kukushkin V.A., Lobaev M.A., Radishev D.B., Bogdanov S.A., Drozdov M.N., Isaev V.A., Vikharev A.L., Gorbachev A.M.</i>	
GYROTRON FREQUENCY ECRIS DEVELOPMENT AND THE FUTURE CHALLENGES	38
<i>Sun L., Zhao H.W., Guo J.W.</i>	
ECR DISCHARGE IN A SINGLE SOLENOID FIELD	40
<i>Shaposhnikov R.A., Golubev S.V., Izotov I.V., Razin S.V., Skalyga V.A.</i>	
INVESTIGATION ON MM-WAVE SINTERING OF METAL POWDER COMPACTS USING IN-SITU DILATOMETRY AND ELECTRICAL RESISTIVITY MEASUREMENTS	42
<i>Mahmoud M., Link G., Jelonnek J., Thumm M.</i>	
EFFECTIVE MAGNETIC PERMEABILITY OF COMPACTED METAL POWDERS AT MICROWAVE FREQUENCIES	44
<i>Volkovskaya I.I., Semenov V.E., Rybakov K.I.</i>	
SOURCES OF ULTRAVIOLET LIGHT BASED ON MICROWAVE DISCHARGES	46
<i>Vodopyanov A.V.</i>	
A STUDY OF RF POWER STATION FOR MICROWAVE ROCKET LAUNCH SYSTEM	48
<i>Oda Y., Inai T., Shimamura K., Fukunari M., Katsurayama H., Ohnishi N., Komurasaki K.</i>	
EXCITATION OF WAKEFIELDS BY RELATIVISTIC ELECTRON BUNCHES IN THE DIELECTRIC WAVEGUIDE FILLED WITH RADIALY INHOMOGENEOUS PLASMA	50
<i>Sotnikov G.V., Markov P.I., Onishchenko I.N.</i>	
DATA RATES OF SUBTHZ WIRELESS TELECOMMUNICATION CHANNELS	52
<i>Bubnov G.M., Lesnov I.V., Vdovin V.F.</i>	
OPTICAL EMISSION SPECTROSCOPY FOR DIAGNOSIS OF DIAMOND GROWTH AND ETCHING PROCESSES IN MICROWAVE PLASMA	54
<i>Yurov V.Yu., Bushuev E.V., Bolshakov A.P., Antonova I.A., Ralchenko V.G., Konov V.I.</i>	
DEPENDENCE OF BORON INCORPORATION IN DELTA LAYERS ON CVD DIAMOND GROWTH PROCESS AND MISORIENTATION ANGLE	56
<i>Lobaev M.A., Gorbachev A.M., Vikharev A.L., Radishev D.B., Isaev V.A., Bogdanov S.A., Yunin P.A., Drozdov M.N., Butler J.E.</i>	
COOPERATION AND COMPETITION OF SOLID STATE AND VACUUM MICROWAVE DEVICES IN RADAR APPLICATIONS	58
<i>Galdetskiy A.V., Sherbakov S.V.</i>	
SYNTHESIS OF MICRO- AND NANOSTRUCTURES WITH CONTROLLABLE COMPOSITION IN THE CHAIN PLASMA-CHEMICAL REACTIONS INITIATED BY THE RADIATION OF A POWERFUL GYROTRON IN THE MIXTURES OF METAL-DIELECTRIC POWDERS	59
<i>Skvortsova N.N., Akhmadullina N.S., Batanov G.M., Borzosekov V.D., Kolik L.V., Konchekov E.M., Kharchev N.K., Letunov A.A., Malakhov D.V., Obraztsova E.A., Petrov A.E., Sarkisian K.A., Stepakhin V.D., Shishilov O.N.</i>	
INFLUENCE OF INTENSE COHERENT ELECTROMAGNETIC RADIATION ON SEVERAL TYPES OF RADIOACTIVE DECAY	61
<i>Andreev S.N., Barmina E.V., Kaminsky A.K., Sedykh S.N., Shafeev G.A., Shcherbakov I.A., Simakin A.V., Stegailov V.I., Tyutyunnikov S.I.</i>	
HIGH-PERFORMANCE SPECTRALLY SELECTIVE PYROELECTRIC DETECTION OF MILLIMETER AND SUBMILLIMETER WAVES USING ULTRA-THIN METASURFACE ABSORBERS	63
<i>Kuznetsov S.A., Arzhannikov A.V., Nikolaev N.A.</i>	
MICROWAVE PULSE DELAY AT PROPAGATION THROUGH THE 1D ELECTROMAGNETIC CRYSTALS	65
<i>Babitski V.S., Baryshevsky V.G., Gurinovich A.A., Gurnevich E.A., Molchanov P.V., Simonchik L.V., Usachonak M.S., Zuyevski R.F.</i>	
