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Department of Physics

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Romanian Ministry of Education

CNFA 2008

The 3-rd National Conference of Applied Physics

21-22 November 2008

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Foreword

CNFA-2008 is the third Conference of Applied Physics that is organized by the "Gh. Asachi" Technical University of Iasi, Department of Physics and Romanian Ministry of Education. The first was organized in 2004 and the second in 2006.

More than 150 scientists are participated at these conferences from various countries: France, USA, Ireland, Israel, Finland, Sweden, Russia, Ukraine, Rep. Moldova, and Estonia. From Romania all major universities are represented: Iasi, Bucharest, Cluj, Timisoara, Constanta, Brasov, Sibiu, Craiova,etc.

The aim of the conference is to create a bridge between the physics and its various applications.

The papers will be published in Buletinul Institutului Politehnic din Iasi, sectia Matematica, Mecanica teoretica, Fizica, a journal recognized by CNSIS (B category).

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Prof.dr. Anca Tureanu (Helsinki University, Finland)
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The Conference sections are as follow:

1. Theoretical, Mathematical and Computational

Physics.

2. Physics and Technology of Bulk Materials.

3. Optics, Spectroscopy and Plasma Physics.

4. Technical Physics and Interdisciplinarity.

CONFERENCE   PROGRAMME

VENUE BUILDING: "GH. ASACHI" TECHNICAL UNIVERSITY,
CORP T (RECTOR BUILDING)
Bulevardul D. Mangeron, nr. 59, Iasi

FRIDAY   21 NOVEMBER 2008

8^{30} - 9^{30} Registration   Corp T Hall

9^{30} - 9^{40} Opening ceremony   Auditorium T1

9^{40} – 11^{00} Plenary Session (Invited Talks)   Auditorium T1

11^{00} – 11^{30} Coffee Break   Corp T Hall

11^{00} – 13^{00} Physics Instruments Exposition   Corp T Hall

11^{30} – 13^{00} Oral Session   Auditorium T1

13^{00} - 15^{00} Lunch Break

15^{00} – 17^{00} Oral Session   Auditorium T1

17 -17^{30} Coffee Break   Corp T Hall

17^{30} – 19^{00} Poster Session (Sections 1 and 2)   Corp T Hall

20^{00} Festive dinner at " Cornelius" Restaurant

SATURDAY   22 NOVEMBER 2008

10 - 12   Poster Session (Sections 3 and 4)   Corp T Hall

12 – 14   Round Table: Physics in Technical University   Auditorium T1

FRIDAY, NOVEMBER 21st 2008

9^{30} - 9^{40} **Opening ceremony**   **Auditorium T1**

9^{40} – 11   **Plenary Session (Invited Talks)**   **Auditorium T1**

**Chairmans: Prof. dr. P.D. Ioannou
Prof. dr. Cristian Focsa**

	Invited Talks		
	TITLE	Authors	Affiliation
I1	SINGLE AND MULTILAYERED MAGNETIC NANOWIRES PREPARATION AND CHARACTERIZATION	H. Chiriac, N. Lupu, O. Dragos, C. Gherasim, M. Grigoras, G. Ababei	National Institute of R&D for Technical Physics-IFT, Mangeron Avenue 47, 700050, Iasi, Romania
I2	DIPOLE MOMENTS AND POLARIZABILITIES IN THE EXCITED ELECTRONIC STATES OF SOME MOLECULES	Dana-Ortansa Dorohoi	Facultatea de Fizică, Univ. Al.I.Cuza, Iaşi

Oral Session: 1. Theoretical, Mathematical and Computational Physics
FRIDAY, NOVEMBER 21st 2008, 11^{30}-13^{00}
Session chairs: Prof. Dr. C. Dariescu/Prof. Dr. Gh. Zet

	TITLE	Authors	Affiliation
S1-O1 11^{30} - 11^{50}	SELF-DUAL GAUGE FIELDS ON NON-COMMUTATIVE SPACE-TIME	G. ZET	Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA
S1-O2 11^{50} - 12^{10}	GAUGE THEORY WITH $SU(n) \times SO(p,q)$ AS STRUCTURE GROUP	G. ZET	Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA
S1-O3 12^{10} - 12^{30}	A NEW THEORETICAL DESCRIPTION OF THE TUNEL EFFECT BY MEANS OF FRACTAL THEORY	M. Agop[1], P. Nica[1], P.D.Ioannou[2]	[1]Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA [2]University of Athens, Greece
S1-O4 12^{30} - 12^{50}	SCALARS AND FERMIONS ON 5D WARP OF EINSTEIN UNIVERSE	Marina-Aura Dariescu,Ciprian Dariescu, Ana-Camelia Pirghie	Faculty of Physics, Al. I. Cuza University, Bd. Carol I, no. 11, 700506 Iasi, Romania

Oral Session: 2. Physics and Technology of Bulk Material
3. Optics, Spectroscopy and Plasma Physics
4. Technical Physics and Interdisciplinarity
FRIDAY, NOVEMBER 21st 2008, 15^{00}-17^{00}
Session chairs: Prof. Dr. M. Agop/Prof. Dr. Dana Dorohoi

	TITLE	Authors	Affiliation
S2-O1 15^{00} - 15^{20}	STUDY OF MORPHOLOGY INFLUENCE ON RHEOLOGICAL PROPERTIES OF HYDROXYPROPILCELLULOSE/EPICLON-BASED POLYIMIDE SOLUTION MIXTURES	Andreea Irina Cosutchi, Camelia Hulubei and Silvia Ioan,	"Petru Poni" Institute of Macromolecular Chemistry, Iasi, Romania,

Oral Session: 2. Physics and Technology of Bulk Material
3. Optics, Spectroscopy and Plasma Physics
4. Technical Physics and Interdisciplinarity
FRIDAY, NOVEMBER 21st 2008, 15[00]-17[00]
Session chairs: Prof. Dr. M. Agop/Prof. Dr. Dana Dorohoi

	TITLE	Authors	Affiliation
S3-O1 15[20] - 15[40]	OXYGEN RF PLASMA STERILIZATION	S. Popescu*, D. Vicoveanu, Y. Ohtsu, H. Fujita	* Faculty of Physics, Al I Cuza University, 700506 Iasi, Romania Faculty of Science and Engineering, Saga University, 840-8502 Saga, Japan
S3-O2 15[40] -16	SELF-SIMILAR SOLUTIONS FOR LASER PRODUCED EXPANDING PLASMA	P. Nica[1], M. Agop[1], S. Gurlui[2], M. Ziskind[3], and C. Focsa[3]	[1]Department of Physics, Technical "Gh. Asachi" University, Romania [2]Faculty of Physics, "Al.I.Cuza" University, Romania [3]Laboratoire de Physique des Lasers, Atomes et Molécules Université des Sciences et Technologies de Lille, France
S3-O3 16[00] - 16[20]	*A*NALIZA DE SENSIBILITATE SI MODELARE STATISTICA PENTRU CONDENSAREA ACIZILOR R1-6-CLORO-7 FLUORO-1,4-DIHIDRO-4 OXO-CHINOLIN-3 CARBOXILICI CU 4-METIL-PIPERIDINA	Rodica Diaconescu[1], Corneliu Oniscu [2], Corina Cernatescu[2] Cristina Bibire[3], Nicoleta Vornicu[3] si Anca Mocanu [2]	[1] Facultatea de Inginerie Chimica si Protectia Mediului, Catedra de Inginerie Chimica, Universitatea Tehnica Gh. Asachi Iasi [2] Facultatea de Inginerie Chimica si Protectia Mediului, Catedra de Ingineria Substantelor Organice si Inginerie Biochimica, Universitatea Tehnica [3]Centrul de Cercetari T.A.B.O.R, 700066 Iasi
S3-O4 16[20] - 16[40]	INORGANIC CRYSTALS BIREFRINGENCE DETERMINED WITH A POLARIZING MICROSCOPE	[1]Leonaş Dumitraşcu, [1]Irina Dumitraşcu, [2]Nicoleta Puică-Melniciuc, [1]Dana-Ortansa Dorohoi	[1]Facultatea de Fizică, Univ. Al.I.Cuza, Iaşi [2]Facultatea de Teologie Ortodoxă, Univ. Al.I.Cuza, Iaşi

Oral Session: 2. Physics and Technology of Bulk Material 3. Optics, Spectroscopy and Plasma Physics 4. Technical Physics and Interdisciplinarity FRIDAY, NOVEMBER 21st 2008, 15^{00}-17^{00} Session chairs: Prof. Dr. M. Agop/Prof. Dr. Dana Dorohoi			
	TITLE	Authors	Affiliation
S4-O1 16^{40} - 17^{00}	TRANSPORT IN NANOSTRUCTURE OF ION CHANEL	Mariana Latu	Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA

Poster Session: 1. Theoretical, Mathematical and Computational Physics Friday, NOVEMBER 21st 2008, 17³⁰-19⁰⁰		
TITLE	**Authors**	**Affiliation**
S1-P1 LOCALIZATION OF ENERGY FOR A HETEROTIC STRINGY BLACK HOLE SOLUTION	I. Radinschi	Department of Physics, "Gh. Asachi" Technical University, Iasi, 700050, Romania
S1-P2 ELECTROMAGNETIC PROPERTIES OF CHIRAL METAMATERIALS	*V. DAVID, ** MARIANA LATU	* "Gh. Asachi" Technical University, Department of Electrical Measurement and Materials, Iasi, Romania ** "Gh. Asachi" Technical University, Department of Physics, Iasi, Romania
S1-P3 ELECTRIC PROPERTIES OF CARBON NANOTUBES	MARIANA LATU	Gh. Asachi" Technical University, Department of Physics, Iasi, Romania
S1-P4 COMPARATIVE STUDY OF ALPHA-DECAY PROPERTIES FOR SUPERHEAVY ELEMENTS	Iulia Brindusa Ciobanu (1), Ion Silisteanu (2),	(1) Physics Department, Gh. Asachi Technical University, Iasi, Romania (2) Horia Hulubei Institute of Physics and Nuclear Engineering, RO-077125, Bucharest-Magurele, Romania
S1-P5 A NEW GENERAL FORM FOR ELECTRIC FIELD LINES EQUATION	M.B. Raut	Al.I. Cuza University, Faculty of Physics, Department of Solid State & Theoretical Physics, blvd. Carol I, 11, 700506, Iasi, Romania
S1-P6 THE SPATIAL ELLIPTICAL MOVEMENT IN A NON-INERTIAL FRAME OF REFERENCE	M.B. Raut	Al.I. Cuza University, Faculty of Physics, Department of Solid State & Theoretical Physics, blvd. Carol I, 11, 700506, Iasi, Romania
S1-P7 THE SPONTANEOUSLY SYMMETRY BREAKING AND THE CHARGE TRANSPORT IN PLASMA STRUCTURES	Camelia Popa[1] and Doina Partenie[1]	[1]Faculty of Physics, „Al. I. Cuza" University, Iaşi 700506, Romania
S1-P8 THEORETICAL ANALYSIS VERSUS EXPERIMENTAL RESULTS ON THE BETA-DECAY ATTENUATION	Iulia Brindusa Ciobanu (1)*, Ion Silisteanu (2), Daniela Ionescu (2)	(1) Physics Department, Gh. Asachi Technical University, Iasi, Romania, (2) Horia Hulubei Institute of Physics and Nuclear Engineering, RO-077125, Bucharest-Magurele, Romania (3) Electronics and Telecommunications Faculty, Gh. Asachi Technical University,

Poster Session: 1. Theoretical, Mathematical and Computational Physics
Friday, NOVEMBER 21st 2008, 17^{30}-19^{00}

	TITLE	Authors	Affiliation
S1-P9	TRANSITION FROM CHAOS TO ORDER IN EXTENDED DISSIPATIVE RELATIVISTIC STANDARD MAP	Liviu Badelita, Viorel Stancu	Department of Physics, "Gh. Asachi" Technical University, Iasi, Romania
S1-P11	ON SOME QUANTUM TUNELLING EFFECTS DETERMINED BY THE "IMAGE" FORCES AT SOME PHOTOACTIVE STRUCTURES QDS (QUANTUM DOTS NANOCRISTALS)-TYPE USED AS NEW BIO-SENSORS	Magda Gherghel	Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA,
S1-P12	A VARIATIONAL NON-RELATIVISTIC APPROACH TO IDEAL MAGNETOFLUID	Tiberiu – Dan Onuță and Dodu Ursu,	Department of Physics,, "Gh. Asachi" Technical University Indiana University, Bloomington, USA
S1-P13	NEW EXACT SOLUTIONS CORRESPONDING TO THE SECOND PROBLEM OF STOKES, FOR MAXWELL FLUIDS	Imran Siddique, Rubbab Qamma	COMSATS Institute of Information Technology
S1-P14	SOME EXACT SOLUTIONS FOR THE FLOW OF O GENERALIZED OLDROYD-B FLUID BETWEEN TWO SIDE WALLS PERPENDICULAR TO A PLATE	A.U. Awana , Corina Fetecau[b] , M. Imrana,	[a] Abdus Salam School of Mathematical Sciences, GC University Lahore, Pakistan, [b] Department of Theoretical Mechanics, Technical University of Iasi, Romania,
S1-P16	COMPUTATIONAL EXPERIMENT IN THE INVESTIGATION OF NEW MAGNETIC MATERIALS	S. Mohorianu, M. Lozovan, F.-V. Rusu	INCDFT-IFT Iasi, Mangeron 47, Iasi, Romania
S1-P17	ON THE AXIAL COUETTE FLOW OF A MAXWELL FLUID DUE TO A LONGITUDINAL TIME DEPENDENT SHEAR STRESS	W. AKHTAR[*] AND M. JAMIL	Abdus Salam School of Mathematical Sciences GC University Lahore, Pakistan

Poster Session: 2. Physics and Technology of Bulk Materials Friday, NOVEMBER 21st 2008, 17³⁰-19⁰⁰		
	TITLE	Authors	Affiliation
S2-P1	GALVANOMAGNETIC EFFECTS OF NEW COFESIBMO ALLOY	MIHAI LOZOVAN, HORIA CHIRIAC, VIOREL DOBREA, , MIHAIL-LIVIU CRAUS and SERGIU MOHORIANU	National Institute of R & D for Technical Physics, Iaşi 700050, România
S2-P2	SAXS INVESTUGATION OF THE SINTERED NB POWDER SURFACE INHOMOGENEITIES	Leonid Skatkov[1] & Valeriy Gomozov[2]	1) PCB "Argo", 4/23 Shaul ha-Melekh Str., 84797 Beer Sheva, Israel; 2) NTU"KhPI", 21 Frunze Str., 61002 Kharkov, Ukraine;
S2-P3	ELECTRICAL CONDUCTIVITY MECHANISM IN DOPED α-FE2O3	Sergiu Istrate, Dorin Condurache	Technical Gh. Asachi University, Department of Physics
S2-P4	VELOCITY AND ATTENUATION FACTOR OF A ULTRASOUND WAVE PROPAGATING IN A FERROFLUID	R. Badescu, V. Badescu, G. Apreotesei	Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA
S2-P5	THE PROPERTIES OF A FERROFLUID WITH MODIFIED STABILIZING AGENT AND THEIR TEMPERATURE DEPENDENCE	R. Badescu, D. Condurache, M. Ivanoiu	Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA
S2-P6	MORPHOLOGICAL ASPECTS OF CELLULOSE ACETATE MEMBRANES WITH DIFFERENT SUBSTITUTION DEGREES	Adina Maria Necula, Niculae Olaru, Liliana Olaru, Iuliana Stoica and Silvia Ioan	"Petru Poni" Institute of Macromolecular Chemistry, Iasi, Romania
S2-P7	SPECIFIC INTERACTIONS IN QUATERNIZED POLYSULFONES WITH DIMETHYLETHYLAMMONIUM CHLORIDE GROUPS INSOLUTIONS	Raluca Marinica Albu, Ecaterina Avram and Silvia Ioan,	"Petru Poni" Institute of Macromolecular Chemistry, 700487-Iasi, Romania
S2-P8	VARIAȚIA TEMPERATURII ANSAMBLULUI FILM-SUBSTRAT ÎN PROCESUL DE FORMARE PRIN DEPUNERE FIZICĂ DE VAPORI	Alexadrina Jeflea, Sabina Picos, Nicoleta Carpinschi	Department of Physics, "Gh. Asachi" Technical University, Iasi, Romania
S2-P9	MAGNETIC SEPARATION OF NANOSPHERES FROM A SIMULATED BIOLOGICAL FLUID	L.E. Udrea[1], V. Bădescu[1], O. Rotariu[1], R. Badescu[2], G. Apreotesei[2]	1 NIRDTP – Institute of Technical Physics Iasi, Bd. Mangeron 47, Iasi 700050, Romania 2 Technical Univ. "Gh. Asachi" Iasi, Physics Dept., Bd. Mangeron 56, Iasi 700050, Romania

Poster Session: 2. Physics and Technology of Bulk Materials
Friday, NOVEMBER 21st 2008, 17³⁰-19⁰⁰

	TITLE	Authors	Affiliation
S2-P10	AN ANALYSIS OF A HIGH GRADIENT MAGNETIC SEPARATOR FOR EXTRACORPOREAL BLOOD PURIFICATION	V. Bădescu[1], L.E. Udrea[1], O. Rotariu[1], R. Badescu[2], G. Apreotesei[2]	[1] NIRDTP – Institute of Technical Physics Iasi, Bd. Mangeron 47, Iasi 700050, Romania [2] Technical Univ. "Gh. Asachi" Iasi, Physics Dept., Bd. Mangeron 56, Iasi 700050, Romania
S2-P11	STRUCTURAL ANALYSIS, MAGNETIC PROPERTIES AND TRANSPORT CHARACTERISTICS OF $La_{0.54}Sm_{0.11}Ca_{0.35-y}Na_yMn_{0.97}Cu_{0.03}O_3$ MANGANITES	MIHAIL-LIVIU CRAUS[1,2], NICOLETA CORNEI[3], MIHAI LOZOVAN[1] AND VIOREL DOBREA[1]	[1] National Institute of R & D for Technical Physics, Iaşi 700050, România [2] Joint Institute for Nuclear Research, Dubna, Russia [3] "Al.I.Cuza" University Iasi
S2-P12	AN ESTIMATION OF THE HEIGHT OF THE POTENTIAL BARRIER AT THE METAL-DIELECTRIC INTERFACE	E. R. Neagu, R. M. Neagu and J. N. Marat-Mendes	Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA,
S2-P13	MEMS SWITCHES AND THE PULL-IN VOLTAGE	E. R. Neagu,1 C. J. Dias 2, M. C. Lança2, and Jose N. Marat-Mendes2	Department of Physics, "Gh. Asachi" Technical University, Iasi 700050, ROMANIA, Universidade Nova de Lisboa, Portugal
S2-P14	THE MAGNETORESISTIVE PROPERTIES FOR SYMMETRIC MAGNETIC , TUNNEL JUNCTIONS	M. Urse, H. Chiriac, F. Borza, M. Grigoras and V. Buta	National Institute of Research and Development for Technical Physics, , 47 Mangeron Boulevard, Iasi 70050, Romania,
S2-P15	METALLIC NANOTUBES: OBTAINING AND STRUCTURAL CHARACTERIZATION	Gabriela Călin, Florin Brînză, Nicolae Suliţanu	Faculty of Physics, Al. I. Cuza Univ., 11 Bv. Carol I, 700506 Iasi , Romania
S2-P16	DISCREET NANOSTRUCTURES OF PB, SN, CU, NI BY ARC-DISCHARGE SYNTHETIZED	Gabriela Călin, Felicia Carmen Dascălu, Adina Coroabă , Florin Brînză, Nicolae Suliţanu	Faculty of Physics, Al. I. Cuza Univ., 11 Bv. Carol I, 700506 Iasi , Romania
S2-P17	NiO THIN FILMS DEPOSITED BY SPIN-COATING	G. CĂLIN[1], M. DOBROMIR[1], R. APETREI[1], D.LUCA[1], N. IFTIMIE[2], C. BABAN[1], F. IACOMI[1]	[1] Al.I. Cuza University, Faculty of Physics, 11 Carol I Blvd., 700506, Iasi Romania, [2] National Institute of R & D for Technical Physics, 47 D. Mangeron Blvd, Iasi, 700050, Romania