EFFECT OF METHANE ON STABILITY OF PLASMA IN A MW-ASSISTED HYDROGEN-METHANE PLASMA	67
<i>Prasanna Swaminathan, Michau A., Rond C., Farhat S., Hassouni K., Gicquel A.</i>	
MICROSTRUCTURE OF THE MICROWAVE FAST-SINTERED MGAL₂O₄ CERAMICS	68
<i>Sorokin A.A., Egorov S.V., Bykov Yu.V., Ereemeev A.G., Kholoptsev V.V., Rybakov K.I., Balabanov S.S., Belyaev A.V.</i>	

HIGH RATE PRODUCTION OF NANOPOWDERS BY THE EVAPORATION – CONDENSATION METHOD USING GYROTRON RADIATION	70
<i>Vodopyanov A.V., Samokhin A.V., Alexeev N.V., Sinayskiy M.A., Tsvetkov A.I., Mansfeld D.A., Glyavin M.Yu., Fokin A.P., Malygin V.I.</i>	
HIGH-TEMPERATURE MICROWAVE PYROLYSIS OF PEAT AS A METHOD TO OBTAINING LIQUID AND GASEOUS FUELS	72
<i>Krapivnitskaia T.O., Bogdashov A.A., Denisenko A.N., Glyavin M.Yu., Kalynov Yu.K., Kuzikov S.V., Peskov N.Yu., Semenycheva L.L., Stricovskiy A.V.</i>	
THEORY OF RESONANT STATIONARY DISCHARGE WITH MULTIPLY CHARGED IONS IN PLASMA FLOW PROPAGATING IN MIRROR MAGNETIC TRAP	74
<i>Abramov I.S., Gospodchikov E.D., Shalashov A.G.</i>	
STUDY OF PLASMA PARAMETERS IN A CONTINUOUS ECR DISCHARGE SUSTAINED BY 24 GHZ/5 KW GYROTRON RADIATION IN A QUASI-GASDYNAMIC MODE	76
<i>Izotov I., Skalyga V., Golubev S., Bokhanov A.</i>	
FIRST EXPERIMENTS ON APPLYING THE GASDYNAMIC ECR ION SOURCE FOR NEGATIVE HYDROGEN ION PRODUCTION	78
<i>Lapin R.L., Skalyga V.A., Izotov I.V., Golubev S.V., Razin S.V., Tarvainen O.</i>	
NEW APPROACH FOR A "POINT-LIKE" NEUTRON SOURCE CREATION BASED ON SHARP FOCUSING OF A HIGH QUALITY DEUTERON BEAM PRODUCED BY HIGH-CURRENT GASDYNAMIC ECR ION SOURCE	80
<i>Golubev S.V., Izotov I.V., Lapin R.L., Razin S.V., Shaposhnikov R.A., Sidorov S.V., Skalyga V.A.</i>	
REACHING HIGH SENSITIVITY OF RADIO-ACOUSTIC SPECTROSCOPY USING "STRONG MICROWAVES"	82
<i>Koshelev M.A., Vilkov I.N., Tsvetkov A.I., Glyavin M.Yu., Tretyakov M.Yu.</i>	
STUDY OF GROWN SINGLE CRYSTAL DIAMOND BY OPTICAL AND X-RAY SPECTROSCOPY	84
<i>Radishev D.B., Vikharev A.L., Gorbachev A.M., Muchnikov A.B., Yunin P.A., Amosov V.N., Rodionov N.B.</i>	
HIGH-POWER MICROWAVES AGAINST LOCUSTS AND OTHER HARMFUL ANIMALS	86
<i>Zapevalov V.E.</i>	
GAS BREAKDOWN BY A FOCUSED BEAM OF THZ WAVES	88
<i>Sidorov A.V., Razin S.V., Luchinin A.G., Tsvetkov A.I., Fokin A.P., Sidorov D.S., Veselov A.P., Vodopyanov A.V., Glyavin M.Yu.</i>	
LIGHT EMISSION PROPERTIES OF A DISCHARGE INDUCED IN A GAS FLOW BY TERAHERTZ WAVES IN THE VACUUM AND EXTREME ULTRAVIOLET RANGE	90
<i>Razin S.V., Sidorov A.V., Luchinin A.G., Sidorov D.S., Golubev S.V., Glyavin M.Yu., Vodopyanov A.V.</i>	
A POSSIBILITY OF REMOTE DETECTION OF AIR BREAKDOWN IN A FOCAL SPOT OF MICROWAVE BEAM USING REFLECTED SIGNAL	92
<i>Semenov V.E., Rakova E.I., Glyavin M.Yu., Nusinovich G.S.</i>	
THEORY OF INITIAL STAGE OF THE BREAKDOWN IN NON-UNIFORM GAS FLOW	94
<i>Semenov V.E., Rakova E.I., Glyavin M.Yu., Nusinovich G.S.</i>	
GLOBUS-M2 SPHERICAL TOKAMAK AND ITS MISSION IN DEVELOPING OF COMPACT FUSION NEUTRON SOURCE	96
<i>Minaev V.B., Gusev V.K., Sakharov N.V., Petrov Yu.V., Varfolomeev V.I., Chernyshev F.V., Bakharev N.N., Dyachenko V.V., Khromov N.A., Kurskiev G.S., Mineev A.B., Rozhansky V.A., Saveliev A.N., Shchegolev P.B., Shikhovtsev I.V.</i>	
EXPERIMENTAL STUDY OF OHMIC LOSSES OF POLARIZER MIRROR SYSTEM	98
<i>Leuterer F., Wagner D., Stober J., Kasperek W., Lechte C., ASDEX Upgrade Team</i>	
THE EC-SYSTEM OF EU DEMO: CONCEPTS FOR A REACTOR HEATING SYSTEM	100
<i>Granucci G., Aiello G., Avramidis K.A., Bruschi A., Gantenbein G., Garavaglia S., Grossetti G., Jelonnek J., Moro A., Poli E., Rispoli N., Strauss D., Thumm M., Tigelis I., Tsironis C., Franke T., Tran M.Q.</i>	
EXTENSION OF THE MULTI-FREQUENCY ECRH SYSTEM AT ASDEX UPGRADE	102
<i>Wagner D., Stober J., Kircher M., Leuterer F., Monaco F., Münich M., Schubert M., Zohm H., Gantenbein G., Jelonnek J., Thumm M., Meier A., Scherer T., Strauss D., Kasperek W., Lechte C., Plaum B., Zach A., Litvak A.G., Denisov G.G., Chirkov A., Malygin V., Popov L.G., Nichiporenko V.O., Myasnikov V.E., Tai E.M., Solyanova E.A., Malygin S.A., ASDEX Upgrade team</i>	
ELECTRON-CYCLOTRON WAVES IN LARGE-SCALE OPEN TRAPS: NEW QUESTIONS HIGHLIGHTED BY RECENT EXPERIMENTS	104
<i>Shalashov Alexander</i>	
PLASMA HEATING BY MICROWAVES IN HIGH-β DEVICES	106
<i>Gospodchikov E.D., Shalashov A.G., Kutlin A.G.</i>	
3D FULL-WAVE MODELLING AND MODE CONVERSION IN REALISTIC W7-X PLASMAS	108
<i>Aleynikov Pavel, Marushchenko Nikolai B.</i>	

QUASI-OPTICAL APPROACH FOR INHOMOGENEOUS DISSIPATIVE MEDIA WITH HIGH-ORDER SPATIAL DISPERSION	110
<i>Balakin A.A., Gospodchikov E.D., Shalashov A.G.</i>	
ECRH EFFECT ON THE ELECTRIC POTENTIAL IN TOROIDAL PLASMAS (OVERVIEW OF RECENT T-10 TOKAMAK AND TJ-II STELLARATOR RESULTS).....	112
<i>Melnikov A.V., Hidalgo C., Krupnik L.I., Ascasibar E., Cappa A., Chmyga A.A., Deshko G.N., Drabinskij M.A., Eliseev L.G., Khabanov P.O., Khrebtov S.M., Kharchev N.K., Komarov A.D., Kozachek A.S., Lysenko S.E., dePablos J.L., Zenin V.N., Zhezhera A.I.</i>	
OBSERVATION OF ION CYCLOTRON EMISSION FROM OHMICALLY AND NBI HEATED PLASMAS IN TUMAN-3M TOKAMAK	114
<i>Lebedev S.V., Askinazi L.G., Belokurov A.A., Gin D.B., Kornev V.A., Shabelsky A.A., Shevelev A.E., Tukachinsky A.S., Zhubr N.A.</i>	
CONTINUOUS HIGH POWER MICROWAVE HEATING AT THE W7-X STELLARATOR.....	116
<i>Brunner K.J., Braune H., Erckmann V., Kasperek W., Laqua H.P., Marsen S., Moseev D., Plaum B., Stange T., Weißgerber M., entire W7-X team</i>	
ISOTOPIC EFFECT IN EXPERIMENTS ON LOWER HYBRID CURRENT DRIVE IN THE FT-2 TOKAMAK.....	118
<i>Lashkul S.I., Stepanov A.Yu., Altukhov A.B., Gurchenko A.D., Gusakov E.Z., Dyachenko V.V., Esipov L.A., Irzak M.A., Kantor M.Yu., Kouprienko D.V., Saveliev A.N., Shatalin S.V.</i>	