Poster Session: 2. Physics and Technology of Bulk Materials
Friday, NOVEMBER 21st 2008, 17:30-19:00

	TITLE	Authors	Affiliation
S2-P18	STUDIES ON Mn SPECIES IN Mn:ITO THIN FILMS	A. LAZĂR[1], M. IRIMIA[1], C.V.TEODORESCU[2], C. BABAN[1], F. IACOMI[1]	[1]Al.I. Cuza University, Faculty of Physics, 11 Carol I Blvd., 700506, Iasi Romania, [2]National Institute of Material Physics P. O. Box MG7, 77125 Magurele Bucuresti, Romania
S2-P19	MAGNETIC CAPTURING AND GUIDING OF MAGNETITE-POLYVINYL ALCOHOL FERROFLUIDS FOR TARGETED DRUG DELIVERY	O. ROTARIU[1], LAURA ELENA UDREA[1], V. BADESCU [1], RODICA BADESCU[2], GABRIELA APREOTESEI[2]	[1] National Institute of Research and Development for Technical Physics, 47 Mangeron Blvd., Iasi, 700050, Romania [2] Technical University "Gh. Asachi", Department of Physics, 67 Mangeron Blvd., Iasi, 700050, Romania
S2-P20	MICROSTRUCTURE AND WEAR RESISTANCE OF STEEL SURFACES HARDENED ON CENTRIFUGED BALLS	MARIAN MAREŞ, VASILE BULANCEA, and DORIN CONDURACHE	Technical University "Gh. Asachi" Iasi, Romania

Poster Session: 3. Optics, Spectroscopy and Plasma Physics
SATURDAY, NOVEMBER 22nd 2008, 10:00-12:00

	TITLE	Authors	Affiliation
S3-P1	OBSERVATION OF A TORUS DOUBLING EVOLUTION TO CHAOS IN AN RLC CIRCUIT WITH MFS CAPACITOR AS NONLINEAR ELEMENT	Cristina STAN[1], Constantin P. CRISTESCU[1] and Bogdan MEREU[2]	[1]Politehnica University of Bucharest, Faculty of Applied Physics, Department of Physics 1,Bucharest,060042, Romania, [2]Max Planck Institute of Microstructure Physics, Weinberg 2, D-06120, Halle, Germany
S3-P2	EXPERIMENTAL AND THEORETICAL INVESTIGATIONS OF A LASER-PRODUCED ALUMINUM PLASMA	P. Nica[1], M. Agop[1], S. Gurlui[2], M. Ziskind[3], and C. Focsa[3]	[1]Department of Physics, Technical "Gh. Asachi" University, Romania [2]Faculty of Physics, "Al.I.Cuza" University, Romania [3]Laboratoire de Physique des Lasers, Atomes et Molécules Université des Sciences et Technologies de Lille, France

Poster Session: 3. Optics, Spectroscopy and Plasma Physics
SATURDAY, NOVEMBER 22nd 2008, 10:00-12:00

	TITLE	Authors	Affiliation
S3-P3	SIMULATING AND MODELING CHAOS IN FUSION PLASMAS USING LOGISTIC MAP	Viorel Stancu, Liviu Bădeliţă	Department of Physics, "Gh. Asachi" Technical University, Iasi, Romania
S3-P4	NUMERICAL STUDY ON A COUPLED LOGISTIC MAP AS A SIMPLE MODEL FOR THE INTERACTION OF NONLINEAR OSCILLATORS IN PLASMA	Viorel Stancu, Liviu Bădeliţă	Department of Physics, "Gh. Asachi" Technical University, Iasi, Romania
S3-P5	DIPOLE MOMENTS IN THE EXCITED STATES OF SOME PYRIDINIUM YLIDES	Dana-Ortansa Dorohoi, Dorina-Emilia Creangă, Claudia Nădejde, Mihaela Dimitriu	Faculty of Physics, "Al. I. Cuza" University, Iasi, Romania
S3-P6	ABE MODEL USED IN DESCRIBING THE SIMPLE LIQUID STRUCTURE. APPLICATIONS	Dana-Ortansa Dorohoi, Radu-Ionuţ Tigoianu	Al. I. Cuza University, Faculty of Physics, 11Carol I Bdv, RO-700506, Iasi
S3-P7	EFFECTS OF CROSSLINKING STATE ON PROPERTIES FOR POLYMERS WITH LOG NORM PRIMARY MOLECULAR WEIGHT DISTRIBUTION (POSTER)	Virgil Bărboiu, Mihaela Avădanei	Institutul de Chimie Macromoleculara P. Poni, Iaşi
S3-P8	AFM AND RX STUDIES OF APV FOILS UNPURIFIED WITH GLUCOSE	[1]Irina Dumitraşcu, [1]Leonaş Dumitraşcu, [2]Magdalena Aflori, [2]Daniel Timpu, [2]Iuliana Stoica and [1]Dana-Ortansa Dorohoi	[1] Al. I. Cuza University, Faculty of Physics, 11Carol I Bdv, RO-700506, Iasi [2]Institutul de Chimie Macromoleculară Petru Poni, Iaşi
S3-P9	HYDROGEN BONDS IN PROTIC TERNARY SOLUTIONS OF PYRIDAZINIUM YLIDES	Mihaela-Maria Dulcescu, Dana-Ortansa Dorohoi	Al. I. Cuza University, Faculty of Physics, 11Carol I Bdv, RO-700506, Iasi
S3-P10	VISIBLE BIREFRINGENCE OF APV THIN FOILS (POSTER)	Cristina Nechifor, Ecaterina Angheluţă, Dana-Ortansa Dorohoi	Al. I. Cuza University, Faculty of Physics, 11Carol I Bdv, RO-700506, Iasi
S3-P11	COMPUTER SIMULATION OF FRAUNHOFER DIFFRACTION IN DIDACTICAL PURPOSES	George Amarandei, Claudiu Costin, Dana-Ortansa Dorohoi	Al. I. Cuza University, Faculty of Physics, 11Carol I Bdv, RO-700506, Iasi
S3-P12	CONTRIBUTION OF EACH TYPE OF INTERMOLECULAR INTERACTION TO THE TOTAL SHIFT MEASURED IN THE VISIBLE ELECTRONIC ABSORPTION BANDS OF LIQUID SOLUTIONS	Dana-Ortansa Dorohoi, Dorina-Emilia Creangă, Mihaela-Maria Dulcescu, Claudia Nădejde	Al. I. Cuza University, Faculty of Physics, 11Carol I Bdv, RO-700506, Iasi

Poster Session: 3. Optics, Spectroscopy and Plasma Physics
SATURDAY, NOVEMBER 22nd 2008, 10:00-12:00

	TITLE	Authors	Affiliation
S3-P13	ON THE EFFECTS OF LOW PRESSURE ARGON PLASMA TREATMENT ON PVA FILMS	Oana Niculescu Cristina-Delia Nechifor	Al. I. Cuza University, Faculty of Physics, 11Carol I Bdv, RO-700506, Iasi
S3-P14	CHOLESTERIC LIQUID CRYSTALS – DETECTORS OF ATMOSPHERIC POLLUTION	Alina Rogojanu, Cristina Delia Nechifor	Al.I.Cuza University, Faculty of Physics, Iasi
S3-P15	SPECTRAL AND AFM STUDIES ON UV-CROSSLINKED FILMS OF POLY(4-VINYLPYRIDINE) DERIVATIVES	Mihaela Avădanei, Elena Gabriela Hitruc, Cornelia Luca	Institutul de Chimie Macromoleculara P. Poni, Iaşi
S3-P16	ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY STUDIES OF NON PRECIOUS GOLD ALLOY IN ARTIFICIAL SALIVA	D. Mareci, A.Cailean, D.Sutiman, I. Cretescu	Faculty of chemical Engineering and Environmental Protection
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S3-P19	THERMIC"AUTO-STIMULATION" EFFECT IN THE OPTICAL ABSORBTION PROCESS AT SOME HYBRID POLYCRISTALLINE (NANO) STRUCTURES	Magda Gherghel	Technical University "Gh. Asachi", Jassy, Department of Physics, 70050 Romania
S3-P20	MICROSTRUCTURE OF SOME MAGNETIC OXIDES USED AS GASSES AND VAPORS SENSORS	S. Istrate, D. Condurache, P. Nica	Technical University "Gh. Asachi", Jassy, Department of Physics, 70050 Romania
S3-P21	SEM STRUCTURE OF LI AND MG SPINEL FERITES USED AS GAS SENSORS	S. Istrate, D. Condurache, P. Nica	Technical University "Gh. Asachi", Jassy, Department of Physics, 70050 Romania