DECAY OF THE X-MODE INTO TWO UPPER-HYBRID PLASMONS IN THE PLASMA FILAMENT. EXPERIMENTAL MODELING AND THEORETICAL DESCRIPTION.....	120
<i>Simonchik L.V., Altukhov A.B., Arkhipenko V.I., Gurchenko A.D., Gusakov E.Z., Popov A.Y., Usachonak M.S.</i>	
KINETIC INSTABILITIES IN NON-EQUILIBRIUM PLASMA: A REVIEW OF OBSERVATIONS	122
<i>Mansfeld D.A.</i>	
LABORATORY EXPERIMENTS SIMULATING ELECTRON CYCLOTRON MASERS IN SPACE	124
<i>Ronald K., Speirs D.C., King M., Heelis T., McConville S.L., Gillespie K.M., Bingham R., Robertson C.W., Cross A.W., Phelps A.D.R.</i>	
OBSERVATION OF MULTIPLE CHIRPING EVENTS IN ELECTRON CYCLOTRON EMISSION OF NON-EQUILIBRIUM MIRROR-CONFINED PLASMA.....	126
<i>Viktorov M.E., Shalashov A.G., Mansfeld D.A., Golubev S.V.</i>	
FAST EVENTS DETECTION WITH THE CTS DIAGNOSTIC ON FTU AND PLANS FOR IMPROVEMENT	128
<i>Bruschi A., Alessi E., Baiocchi B., Bin W., D'Arcangelo O., Fanale F., Figini L., Galperti C., Garavaglia S., Gittini G., Granucci G., Grosso G., Lubyako L., Mazzotta C., Mellera V., Moro A., Orsitto F., Pallotta F., Rocchi G., Tartari U., Tudisco O.</i>	
FILTERS FOR DIAGNOSTIC OF DOPPLER REFLECTOMETRY ON THE L-2M STELLARATOR FOR OPERATION UNDER CONDITIONS OF HIGH ECR HEATING POWER	130
<i>Malakhov D.V., Kharchevsky A.A., Bogachev N.N., Skvortsova N.N.</i>	
INTERFEROMETER SYSTEM FOR KEDA TORUS EXPERIMENT USING TERAHERTZ SOLID-STATE DIODE SOURCES.....	132
<i>Mao Wenzhe, Xie Jinlin, Ding Weixing, Li Hong, Lan Tao, Liu Adi, Liu Wandong</i>	
PARAMETRIC DECAY INSTABILITY NEAR THE UPPER HYBRID RESONANCE AND ANOMALOUS MM-WAVE SCATTERING IN TOKAMAK AND STELLARATOR PLASMAS.....	134
<i>Hansen S.K., Nielsen S.K., Salewski M., Stejner M., Stober J., ASDEX Upgrade team</i>	
STATUS AND DESIGN OF ECRH/CD SYSTEM OF THE UPGRADE OF THE TOKAMAK T-15.....	136
<i>Roy I.N., Anashkin I.O., Kirneva N.A., Kislov D.A., Khvostenko P.P., Melnikov A.V., Romannikov A.N.</i>	
QUASI-OPTICAL APPROACH TO RECONSTRUCTION OF PLASMA FLUCTUATIONS USING AMPLITUDE DISTRIBUTION OF TRANSMITTED MICROWAVE BEAM.....	137
<i>Gospodchikov E.D., Sobolev D.I., Khusainov T.A., Balakin A.A., Shalashov A.G.</i>	
ELECTRON CYCLOTRON HEATING AND DIAGNOSTICS OF PLASMA AT THE SECOND HARMONIC IN THE GDT DEVICE	139
<i>Gospodchikov E.D., Smolyakova O.B., Solomakhin A.L., Shalashov A.G.</i>	
CROSSED-FIELD FLOWS.....	141
<i>Lau Y.Y.</i>	
DEVELOPMENT OF GYROTRON TRAVELING-WAVE TUBES AT IAP AND GYCOM	142
<i>Samsonov S.V., Denisov G.G., Gachev I.G., Bogdashov A.A., Mishakin S.V., Manuilov V.N., Belousov V.I., Sobolev D.I., Sokolov E.V., Soluyanov E.A., Tai E.M.</i>	
NON-CANONICAL GYROTRONS	144
<i>Zapevalov V.E.</i>	
DEVELOPMENT OF ADVANCED ELECTRON OPTICAL SYSTEMS FOR NOVEL GYROTRONS	146
<i>Manuilov V.N., Sominskii G.G., Glyavin M.Yu.</i>	

COMPARISON BETWEEN CONTROLLED NON-ADIABATIC AND E×B CONCEPTS FOR GYROTRON MULTISTAGE DEPRESSED COLLECTORS	148
<i>Wu Chuanren, Pagonakis Ioannis Gr., Illy Stefan, Gantenbein Gerd, Thumm Manfred, Jelonnek John</i>	
GENERATION OF ROGUE WAVES IN GYROTRONS WITH HIGH EXCESS OVER THE THRESHOLD	150
<i>Zotova I.V., Ginzburg N.S., Morozkin M.V., Rozental R.M., Sergeev A.S., Fedotov A.E., Tarakanov V.P.</i>	
EUROPEAN RESEARCH ACTIVITIES TOWARDS A FUTURE DEMO GYROTRON.....	152
<i>Jelonnek J., Aiello G., Alberti S., Avramidis K., Bertinetti A., Bruschi A., Chelis J., Franke T., Gantenbein G., Garavaglia S., Granucci G., Grossetti G., Illy S., Ioannidis Z.C., Jin J., Kalaria P., Latsas G.P., Laqua H., Leggieri A., Legrand F., Marek A., Pagonakis I.Gr., Peponis D., Savoldi L., Rzesnicki T., Ruess S., Ruess T., Scherer T., Schmid M., Strauss D., Tigelis I., Thumm M., Tran M.Q., Wilde F., Wu C., Zanino R., Zein A.</i>	
THE CARM BEAM-WAVE INTERACTION AND CAVITY DESIGN	154
<i>Di Palma E., Dattoli G., Ceccuzzi S., Sabia E., Ravera G. L., Spassovsky I., Mirizzi F., Doria A., Tuccillo A.A., Gallerano G.P., the ENEA CARM Task Force</i>	
COMPARISON OF REFLECTOR CONCEPTS FOR A 250 GHZ CARM CAVITY	156
<i>Ceccuzzi S., Dattoli G., Di Palma E., Doria A., Gallerano G.P., Ravera G.L., Spassovsky I., Tuccillo A.A., ENEA CARM Team</i>	
PLASMA RELATIVISTIC MICROWAVE AMPLIFIER.....	158
<i>Strelkov P.S., Ivanov I.E., Tarakanov V.P.</i>	
DEVELOPMENT OF POWERFUL KA-BAND FEM-AMPLIFIERS WITH BROAD FREQUENCY TUNING	160
<i>Kaminsky A.K., Bandurkin I.V., Donets D.E., Kuzikov S.V., Peskov N.Yu., Savilov A.V., Sedykh S.N., Vikharev A.A.</i>	
POWERFUL NARROW-BAND RELATIVISTIC MASERS WITH BRAGG RESONATORS OPERATING FROM MM TO SUB-MM WAVELENGTH BAND: RESENT RESULTS AND PROSPECTS.....	162
<i>Peskov N.Yu., Ginzburg N.S., Kaminsky A.K., Sedykh S.N., Zaslavsky V.Yu.</i>	
SURFACE-WAVE BRAGG RESONATORS FOR TERAHERTZ FREQUENCY RANGE.....	164
<i>Malkin A.M., Ginzburg N.S., Fil'chenkov S.E., Sergeev A.S., Zaslavsky V.Yu.</i>	
THE GYROTRON – A NATURAL SOURCE OF HIGH-POWER ORBITAL ANGULAR MOMENTUM MILLIMETER-WAVE BEAMS	166
<i>Thumm M., Sawant A., Choe M.S., Choi E.M.</i>	
DESIGN AND MANUFACTURING PROCESS FOR THE KIT 2-MW 170-GHZ COAXIAL-CAVITY LONGER-PULSE GYROTRON.....	168
<i>Ruess S., Gantenbein G., Heinzl A., Illy S., Pagonakis I. Gr., Rzesnicki T., Thumm M., Weggen J., Weisenburger A., Jelonnek J.</i>	
SIMULATION OF ELECTROMAGNETIC FIELDS SCATTERED FROM ARBITRARY SHAPED ELECTRIC CONDUCTORS	170
<i>Marek A., Avramidis K.A., Copplestone S.M., Ginzburg N.S., Illy S., Jelonnek J., Jin J., Mishakin S.V., Müller A.-S., Ortwein P., Thumm M.</i>	
POLARIZATION-DEPENDENT TE₁₁-TO-TE₁₁/TE₀₁ WAVEGUIDE MODE CONVERTER FOR TRANSMISSION LINE MODE SWITCHING.....	172
<i>Sobolev D.I., Denisov G.G., Ereemeev A.G., Holoptsev V.V., Tsvetkov A.I.</i>	
REVIEW OF THE GYROTRON THEORY	174
<i>Nusinovich Gregory S.</i>	
SIMULATION OF GYROTRONS USING THE HIGH-ORDER PARTICLE-IN-CELL CODE PICLAS	176
<i>Copplestone S. M., Ortwein P., Munz C.-D., Avramidis K. A., Jelonnek J.</i>	