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S4-P2	AMPEROMETRIC SENSOR BASED ON A MAGNETIC ELECTRODE FOR BIOMEDICAL APPLICATIONS,	Dumitru-Daniel Herea and Horia Chiriac	National Institute of Research and Development for Technical Physics – IFT, 47 Mangeron Avenue, 700050, Iasi, Romania ,
S4-P3	CHARACTERIZATION OF MAGNETITE AND COBALT FERRITE NANOPARTICLES	E. Foca-nici, A. Cîrlescu, V. Nica, D. Creanga, N. Sulitanu	Faculty of Physics, University ”Al.I.Cuza”, 11A Carol I Blvd.,700506, Iasi, Romania
S4-P4	SOME ASPECTS CONCERNING the FLY ASH DISPOSAL AROUND the POWER PLANT STATION in VASLUI CITY	Cretescu Igor[1], Furcoi Elena Diana[1], Crânganu Renata[2]	1-"Gh. Asachi" Technical University of Iasi, Faculty of Chemical Engineering and, Environmental Protection, 2.- Environmental Protection Agency, Laboratory of Radioactive Monitoring, Suceava
S4-P5	SOME FEATURES OF ELECTRIC AND MAGNETIC FIELDS EMITTED BY CRT COMPUTER MONITORS	C. Goiceanu (1), R. Dănulescu (2)	(1+2) - Institute of Public Health, Department of Occupational Health, 14 Victor Babes St, 700465 Iasi, Romania;
S4-P6	EFFECTS OF ELECTRON BEAM IRRADIATION ON AQUEOUS SOLUTION OF CORN STARCH	Monica R. Nemţanu, Mirela Braşoveanu	National Institute for Laser, Plasma and Radiation Physics, Electron Accelerator Laboratory, 409 Atomistilor St., P.O. Box MG-36, RO- 077125 Bucharest-Magurele, Romania
S4-P7	GEOELECTRICAL TOMOGRAPHIC TECHNIQUE FOR THE NONDESTRUCTIVE INVESTIGATION OF THE WATER SOURCE	MAFTEIU MIHAI[1], DANIEL TOACĂ[3], ALEXANDRESCU ADINA[3], CHIUC ANAMARIA[3], HÂRSU ADRIAN[3], PĂVALUCĂ IULIAN[3], ANCA IACOB[3] ALEXANDRU ŞTEFAN[1] and MARIA RODICA NEAGU[2]	[1]University of Bucarest, Faculty of Geology and Geophysics [2]Technical University "Gh. Asachi", Jassy, Department of Physics, 70050 Romania [3]Technical University "Gh. Asachi", Jassy, Department of Hydroameliorations and Environmental, 70050 Romania

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S4-P9	THE PHYSICAL SENSOR FOR PRESSURE MEASUREMENT	AURORA Stanci and ANDREEA STANCI	University of Petrosani, Str. University, Nr.20, Petrosani, 335600, Romania
S4-P10	DYNAMIC SHIELDING	Doina Costandache, Octavian Baltag	Facultatea de Bioinginerie Medicala, Universitatea de Medicina si Farmacie "Gr. T. Popa, Iasi , Romania
S4-P11	BIOMEDICAL APPLICATIONS OF MICROWAVE RADIOMETRY	Octavian Baltag, Doina Costandache, Mihaela Costin, Anca Banarescu	Facultatea de Bioinginerie Medicala, Universitatea de Medicina si Farmacie "Gr. T. Popa, Iasi , Romania
S4-P12	NON-INVASIVE MONITORING OF CARDIORESPIRATORY ACTIVITY	Octavian Baltag, Miuta Rau, Anca Banarescu	Facultatea de Bioinginerie Medicala, Universitatea de Medicina si Farmacie "Gr. T. Popa, Iasi , Romania
S4-P13	THE RAINFALL QUALITY IN THE SAVINESTI-PIATRA NEAMT REGION	Luminita Stroia	Al.I. Cuza University, Faculty of Physics, Iasi
S4-P14	OPTICAL CENTERED SYSTEM OF HUMAN EYE	[1]Mihaela Miron, [2]Mona-Lisa Cazacu	[1]Gr.T. Popa University, Faculty of Medicine, Iasi, [2]Al.I. Cuza University, Faculty of Physics, Iasi
S4-P15	ENERGIA SI LUMEA VIITORULUI	Carmina Cazan, Alexandrina Jeflea	Department of Physics, "Gh. Asachi" Technical University, Iasi, Romania
S4-P16	LOAD DISTRIBUTION ON THE ROLLING ELEMENTS IN ANGULAR CONTACT BALL BEARING	Ion Oancea, Viorel Paleu	Technical Gh. Asachi University, Mecanical Engineering Faculty, Machine Design and Mechatronics Department
S4-P17	RESEARCH ON THE IMPACT OF LOW DOSES OF RADIATION ON *ECHINACEA PURPUREA* SEEDLINGS	D. Ichim*, D. Creanga, G. Capraru**, D. Mihailescu, C. Borcia I. Karatchuk***	Univ. Al. I. Cuza – Iasi, Fac. of Physics *Military Hospital Iasi **Institute of Biological Research, Iasi ***Institute of Nuclear Physics, Dubna, Russia

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S4-P19	METHAMERISM IN RESTAURATION	Nicoleta Puică-Melniciuc, Dana-Ortansa Dorohoi	[1]Facultatea de Teologie Ortodoxă, Univ. Al.I.Cuza, Iaşi [2]Facultatea de Fizică, Univ. Al.I.Cuza, Iaşi
S4-P20	DISPERSION AND ABSORPTION IN SIMPLE EXPERIMENTS FOR HIGH SCHOOLS	[1]Nina Robu, [2]Oana Surugiu, [3]Doina Irimia	[1] Perieni School, Iasi [2]Al.I.Cuza University, Faculty of Philology, Iasi [3]Mogosesti School, Ias
S4-P21	COLOR IN EDUCATIVE-INSTRUCTIVE PROCESS	[1]Ribanna Sabin, [1]Isabella Maria Istati, [1]M. Cojoc, [2]C. Adiaconitei, [3]Elena Huma, [4]Alexandra Taralunga, [5]Mihaela-Liliana Ivan, [5]Dana-Ortansa Dorohoi	[1]Grupul Scolar Sfantul Andrei Gura Humorului [2]Scoala Petricani, Jud. Neamt [3]Colegiul Auto Piatra Neamt Facultatea de Psihologie, Univ. Al.I.Cuza Iasi Facultatea de Fizica, Universitatea Al.I. Cuza Iasi
S4-P22	ROLE OF THE SPECTRAL COMPOSITION IN EVALUATION OF THE PICTORIAL SURFACES	[1]Carmen Adiaconitei, [2]Elena Huma, [3]Mihaela Liliana Ivan, [3]Dana-Ortansa Dorohoi	[1]Petricani School, Neamt [2]Auto Colege Piatra Neamt, Theology Faculty, Al.I.Cuza University, Iasi Physics Faculty, Al.I.Cuza University, Iasi
S4-P23	SCATTERED NANOFIELDS AND ATOMS MANIPULATION	S. Balmus	Paul Sabatier III University, Toulouse, France

S2-O1

SELF-DUAL GAUGE FIELDS ON NON-COMMUTATIVE SPACE-TIME

BY

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Abstract. A self-dual gauge theory is developed considering $U(2)$ as local symmetry group. Using the gauge fields, the covariant derivative is constructed and the strength tensor components are calculated. The self-duality equations are written and a solution for the gauge fields is obtained in the case of commutative space-time. The results are extended to the non-commutative space-time defined by the condition $\left[x^\mu, x^\nu\right] = i\,\theta^{\mu\nu}$, with $\theta^{\mu\nu} = -\theta^{\nu\mu}$ as constant (canonical) parameters of the model. The gauge fields are expanded as power series of θ- parameters and their components are calculated order by order using the self-duality equations. An example of non-commutative self-dual solution is given and some of their properties are discussed.

S2-O2

GAUGE THEORY WITH $SU(n) \times SO(p,q)$ AS STRUCTURE GROUP

BY

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Abstract. We present a model of gauge theory based on the symmetry group $SU(n) \times SO(p,q)$. The $SU(n)$ group is associated to the internal properties of gauge fields and $SO(p, q)$ – to external (space-time) symmetry. The model allows to obtain a unified theory for the gravitational and strong (internal) interactions. The integral action for this system of fields is constructed and the gauge field equations are written ian a general form. As an example, we consider the $SU(2) \times SO(4,1)$ symmetry, where $SU(2)$ is the internal (isospin) gauge group and $SO(4,1)$ is the de-Sitter describing the gravitational interaction which allows the introduction of the cosmological constant Λ into the model. Making a contraction of the $SO(4,1)$ group we obtain the Poincaré gauge theory and construct a solution with spherical symmetry for the field equations.

S1-P1

Localization of Energy for a Heterotic Stringy Black Hole Solution

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In this paper we provide a study of the energy distribution of a charged black hole solution in heterotic string theory in the Einstein prescription. The metric under consideration is an exact classical solution in the low-energy effective field theory, which describes a black hole carrying a finite amount of charge and angular momentum. We consider that the angular momentum vanishes and we study the Einstein metric. We obtained meaningful results and in the limit case $\alpha = 0$ the energy is equal to the mass M of the black hole.

S1-P2

ELECTROMAGNETIC PROPERTIES OF CHIRAL METAMATERIALS

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* *"Gh. Asachi" Technical University, Department of Electrical Measurement and Materials, Iasi, Romania.*
** *"Gh. Asachi" Technical University, Department of Physics, Iasi, Romania.*

The paper reports a theoretical study of electromagnetic waves in a chiral metamaterial. We have obtained the differential equations of the electric and magnetic component of wave, taking into account the conductivity of the medium and the volume charge density. Using this equation it is possible to determine the nature of waves (forward, backward or forward and backward) in the chiral slab

S1-P3

ELECTRIC PROPERTIES OF CARBON NANOTUBES

MARIANA LATU

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The paper reports a theoretical study of the conductance of carbon nanotubes. The multi-walled carbon nanotube conductance jumped by increments of 1 G_0 as additional nanotubes werw touched to a mercury surface. We present a new derivation of the single-channel conductance formula. We consider the situation of a one-dimensional circular carbon nanotubes. From the Born-von Karman periodic boundary condition result the values for the electron wave function, energy and the density of states. Then we have calculated the total current flowing accros thr system and the conductance.

S1-P5

A new general form for electric field lines equation

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& Theoretical Physics, blvd. Carol I, 11, 700506, Iasi, Romania*

By using an unexpected approach it results a new form for electric field lines equation. It is a general formula, a derivative-integral equation structured as a multipole expansion series. By solving this equation we can find the electric field lines expressions for any type of an axially symmetric electric multipole continuous charge distributions we interested in, without the need to consider special assumptions for particularly cases.

S1-P6

The spatial elliptical movement in a non-inertial frame of reference

M. B. Raut

Al. I. Cuza University of Iasi

In this paper the spatial two-body problem in a Newtonian non-inertial frame of reference is analyzed. The Lagrange's equations of elliptical movement are established and applied to estimate the advance of perihelion in this case. Finally the theoretical results are compared with the observational results

S1-P9

TRANSITION FROM CHAOS TO ORDER IN EXTENDED DISSIPATIVE RELATIVISTIC STANDARD MAP

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The extended dissipative relativistic standard map is introduced in order to understand better the nonlinear interaction between waves and charged particles in plasma. The fixed points of the map and their stability are studied using analytical methods. Influences of the dissipation and of the relativistic factor on the behavior of this map are investigated through numerical simulations. When the values of the dissipation parameter increases from 0 to 1, the critical values of the relativistic factor (at which the chaotic behavior of the map is totally suppressed and motion becomes regular, strictly periodic) grows too. An exception in the relatively monotone dependence between them is founded. We consider that this region offers better conditions for the particle's acceleration.

S1-P12

A VARIATIONAL NON-RELATIVISTIC APPROACH TO IDEAL MAGNETOFLUID

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Indiana University, Bloomington, USA
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Using Clebsch representation for Hertz potential, a Lagrangian formulation for non-relativistic approach of an ideal magnetofluid undergoing isentropic motion in external electromagnetic field is given.

S1-P13

New exact solutions corresponding to the second problem of Stokes for Maxwell fluids

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Abstract. In this paper are presented new exact solutions for Stokes' second problem for the Maxwell fluids by considering both sine and cosine oscillations of the plate. These new starting solutions, obtained by means of Laplace and Fourier sine transforms, describe the flow for low and high values of time t and are presented as sums of steady-state solutions and transient solutions. In our paper we determine not only the velocity field, but also the resulting shear stress. The times required to reach the steady flows are also determined by means of numerical methods. The solutions corresponding to the second problem of Stokes for Newtonian fluids as well as the solutions corresponding to the first problem of Stokes for Maxwell and Newtonian fluids are obtained as particular cases from our solutions.

S1-P14

SOME EXACT SOLUTIONS FOR THE FLOW OF A GENERALIZED OLDROYD-B FLUID BETWEEN TWO SIDE WALLS PERPENDICULAR TO A PLATE

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Abstract: New exact solutions for the unsteady flow of a generalized Oldroyd-B fluid induced by a suddenly moved plate between two side walls perpendicular to the plate have been established under integral and series form in terms of the generalized Mittag-Leffler functions. Similar solutions for generalized second grade fluids and Maxwell fluids with fractional derivatives as well as those for ordinary models are obtained as limiting cases of general solutions. In the absence of the side walls, all solutions that have been determined reduce to the solutions corresponding to the motion over an infinite plate (first problem of Stokes).

S1-P16

COMPUTATIONAL EXPERIMENT IN THE INVESTIGATION OF NEW MAGNETIC MATERIALS

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Abstract Actual development of IT permit the representation of knowledge as it is rich enough to catch the subtility of human intelligence but still formal enough to allow computer manipulation. For the last few years we worked to the design of new magnetic materials especially for the nano-scale. The paper presents our last results in the investigation of the structure-properties relationship and the size effect for some nano-magnetic materials of great interest in modern applications. Our method based on computational experiment and a new IT research instrument – neural network methods and machine learning algorithms - operating on a DataBase magnetic materials allow the discovery of some new 'island of materials' on the **Inoue** type diagrams.

S1-P17

ON THE AXIAL COUETTE FLOW OF A MAXWELL FLUID DUE TO A LONGITUDINAL TIME DEPENDENT SHEAR STRESS

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Abstract: A study is made for the unsteady flow of a Maxwell fluid in an infinite circular cylinder. The motion is produced by the infinite cylinder that at the initial moment is subject to a longitudinal time dependent shear stress. The velocity field and the associated shear stress corresponding to the longitudinal flow are determined by means of the Hankel and Laplace transforms. Both solutions are written in terms of the generalized G-functions. The similar solutions for Newtonian fluids are obtained as limiting cases from our general solutions.

S2-P1

GALVANOMAGNETIC EFFECTS OF NEW CoFeSiBMo ALLOY

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MIHAIL-LIVIU CRAUS and SERGIU MOHORIANU

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Abstract. Results concerning measurements of the Hall resistivity, spontaneous Hall coefficient, longitudinal and transversal magnetoresistance and ferromagnetic anisotropic resistivity for as-cast and thermally treated $Co_{65.75}Fe_{4.5}Si_{12.25}B_{15}Mo_{2.5}$ amorphous ribbons are presented. The obtained results show a strong dependence of the electrical properties of the samples on the thermal treatment. In the nanocrystallized samples the value of ferromagnetic anisotropic resistivity $(+1.65 \times 10^{-4})$ is quite similar to that of the amorphous samples $(+1.17 \times 10^{-4})$. In the crystallized state the value of ferromagnetic anisotropic resistivity increases up to $+17.93 \times 10^{-4}$.

S2-P2

SAXS Investugation of the Sintered Nb Powder Surface Inhomogeneities

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This report presents a method for investigating the solid porous surface inhomogeneities. The method proposed was used to investigate the surface of compact Nb samples obtained by high temperature vacuum sintering of niobium powder. The technique was used the small-angle X-ray scattering (SAXS). The range of scattering angles is to 2 up to 360 ungular minutes. With the collimation process used and the radiation chosen, a resolution is achivied which allows to detect pores with dimensions from 0,1 to 50 nm. The SAXS measurement were treated according to special program which included the background curve substraction of the SAXS diffractometr trough the use of the 5-point cubic interpolation technique in the region of every experimental point. The pores obtained by SAXS in the present communication has two dimensions exceed the third one – lamella – are approximated by cilindres. The curve of the SAXS data scattering invariant has some peak values. This indicates the polymodality of the surface inhomogeneities system. It should be noted that surface inhomogeneities displays the fractal nature. The approximation procedure of the cylinder shapes is known in the fractal theory as the Swartz area paradox.

S2-P3

ELECTRICAL CONDUCTIVITY MECHANISM IN DOPED α-Fe$_2$O$_3$

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The variation of the Seebeck coefficient was carried out in the temperature range 300-1350 K. The possible electrical conductivity mechanisms of doped α-Fe$_2$O$_3$ are discussed.

S2-P4

Velocity and attenuation factor of a ultrasound wave propagating in a ferrofluid

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The propagation velocity and the attenuation factor of an ultrasound wave during the propagation in a ferrofluid are two parameters strongly dependent on the ferrofluid composition, frequency, temperature, magnetic field intensity. Here, these parameters are measured for several types of ferrofluids. A difference in behavior is shown for between water-based, mineral oil-based, and kerosene-based ferrofluids. A model equation is proposed to account for these parameters, and calculated properties are compared with experimental results obtained in several conditions.

S2-P5

The properties of a ferrofluid with modified stabilizing agent and their temperature dependence

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We study a ferrofluid in which the oleic acid stabilizing agent was partially replaced with siliconic oil PDMS or PMFS. We analyze the viscosity, the density and the magnetic susceptibility, observing their variations as function of siliconic oil concentration at several values of the magnetic field and of the temperature. We compare the obtained results obtained with those for a ferrofluid with classical stabilizing agent. An interpretation is given for the different behaviors for the two ferrofluids. We observe that the density and the viscosity increase with the concentration of the siliconic oil, while the magnetic susceptibility decreases with it, in larger proportions than that of the initial ferrofluid. These properties depend on the intensity of the magnetic field and on the temperature.