BENCHMARKING A HIGH-ORDER PARTICLE-IN-CELL CODE FOR THE SIMULATION OF A GYROTRON TRAVELING-WAVE TUBE.....	178
<i>Ortwein P., Copplestone S.M., Munz C.-D., Marek A., Jelonnek J.</i>	
INFLUENCE OF MODE COMPETITION AND EXTERNAL WAVE FREQUENCY MODULATION ON GYROTRON FREQUENCY LOCKING.....	180
<i>Novozhilova Yu.V., Bakunin V.L., Chirkov A.V., Guznov Yu.M., Denisov G.G., Fokin A.P., Shevchenko A.S., Zaitsev N.L., Zapavalov S.A.</i>	
HIGH PRECISION FREQUENCY STABILIZATION OF A 263 GHZ CONTINUOUS WAVE GYROTRON.....	182
<i>Denisov G.G., Fokin A.P., Glyavin M.Yu., Golubiatnikov G.Yu., Lubyako L.V., Morozkin M.V., Movshevich B.Z., Tsvetkov A.I.</i>	
PROGRESS IN MICROWAVE TO SUB-THZ SOURCES AT STRATHCLYDE.....	183
<i>Phelps A. D. R.</i>	

CODE KARAT IN SIMULATIONS OF POWER MICROWAVE SOURCES INCLUDING CHERENKOV PLASMA DEVICES, VIRCATORS, OROTRON, E-FIELD SENSOR, CALORIMETER ETC.	185
<i>Tarakanov V.P.</i>	
SIMULATIONS OF POWERFUL MICROWAVE OSCILLATORS WITH OVERSIZED ELECTRODYNAMICS SYSTEMS	187
<i>Zaslavsky V.Yu., Ginzburg N.S.</i>	
W-BAND 5 MW PULSE RELATIVISTIC GYROTRON: DEVELOPMENT AND EXPERIMENTAL IMPLEMENTATION	189
<i>Leontyev Alexander N., Abubakirov E.B., Chirkov A.V., Denisov G.G., Guznov Yu.M., Kornishin S.Yu., Plankin O.P., Rozental R.M., Sedov A.S., Semenov E.S., Zavolsky N.A., Zapevalov S.A., Zapevalov V.E.</i>	
PLANAR SLOW-WAVE STRUCTURES FOR MINIATURIZED LOW-VOLTAGE CHERENKOV DEVICES	191
<i>Ryskin N.M., Benedik A.I., Rozhnev A.G., Sinityn N.I., Torgashov G.V., Torgashov R.A.</i>	
PROSPECTIVE FIELD EMITTERS FOR MINIATURE HIGH VOLTAGE ELECTRONIC DEVICES OPERATING AT TECHNICAL VACUUM CONDITIONS.....	193
<i>Sominskii G.G., Sezonov V.E., Taradaev E.P., Tumareva T.A.</i>	
SYNCHRONIZATION OF DELAY-COUPLED GYROTRON OSCILLATORS.....	195
<i>Adilova A.B., Gerasimova S.A., Ryskin N.M.</i>	
260 GHZ CW GYROTRON HEATING SUBSTITUTION WITH SECOND-LONG LASER PULSES IN WAVEGUIDE SEMICONDUCTOR SWITCHES	197
<i>Kulygin M.L., Denisov G.G., Salahetdinov S.H., Shubin S.V., Novikov E.A., Litovsky I.A.</i>	
THEORETICAL AND EXPERIMENTAL INVESTIGATIONS OF OVERSIZED KA-BAND SURFACE-WAVE OSCILLATOR BASED ON 2D PERIODICAL CORRUGATED STRUCTURE	198
<i>Ginzburg N.S., Ilyakov E.V., Kulagin I.S., Peskov N.Yu., Sergeev A.S., Zaslavsky V.Yu.</i>	
45GHZ/20KW GYROTRON SETUP WITH AUTOMATED OUTPUT POWER CONTROL FOR ECR ION SOURCE.....	200
<i>Tsvetkov A.I., Ereemev A.G., Kholoptsev V.V., Shmelev M.Yu., Plotnikov I.V., Bykov Yu.V., Kopelovich E.A., Novikov A.Yu., Troitskiy M.M., Kuznetsov M.V., Zhurin K.A., Fokin A.P., Morozkin M.V., Glyavin M.Yu., Bakulin M.I., Denisov G.G., Solyanova E.A., Tai E.M.</i>	
A QUASI-OPTICAL INPUT FOR A WHISPERING-GALLERY-MODE GYRO-TWYSTRON	202
<i>Filchenkov S., Gachev I., Goikhman M., Guznov Yu., Lukovnikov D., Tsvetkov A.</i>	
DEVELOPMENT OF HIGH-EFFICIENT GYROTRON BASED COMPLEX FOR INDUSTRIAL APPLICATIONS.....	203