S2-P9

Magnetic separation of nanospheres from a simulated biological fluid

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We are working in developing a therapeutic tool for selective and rapid removal of biohazards, i.e. chemicals and radioactive substances, from human blood. For this we realised a mini magnetic separator capable of separating magnetic nano/micro-carriers from arterial blood flow in an *ex vivo* unit. The system is a HGMS magnetic separator working in the axial configuration and consisting of an array cells with the ferromagnetic wires in the exterior of fluid flow field. Here we evaluate the performance of our mini magnetic separator and present some preliminary *in vitro* flow experiments using a separator unit consisting of single separation cell. Pure water and ethylene glycol–water solutions with a viscosity of 3.0 cp and 4.0 cp (v:v = 39:61 and v:v = 49:51, respectively) were used as the fluids. The results showed that when the viscosity increased from 1.0 cp to 3.0 cp, the capture efficiency (CE) decreased from 90% to 56%. However, it is still feasible to obtain >90% CE in blood flow if the separator design is optimized to create higher magnetic gradients and magnetic fields in the separation area. The overall results demonstrated the feasibility of achieving a high CE device for blood and the promise of a prototype portable high throughput magnetic separator design for future biomedical applications

An analysis of a high gradient magnetic separator for extracorporeal blood purification

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Working for removing excess chemo- or radio-therapeutic drugs from cancer patients or for eliminating toxin-bounded magnetic spheres from the bloodstream we designed a magnetic separation system in which the blood is received in a simple extracorporeal circuit, filtered and returned to the human body. Such a system must meet rather strict boundary conditions for clinical use such as minimal contact with the blood and high volumetric throughput. Our separator consists of an array of biocompatible capillary tubing and magnetizable wires adjacent in the exterior of these. The wires are magnetized perpendicular to their axes by an spatially uniform magnetic field generated by two parallel permanent magnets. The high gradient magnetic field from the magnetized wires helps to collect blood-borne magnetic carriers. In this work we investigate the performance of our magnetic separator model. First, the capture efficiency of a single separation cell was investigated using a mathematical model. Second, the one-pass effectiveness to remove magnetic chitosan microspheres from solutions simulating human blood was experimentally verified. The theoretical and experimental data correlated well at low flow velocities (<4.5 cm/s) and high external magnetic fields (>48 kA/m). Our model separator unit removed >90% in a single pass of the magnetic microspheres from water at mean flow velocity ≤8.0 cm/s and from blood mimic fluids (ethylene glycol–water solutions) at mean flow velocity ≤2.0 cm/s. In summary, we describe and prove the feasibility of a HGMS model separator for extracorporeal blood purification.

STRUCTURAL ANALYSIS, MAGNETIC PROPERTIES AND TRANSPORT CHARACTERISTICS OF $La_{0.54}Sm_{0.11}Ca_{0.35-y}Na_yMn_{0.97}Cu_{0.03}O_3$ MANGANITES

MIHAIL-LIVIU CRAUS[1,2], NICOLETA CORNEI[3], MIHAI LOZOVAN[1] AND VIOREL DOBREA[1]

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Abstract. We have synthesized by sol-gel method $La_{0.54}Sm_{0.11}Ca_{0.35-y}Na_yMn_{0.97}Cu_{0.03}O_3$ magnetoresistive bulk manganites. The samples contain only a perovskite phase, with Pnma orthorhombic structure. The magnetic properties and magnetoresistance of Cu and Na doped manganite $La_{0.54}Sm_{0.11}Ca_{0.35-y}Na_yMn_{0.97}Cu_{0.03}O_3$ polycrystalline samples have been investigated between 77 and 300K, respectively, 4 and 300 K. For the Na doped samples the Curie and transition temperatures increase, respectively, decrease with Na concentration.

S2-P14

The magnetoresistive properties for symmetric magnetic tunnel junctions

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During the last years, the current-in-plane (CIP) and current perpendicular-to-plane (CPP) spin valve structures have been extensively investigated in view of their utilization for magnetoresistive devices such as magnetic read heads and magnetic sensors [1]. Recent experiments showed that CPP sensors can achieve a higher magnetoresistance (MR) ratio compared to CIP sensors. Spin – polarized tunnelling in magnetic tunnel junctions (MTJs) made of alternating layers of ferromagnetic (FM) metals (Fe, Co, Ni, or their alloys) and dielectric materials (D), has attracted much attention since the discovery of large tunnel magnetoresistance (TMR). Because the tunnelling current density is usually small, MTJ devices tend to have high resistances. Research is concentrating on increasing magnetoresistance and decreasing the tunnelling resistance by using of MTJs with double exchange biased fields [2]. In this paper the evolution of the MR properties for conventional $Ta/NiFe/Al_2O_3/NiFe/FeMn/Ta$ and symmetric $Ta/FeMn/NiFe/Al_2O_3/ NiFe/FeMn/Ta$ MTJs is presented. The thin films were prepared by RF sputtering and electron beam evaporation techniques. The as-deposited MTJs were subsequently annealed, in vacuum, for 1 h, at temperatures between 200 and $350^{o}C$. Magnetoresistive properties were measured, at room temperature and low temperatures, using an automated magnetic probe station. The resistance R of the symmetric $Ta/FeMn/NiFe/Al_2O_3/NiFe/FeMn/Ta$ MTJs changes by approximately 5% in 20 Oe, leading to a sensitivity of about 0.25%/Oe. As compared to conventional $Ta/NiFe/Al_2O_3/ NiFe/FeMn/Ta$ top-pinned MTJs, the symmetric $Ta/FeMn/NiFe/Al_2O_3/NiFe/FeMn/Ta$ MTJs with two ferromagnetic layers exchange biased in opposite directions by Al_2O_3 layer, exhibit reduced magnetoresistive hysteresis, low tunnelling resistance and a thermal coefficient of resistance about + 60 ppm/^{o}C. The MR response of symmetric MTJs at 75 K is approximately 3 times higher than the MR response at room temperature.

S2-P19

MAGNETIC CAPTURING AND GUIDING OF MAGNETITE-POLYVINYL ALCOHOL FERROFLUIDS FOR TARGETED DRUG DELIVERY

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The aim of our study was to evaluate the optimal physical and physiological conditions for the magnetic manipulation of the magnetic particles inside the human body, in order to incrise the efficiency of the magnetic targeting techniques for tumor treatments. First we present an experimental device for studying the colloidal magnetic particles (MPs) capture within fluidic systems simulating the flow regime in small blood vessels. Using this device we proved the possibility of MPs retention and entrapment inside plastic tubes ("blood vessels"), within regions that have similar sizes with the cancer tumours. Second, we present an experimental model for studying the guidance of MP through agar gels which simulates the magnetic targeting of carrier particles in human tissues. The movement MP through the gels was studied as function of the gel porosity, the properties of the magnetic field (intensity, gradient) and the volume of MP colloid.

S2-P20

MICROSTRUCTURE AND WEAR RESISTANCE OF STEEL SURFACES HARDENED ON CENTRIFUGED BALLS

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Abstract: Of the many available methods that are used for surfaces hardening of different pieces, the centrifuged balls processing is considered one of the best.
This paper presents the use of that method in order to increase the wear resistance of some steel (OLT 45 on type) surfaces. The tribological tests were based on a dry-sliding shoe-on-ring tribo-model, with the contact on the inner cylindrical surface of the steel ring. The loss weight for the iron cast shoe was measured, after a fixed value of sliding distance.
On the basis of experimental results, one can consider that the surface hardening leads to an increase of wear resistance, for the studied material, in comparison with the unprocessed surface. The microstructure of processed superficial layer, depending of the processing parameters, influences the wear resistance. On the other hand, it seams that the cited-effect tends to be insignificant, upper of a certain level of hardness increasing.

S3-P1

Observation of a torus doubling evolution to chaos in an RLC circuit with MFS capacitor as nonlinear element

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In this work we present experimental investigations on the dynamics of a metal – ferroelectric semiconductor heterostructure (MFS) used as nonlinear capacity in a series RLC electric circuit. The harmonic voltage perturbation can induce in this system various nonlinear behaviours such as period doubling, intermittency and torus doubling scenarios of evolution to chaos. We focus on the change in dynamics induced by the sinusoidal driving with constant amplitude and variable frequency consisting in a torus doubling bifurcation scenario. In the torus doubling route to chaos, the original torus which is a closed curve in cross-section splits into two closed curves with similar shapes at the bifurcation point. This scenario is reminiscent of the period doubling route to chaos. It differs from this in two significant ways. First, in most experimental investigations only a reduced number of torus doubling before the onset of chaos were observed. Second, the torus doubling route to chaos is a higher dimensional phenomenon requiring at least a four dimensional flow or a three dimensional map.

S3-P2

EXPERIMENTAL AND THEORETICAL INVESTIGATIONS OF A LASER-PRODUCED ALUMINUM PLASMA

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The formation and dynamics of a laser produced aluminum plasma have been experimentally and theoretically investigated. The visible emitting regions of plasma form two structures with different life-times and expansion velocities. The first part of the transient ionic signal simultaneously recorded by a Langmuir probe presents an oscillatory structure. A hydrodynamic model in a non-differentiable space-time has been established. The numerical simulation of the plasma expansion evidenced the plasma plume separation in two patterns. Moreover, the self-structuring of the interface appears through a negative differential conductance and the current oscillations are explained as being induced by thermal fluctuations that appear in the plasma cooling processes.

S3-P3

SIMULATING AND MODELING TURBULENCE AND CHAOS IN FUSION PLASMAS USING LOGISTIC MAP

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The aim of this paper is to underline the importance of the logistic map in modeling of turbulence and chaos in fusion plasmas and to present numerical results concerning the simulation of the transition to turbulence and chaos in plasmas using the logistic map.

S3-P4

NUMERICAL STUDY ON A COUPLED LOGISTIC MAP AS A SIMPLE MODEL FOR THE INTERACTION OF NONLINEAR OSCILLATORS IN PLASMA

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The aim of this paper is to present numerical results concerning the simulation of the transition to chaos in plasma generated by the interaction of two nonlinear oscillators modeled by coupled logistic map.

S3-P17

CORE SHELL PHOSPHORESCENT COMPOSITES FOR OPTOELECTRONIC APPLICATIONS

Cornel Stan, Marius Sebastian Secula, Dana Tutulea,
Doina Sibiescu, Ioan Rosca, Igor Cretescu

"Gh. Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environmental
Protection

By immobilization of some organic compounds with phosphorescent properties in polymeric matrices, phosphorescent composites with properties directed for specific applications in optoelectronic field can be obtained. Among the possible applications, it should be mentioned the lighting sources for domestic and utilitarian applications which have higher energetic efficaciousness than the classic ones (incandescent or fluorescent illumination). Although the main argument in favor of the new lighting sources using phosphorescent composites is represented by the energetic efficaciousness, the advantages resulted from increasing the reability and the life-time, and also diminishing the impact on the environment are of no less importance.