<i>Proyavin M.D., Glyavin M.Yu., Manuilov V.N.</i>	
NON-ADIABATIC ELECTRON-OPTICAL SYSTEM FOR 170GHZ/1MW/CW GYROTRON.....	205
<i>Leshcheva K.A., Goldenberg A.L., Glyavin M.Y., Manuilov V.N.</i>	
DEVELOPMENT OF FIELD EMITTER NON-ADIABATIC ELECTRON OPTIC SYSTEM FOR THE SPECTROSCOPIC 263 GHZ/CW GYROTRON	207
<i>Manuilov V.N., Sominskii G.G., Taradaev E.P., Tumareva T.A., Glyavin M.Yu.</i>	
INFLUENCE OF WEAK REFLECTION FROM A NONRESONANT LOAD ON THE OPERATION FREQUENCY OF THE 28 GHZ TECHNOLOGICAL GYROTRON.....	209
<i>Bogdashov A.A., Denisov G.G., Fokin A.P., Glyavin M.Yu., Novozhilova Yu.V., Sedov A.S., Tsvetkov A.I.</i>	
NON-RELATIVISTIC HOLLOW ELECTRON BEAM FORMATION FOR MM-WAVE BWO.....	210
<i>Bratman V.L., Fedotov A.E., Makhalov P.B., Manuilov V.N.</i>	
PROGRESS IN THE DEVELOPMENT OF LOW-VOLTAGE GYROTRON FOR INTEGRATION WITH NMR SPECTROMETER	212
<i>Bratman V.L., Fedotov A.E., Kalynov Yu. K., Manuilov V.N., Osharin I.V.</i>	
THERMAL ANALYSIS OF GYRO-AMPLIFIERS WITH HELICALLY CORRUGATED WAVEGUIDES	214
<i>Mishakin Sergey V., Samsonov Sergey V.</i>	
ULTRASHORT PULSE GENERATION BASED ON TWO COUPLED HELICAL GYRO-TWTS.....	216
<i>Vilkov M.N., Ginzburg N.S., Denisov G.G., Zotova I.V., Sergeev A.S., Malkin A.M., Samsonov S.V., Mishakin S.V.</i>	
AMPLIFICATION OF SHORT-WAVELENGTH RADIATION BY RELATIVISTIC ELECTRON BEAMS MOVING NEAR THE IMPEDANCE SURFACES	218
<i>Malkin A.M., Ginzburg N.S., Zhelezov I.V., Sergeev A.S.</i>	
COLLECTOR SYSTEM OF A GYROTRON WITH MAGNETICALLY SHIELDED SOLENOID	220
<i>Morozkin M.V., Glyavin M.Yu., Manuilov V.N., Zotova I.V., Proyavin M.D.</i>	
MODULATION OF MICROWAVE RADIATION IN THE PROCESS OF RESONANT INTERACTION WITH A COUNTER-PROPAGATING RECTILINEAR ELECTRON BEAM.....	222
<i>Zotova I.V., Ginzburg N.S., Sergeev A.S., Fedotov A.E., Zaslavsky V.Yu.</i>	

PIC-SIMULATION OF EFFICIENT CHERENKOV X-BAND AND V-BAND HPM SOURCES WITH MODERATELY RELATIVISTIC ELECTRON BEAMS	224
<i>Tarakanov V.P., Totmeninov E.M., Pegel I.V.</i>	
TIME-DEPENDENT NUMERICAL SIMULATION OF DIFFRACTION AND ABSORPTION EFFECTS IN DIAGNOSTICS OF SHORT HIGH-POWER MICROWAVE PULSES USING WIDE-APERTURE LIQUID CALORIMETERS	226
<i>Tarakanov V.P., Klimov A.I., Pegel I.V., Pripitnev P.V., Totmeninov E.M.</i>	
WAVE BEAMS WITH ORBITAL ANGULAR MOMENTUM: A STEP TOWARDS TERAHERTZ	228
<i>Knyazev B.A., Cherkassky V.S., Choporova Yu.Yu., Kameshkov O.E., Kulipanov G.N., Osintseva N.D., Pavelyev V.S., Vinokurov N.A., Volodkin B.O.</i>	
COHERENT SPONTANEOUS THZ UNDULATOR RADIATION FROM DENSE ELECTRON BUNCHES FORMED IN LASER-DRIVEN PHOTO-INJECTORS	230
<i>Bratman V.L., Balal N., Bandurkin I.V., Friedman A., Lurie Yu., Savilov A.V.</i>	
TERAHERTZ BESSEL BEAMS WITH ORBITAL ANGULAR MOMENTUM: DIFFRACTION AND INTERFERENCE	232
<i>Choporova Yu.Yu., Knyazev B.A., Osintseva N.D., Pavelyev V.S., Volodkin B.O.</i>	
TERAHERTZ TIME-DOMAIN MEASUREMENTS BY ELECTRO-OPTIC CRYSTALS WITH VARIOUS SYMMETRIES	234