In the last years some core-shell composites were obtained, using poly-methyl metacrilate and poly-carbonates as host polymer and nano-crystals Quantum Dot type, of CdTe, CdSe, ZnS and so on. In these composites, the influence of the host polymer over the phosphorescent phenomenon is of essential importance. For instance, composites of poli-fluorine as host matrix and nano-crystals of PbSe, PbS, InAs and InSb were studied in order to obtain some radiation sources in the IR spectral range.

Beside the literature reviews concerning the fabrication of some illumination systems based on phosphorescent composites, in the present paper are also presented some polymeric matrices based on PET and co-polymeric PET/PEG, which very promising for the specified applications. The specific advantages of these polymers (high thermal and UV stability, high transparency, high melting and transition temperatures and lack of toxicity) are the fundaments in order to obtain new composites with phosphorescent properties adapted to the required applications.

S4-P2
AMPEROMETRIC SENSOR BASED ON A MAGNETIC ELECTRODE FOR BIOMEDICAL APPLICATIONS

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A new amperometric biosensor based on Co-Fe-Si-B magnetic amorphous electrode and magnetic particles is presented. The response of the biosensor was tested by using H_2O_2 (2 mM), $K_3Fe(CN)_6$ (4 mM), and glucose (1-14 mM). A linear range (1 – 8 mM) and good sensitivity (that depends on the type of the used magnetic particles) were obtained. The biosensor used commercial and laboratory-prepared magnetic particles functionalized with glucose-oxidase. This type of biosensor can be used in amperometric measurements by using enzyme-functionalized magnetic particles and magnetic fields for particle manipulation.

S4-P3
CHARACTERIZATION OF MAGNETITE AND COBALT FERRITE NANOPARTICLES

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Magnetic nanoparticles with a proper surface coating are of outstanding interest for several application, aspecially in the biomedical field and biotechnology.

In this paper we present the characterization of Fe_3O_4 and $CoFe_2O_4$ magnetic cores covered by sodium oleate shell. Sodium oleate ($C_{17}H_{33}COONa$) shell is intended to stabilize the magnetic particles into the aqueous suspension medium in order to prevent their agglomeration.

The colloidal samples have been prepared by the chemical co-precipitation of iron and cobalt ions [1].

The application of usual physical methods (X-ray powder diffraction, vibrating sample magnetometry and scanning electron microscopy) allowed the assesing of some material features. The Bragg reflections showed the pattern characteristic of the cubic spinel structure for both of samples. From the magnetization curves and ferrophase volume fraction the average magnetic diameter of ferrophase particles was determined. The SEM image analysis evidenced the good granularity of ferrophase from both samples.

S4-P4

SOME ASPECTS CONCERNING the FLY ASH DISPOSAL AROUND the POWER PLANT STATION in VASLUI CITY

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The main ASPECTS CONCERNING the FLY ASH DISPOSAL AROUND the POWER PLANT STATION in VASLUI CITY, are related to the possibility for radioactive contamination of environmental factors: soil, water, air, and biological samples.

In the present paper, are presented the most important aspects concerning the radioactive level monitoring around the disposal area of fly ash around the POWER PLANT STATION, in order to diminish the radioactive risks.

The main procedures for measure the radioactive levels for each environmental factor, will be tacked in to consideration.

S4-P5

SOME FEATURES OF ELECTRIC AND MAGNETIC FIELDS EMITTED BY CRT COMPUTER MONITORS

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The aim of our study is to determine the electric and magnetic field levels in the proximity of CRT computer monitors as well as the spectral composition of emissions. Various models of CRT monitors manufactured by several companies, having various technical features and various settings of resolution and refresh rate have been investigated.

Field measurement and analyze was carried out for typical working position in front of monitor. Relevant measuring points have been chosen from the point of view of typical exposure situation, focusing on the points in space corresponding to the position of head and hands. Broad-band level measurements, as well as spectral analysis covered the low frequency domain up to 32 kHz.

Field levels measured in relevant points corresponding to working position in front of investigated CRT monitors were low comparing to international human exposure standards. Only in points very close to the monitor and, especially on side, back and touching screen positions, field levels represented a quite significant percentage of exposure limits.

Spectral analysis of the electric and magnetic fields in the proximity of the CRT monitors showed different composition and weight of relevant frequencies. The balance between the levels of lower frequencies and higher frequencies was different for various models of monitor. Field spectral composition seems to be dependent on monitor design including the location of electronic blocks and the screening efficiency.

S4-P6

EFFECTS OF ELECTRON BEAM IRRADIATION ON AQUEOUS SOLUTION OF CORN STARCH

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The paper deals with the investigation concerning the influence of the electron beam treatment on the 5% aqueous solution of corn starch. Thus, aqueous solution of corn starch were irradiated with accelerated electron beam with medium doses up to 10 kGy and properties as pH, clarity and its stability, color as well as flow behavior were analyzed. The experimental results showed the value reduction of the solution pH and clarity as the increase of the irradiation dose. The color of the irradiated solutions expressed both by CIELAB and CIELCH color space showed a shift toward red-yellowish one with the increase of the chromaticity at same time with the reduction of the hue and lightness in a dose-dependent manner. The flow behavior was also influenced with the irradiation dose by reduction of the viscosity value.

S4-P7

GEOELECTRICAL TOMOGRAPHIC TECHNIQUE FOR THE NONDESTRUCTIVE INVESTIGATION OF THE WATER SOURCE

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Our work refers to research and designing for complex geological and geophysical studies in hydrogeology and water source. These studies are based on the Maxwell equations used in the description of the propagation of electric field in non-homogeneous media.

The classical geophysical survey methodologies were actually developed to explore the subsoil by means of several kinds of physical measurements performed at the surface of the Earth. These are known as "Non destructive Tests" or Geoelectrical Tomography of the subsoil.
By using this method we can put in evidence the existence of underground water, in 3D space.

S4-P8

GEOELECTRICAL – RHEOELECTRICAL METHOD FOR THE MANAGEMENT OF THE UNDERGROUND WATER

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This paper proposes a combination of two electrical methods: geoelectrical tomography and rheoelectrical investigation of underground water sources. Both methods are based are the analogy in some situations of the basic equations of electrodynamics and hydrodynamics.
This is a new method that we propose for a nondestructive investigation of a better captions front for an utilization of underground water in several proposes.

S4-P9

THE PHYSICAL SENSOR FOR PRESSURE MEASUREMENT

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In this paper we will present utilization the magnetic fluid in pressure measurement. Pressure measurements are based on fluidic and magnetic proprieties on magnetic fluids, which allow obtaining values or limited of pressure of gas in a container. The device experimental consists of a cylindrical vertical nonmagnetic vessel surrounded by a coil filled in the bottom part with the magnetic fluid characterized by magnetic permeability μ_{MF} and density ρ_{Mf}. In the top part of the vessel, over the magnetic fluid and between two plates of an electric condenser is placed water characterized by electric permittivity ε_w and density $\rho_w < \rho_{MF}$. The coil and the electric condenser are elements of an electrical oscillating circuit that has the resonance frequency $\nu = \nu_0$ for $\mu = \mu_{MF}$ inside the coil and $\varepsilon = \varepsilon_w$ between the plates of the condenser. These conditions will be ensured by a pressure of reference inside the container. This coil is a component of an electrical oscillating circuit, which contains an electric condenser too

S4-P17

Research on the impact of low doses of radiation on *Echinacea purpurea* seedlings

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The concept of "low doses of radiation" was developed in radiobiology following the observations related to the prolonged effects of irradiations related to nuclear accidents, mainly regarding the repeated exposure to low radiation doses of biosphere around the critical explosion center as well as at long distances. The present study is focused on the response of plant seedlings during their early ontogenetic stages, to the controlled administration of low radiation doses in the regime of chronic exposure. The biological material was consistent with *Echinaceea purpurea* seeds from experimental cultures installed in the Research Station of Secuieni. The selected seeds were exposed for 3 weeks – 5 days exposed and 2 days break every week – to gamma radiation supplied by low activity Cobalt source. First experimental variant was exposed for 2 hours daily while the second variant was exposed for 16 hours daily. After seed germination in controlled environmental conditions (24.0 ^{0}C and 95% humidity in darkness, in INCUCELL room) cytogenetic tests and biochemical assays were carried out on the root meristems and respectively on the green tissue samples. The comparative discussion carried out on the control versus exposed samples revealed slight effects at the level of photosynthetic pigments and mainly at the level of the chlorophyll ratio (chlorophyll a/chlorophyll b being accepted as an indirect measure of photosynthesis efficiency). The cytogenetic tests revealed the differences induced by radiation exposure in the mitotic index as well as in the percentage of chromosomal aberrations. The results obtained in the frame of this research are partially supported by JINR/project 3807-9-07/08 in collaboration with Dubna (Russia) partners.

S4-P18

The influence of seed irradiation on some morphologic and physiologic parameters in *Hypericum perforatum* seedlings

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Gamma irradiation is known as useful method in yielding plant mutants characterized by superior biological features regarding the synthesis of certain active pharmaceutical principles. Experimental study was carried out in the frame of this project on young seedlings of *Hypericum perforatum* – medicinal plant with great potential in the treatment of depression. The seedlings were developed from irradiated seeds – previously selected from biological material characterized by uniform genophond. The radiation doses ranged between 10 Gy and 150 Gy administrated by unique exposures. The phenotypic parameters analyzed in the seedlings were: the fresh substance mass, the dry substance mass, the plant lengths and the number of leaves per plant. The physiological parameters were: the contents of chlorophyll a, chlorophyll b, total carotenes (in mg/g), the photosynthesis intensity (in mg of CO_2/g/h), and the contents of monoglucides, soluble polyglucides, insoluble glucides, total glucides, lipids (in %). General inhibitory effect on the synthesis of chlorophylls and carotenes was evidenced but the slight stimulation of photosynthesis intensity was also noticed for the dose of 30 Gy – which is the most significant result of this experiment. As well slight stimulatory effects were induced in the seedlings developed from seeds exposed to 100 Gy at the level of total glucides content. Inhibitory influences on the morphological parameters were evidenced for all radiation doses. Mathematical correlations between the morphological parameters were also discussed.