<i>Ilyakov I.E., Kitaeva G.Kh., Shishkin B.V., Akhmedzhanov R.A.</i>	
THE NONLINEARITY OF THE REFRACTIVE INDEX OF OPTICAL MEDIA IN THE TERAHERTZ SPECTRAL RANGE	236
<i>Tsyplin A.N., Putilin S.E., Kulya M.S., Drozdov A.A., Siddiqui M., Choudhary S., Zhao J., Bespalov V.G., Boyd R.W., Zhang X.C., Kozlov S.A.</i>	
STUDY OF 0.3-0.8 THZ FLUX GENERATED BY MAGNETIZED PLASMA COLUMN DUE TO RELAXATION OF HIGH-CURRENT REB	238
<i>Arzhamnikov A.V., Annenkov V.V., Burdakov A.V., Burmasov V.S., Ivanov I.A., Kasatov A.A., Kuznetsov S.A., Makarov M.A., Mekler K.I., Polosatkin S.V., Postupaev V.V., Rovenskikh A.F., Sinitsky S. L., Sklyarov V.F., Stepanov V.D., Timofeev I.V., Volchok E.P.</i>	
INSTABILITIES, COHERENCY, AND SPECTRA OF THE NOVOFEL RADIATION	240
<i>Kubarev V.V.</i>	
SUPER-RADIATIVE SELF-COMPRESSION OF PHOTO-INJECTOR ELECTRON BUNCHES AND THE USE OF THIS EFFECT FOR REALIZATION OF A THZ SOURCE BASED ON SPONTANEOUS COHERENT EMISSION FROM A SHORT DENSE ELECTRON BUNCH	242
<i>Savilov Andrei, Bandurkin I.V., Oparina Yu.S.</i>	
STRONG TERAHERTZ FIELDS: INTERACTION WITH CONDENSED MATTER AND ELECTRON ACCELERATION	244
<i>Sergeev Yu.A., Oladyshkin I.V., Bodrov S.B., Korytin A.I., Tokman M.D., Kuzikov S.V., Vikharev A.A., Stepanov A.N.</i>	
BURSTS OF TERAHERTZ RADIATION FROM RELATIVISTIC LASER-PLASMA INTERACTIONS	246
<i>Li Yutong, Liao Guoqian, Li Chun, Wang Weimin, Sheng Zhengming, Zhang Jie</i>	
3D TERAHERTZ BEAM PROFILING FROM TWO COLOR LASER INDUCED PLASMA WITH DIFFERENT FOCUSING	247
<i>Ushakov A.A., Matoba M., Nemoto N., Kanda N., Konishi K., Andreeva V.A., Panov N.A., Shipilo D.E., Chizhov P.A., Bukin V.V., Kuwata-Gonokami M., Yumoto J., Kosareva O.G., Garnov S.V., Savel'ev A.B.</i>	
GENERATION OF HIGH POWER TERAHERTZ PULSES AND APPLICATIONS	249
<i>Sitnikov D.S., Ovchinnikov A.V., Chefonov O.V., Agranat M.B.</i>	
TERAHERTZ SPECTROSCOPY FOR DIABETES DIAGNOSTICS	251
<i>Cherkasova O.P., Nazarov M.M., Shkurinov A.P.</i>	
HARMONIC TERAHERTZ GYROTRON WITH QUASI-OPTICAL CONFOCAL CAVITY	253
<i>Fu Wenjie, Guan Xiaotong, Yan Yang, Li Xiaoyun, Huang Yin, Meng Lin</i>	
PSEUDOSPARK EXCITED SUB-THZ FREQUENCY SOURCES	255
<i>Yin H., Zhang L., Yin Y., Zhao J., Shu G., He W., Cross A. W., Phelps A. D. R.</i>	
EXCITATION OF THZ SURFACE WAVES IN THE CONDUCTOR BY A DRAG CURRENT GENERATED BY A FOCUSED FEMTOSECOND PULSE	257
<i>Frolov A.A., Uryupin S.A.</i>	
ELECTRODYNAMIC SYSTEM FOR TWO-STAGE THZ-GENERATOR ON THE BASE OF TWO-CHANNEL PLANAR FEM	259
<i>Arzhamnikov A.V., Ginzburg N.S., Kalinin P.V., Peskov N.Yu., Sandalov S.E., Sinitsky S.L., Stepanov V.D.</i>	
TERAHERTZ GYROTRONS WITH QUASI-REGULAR CAVITIES	261
<i>Osharin I.V., Bandurkin I.V., Kalynov Yu.K., Kuzikov S.V., Savilov A.V.</i>	

**SPONTANEOUS COHERENT CYCLOTRON THZ SUPER-RADIATION FROM A SHORT
DENSE PHOTO-INJECTOR ELECTRON BUNCH 263**

Oparina Yu.S., Savilov A.V.

Author Index