S4-P23

SCATTERED LASER NANOFIELDS AND ATOMS MANIPULATION

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ABSTRACT. Atoms manipulation with laser forces it's a very important physic process in controlling atom flux for direct "nano" writing on surfaces, building photosensitive nanophotocathode arrays on semiconductors, and guiding atoms through surface-plasmon and resonant-ring structures. In this paper we present the laser nanofields scattered by a periodic metallic nanostructure, the most important relations regarding the interaction between the Cs atoms and the electromagnetic field for the "two-level atom" model and simulations of atoms trajectories in the near field of some particular nano and microstructures excited with lasers.

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IASI 600

Iasul este mentionat ca tirg, de la sfirsitul sec. al XIV – lea si ca punct vamal in 1408. Anul acesta, 2008, se implinesc 600 de ani de la prima atestare documentara.

Iasul a fost capitala Moldovei din timpul domniei lui Alexandru Lapusneanu (1552- 1561, prima oara, 1564-1568, a doua oara) si pina la Unirea cu Tara Romaneasca din 1859. In perioada domniei lui Vasile Lupu (1634-1653) a cunoscut o dezvoltare intensa, atunci fiind construite unele din cele mai valoroase monumente istorice, cum este Biserica Trei Ierarhi.

In decembrie 1816 a fost pusa in scena, la Iasi, prima piesa de teatru in limba romana.

 La 5 ianuarie 1859, Adunarea Electiva a Moldovei l-a ales domn pe Alexandru Ioan Cuza. Prin alegerea lui A. I. Cuza ca domnitor in Tara Ramaneasca, la 24 ianuarie 1859, s-a realizat Unirea, noul stat adoptind numele de Romania.

In 1864 si-a deschis portile la Iasi, Academia Mihaileana.

In prezent municipiul Iasi are peste 300000 de locitori. Aici sunt azi: cinci Universitati de stat, numeroase muzee: Muzeul Literaturii Romane, muzeele din Palatul Culturii, Muzeul Unirii, Muzeul de Istorie Naturala, Muzeul Teatrului etc., case memoriale: Casa Dosoftei, Casa M. Sadoveanu, Casa Mihail Kogalniceanu, Casa Otilia Cazimir etc, Catedrala Mitropolitana, Catedrala Catolica, multe manastiri si biserici, Filarmonica "Moldova", Teatrul National "V. Alecsandri", Teatrul "Luceafarul".

Atractii turistice

Rezervatia Dealul Repedea

Situata la 9 Km de Iasi, a fost infiintata in 1953, fiind prima rezervatie geologica din tara, Zona rezervatiei este de fapt o portiune din fundul Marii Sarmatice ce a existat acum 20 milioane de ani, dovada fiind fauna fosila din rocile calcaroase de aici.

Gradina Botanica

Prima Gradina Botanica din Iasi a fost infiintata in 1856 de medicul si naturalistul Anastasie Fatu.

Actuala Gradina Botanica a fost infiintata aproximativ un secol mai tirziu, in 1963. Un loc favorit al vizitatorilor il reprezinta rozariul, unde sunt peste 800 de specii de trandafiri din diferite zone ale globului.

Manastirea Cetatuia

Minastirea Cetatuia este una din cele mai frumoase opere de arta bisericeasca din Moldova. A fost ctitorita de Duca Voda intre 1668-1672. Aici a functionat o cunoscuta tiparnita cu litere grecesti, adusa de la Venetia, in care au fost tiparite multe carti pentru crestinii din Orient.

Teatrul National "Vasile Alecsandri"

Teatrul a fost inaugurat in 1896, fiind una din cele mai frumoase cladiri de acest gen din tara. Uzina electrica a teatrului, pusa in functiune o data cu deschiderea tetrului, a reprezentat inceputul iluminatului electric la Iasi. Aici pot fi admirate opere de arta cum sunt: candelabrul din cristal de Venetia sau plafonul pictat de Al. Goltz.

Palatul Culturii

Lucrarile de constructie au inceput in 1906 iar inaugurarea a avut loc in 1926, in prezenta regelui Ferdinand al Romaniei. Putem admira orologiul, format dintr-un ansamblu de opt clopote ce reproduc, din ora in

ora,   Hora Unirii   sau celebrele sali, Sala Voievozilor si Sala Gotica. Impresionanta cladire este astazi sediul Muzeului de Istorie a Moldovei, Muzeului Etnografic, Muzeului de Arta si al Muzeului Stiintei si Tehnici.

Casa Memoriala Vasile Pogor

Cladirea este monument de arhitectura si a fost construita de vornicul V. Pogor, intre 1855-1858. A fost locuinta acestuia si apoi sediul Societatii Junimea si al revistei "Convorbiri Literare". In aceasta casa, Titu Maiorescu a citit, in 1870, pentru prima oara poezia "Venere si Madona" a lui Mihai Eminescu, necunoscut la acea vreme. In acesta cladire se afla azi Muzeul Literaturii Ramane.

Biserica "Sf. Nicolae Domnesc"

Biserica initiala s-a construit in timpul lui Stefan cel Mare, intre 1481-1482. Fiind puternic avariata in urma unor incendii, a fost reconstruita din temelii intre 1888-1904. A fost Catedrala Mitropolitana pina la sfirsitul sec. al XVII –lea si aici au fost unsi aproape toti domnii Moldovei.
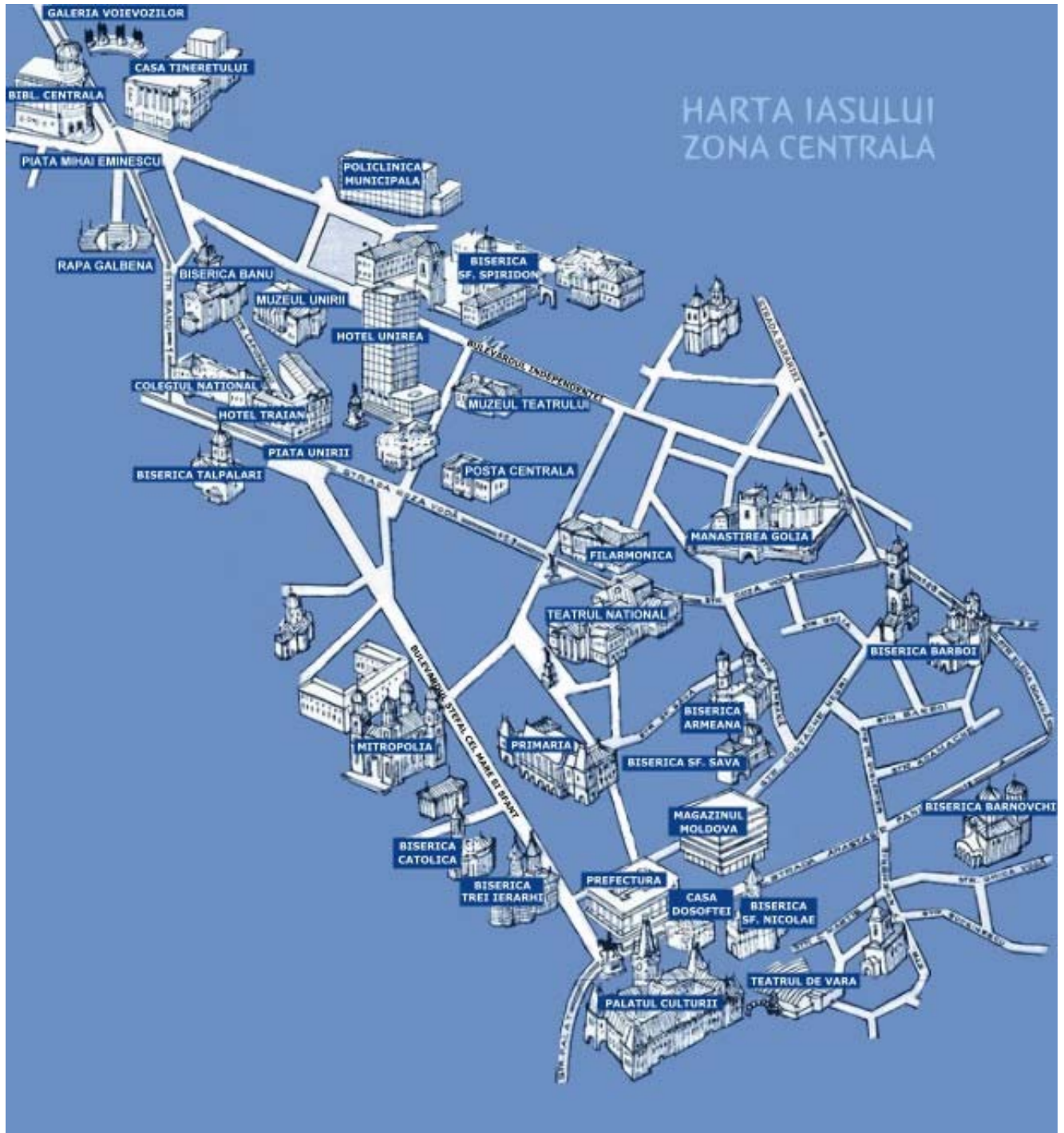
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