
**SUBJECT INDEX TO THE 57TH VOLUME
OF "UKRAINIAN JOURNAL OF PHYSICS" FOR 2012**

1. Fields and Elementary Particles	
1.1. Fields	
1.2. Elementary particles	
2. Nuclei and Nuclear Reactions	
2.1. Structure of nuclei	
2.2. Nuclear reactions	
3. Atoms and Molecules	
3.1. Structure and properties	
3.2. Spectroscopy	
3.3. Atomic collisions. Ionization	
4. Optics, Lasers, and Quantum Electronics	
5. Plasmas and Gases	
5.1. Plasmas	
5.2. Gases and combustion	
6. Soft matter	
6.1. Liquids and liquid systems	
6.2. Quantum liquids	
6.3. Liquid crystals	
6.4. Polymers, biostructures, and their solutions	
6.5. Amorphous materials	
7. Solid Matter	
7.1. Metals	
7.2. Semiconductors	
7.3. Dielectrics	
7.4. Magnetism	
7.5. Surface and contact phenomena	
7.6. Superconductivity	
8. Nanosystems	
9. General Problems of Theoretical Physics	
9.1. Thermodynamics, statistical physics, and kinetics	
9.2. Quantum mechanics	
10. Nonlinear Processes	
11. Astrophysics and Cosmology	
12. Physics Experiment Techniques	
13. Chronicle, Bibliographic Data, and Personalia	

1. Fields and Elementary Particles		
1.1. F i e l d s		
Convolution Problems in Time-Resolved X-Ray Diffraction. S. Bratos, J.-Cl. Leicknam	2	133
Noncommutative Gauge Theories. M. Wohlgenannt	4	389
1.2. E l e m e n t a r y p a r t i c l e s		
General Properties of Higher-Spin Fermion Interaction Currents and Their Test in πN -Scattering. Yu.V. Kulish, E.V. Rybachuk..	11	1179
On the Interplay between Q^2 and t Dependences in Exclusive Diffractive Production of Real Photons and Vector Mesons in ep Collisions. R. Fiore, L.L. Jenkovszky, A. Lavorini, V.K. Magas	12	1197
2. Nuclei and Nuclear Reactions		
2.1. S t r u c t u r e o f n u c l e i		
Theoretical Studies of Rare-Earth Nuclei Leading to ${}_{50}\text{Sn}$ -Daughter Products and the Associated Shell Effects. S. Kumar	5	493
Average Resonance Parameters of Tellurium and Neodymium Nuclei. M.M. Pravdivy, I.O. Korzh, M.T. Sklyar	6	593
States of Even-Even Nuclei in Neutron Chains with $N=96, 98, 100$. M.S. Nadirbekov, G.A. Yuldasheva	8	789
Anomalies in Internal Conversion Coefficients for Hindered γ -Transitions. V.I. Kirishchuk, A.P. Lashko, T.N. Lashko	11	1097
2.1. N u c l e a r r e a c t i o n s		
Low-Energy Spectrum of Electrons Emitted at Irradiation of Au by ${}^{238}\text{Pu}$. V.T. Ku-		

pryashkin, L.P. Sidorenko, A.I. Feoktistov, E.P. Rovenskykh	1	5	Phonon-Like Light Scattering in Polycrystalline Carbon Structures. A.P. Naumenko, N.E. Korniyenko, V.M. Yashchuk, V.N. Bliznyuk, S. Singamaneni	2	197
Influence of Momentum-Dependent Interactions on the Nuclear Stopping in Symmetric Heavy-Ion Collisions. M. Kaur, S. Kumar	3	289	Investigation of Channels of Cs-137 and K Transfer from Soil to Plant under Natural Conditions with Optical and Gamma Spectrometry. V.V. Prorok, L.A. Bulavin, L.V. Poperenko	2	230
Effect of Momentum Correlations on the Properties of Fragments Produced in Heavy-Ion Collisions. S. Gautam, R. Kant	6	599	Aggregation of Benzene Molecules with Molecules of Methanol and Formic Acid. F.H. Tukhvatullin, A. Jumabayev, U.N. Tashkenbaev, H. Hushvaktov, A. Absanov, G. Sharifov	2	244
Role of Different Model Ingredients in the Exotic Cluster-Decay of $^{56}\text{Ni}^*$. N.K. Dhiman	8	796	Raman Spectra and Intermolecular Hydrogen Bonds of Quinoline in Solutions. F.H. Tukhvatullin, A. Jumabayev, H. Hushvaktov, A. Absanov, B. Hudoyberdiev	2	248
Probing the Effect of Different Cross Sections in Asymmetric Systems. D. Kaur, V. Kaur, S. Kumar	8	806	Degradation of Chlorophyll Luminescence in Plants. O.V. Vakulenko, O.O. Grygorieva, O.I. Dacenko	2	256
Anomalies in Internal Conversion Coefficients for Hindered γ -Transitions. V.I. Kirishchuk, A.P. Lashko, T.N. Lashko	11	1097	Structure and Electroluminescent Properties of Thin Tetracene Layers on Gold Island Films. L. Viduta, T. Gavrilko, A. Marchenko, V. Nechytaaylo, A. Senenko, R. Fedorovich, P. Shabatyn	2	260
Study of Angular Distribution and KNO Scaling in the Collisions of ^{28}Si with Emulsion Nuclei at 14.6A GeV. M.A. Ahmad, S. Ahmad	12	1205	The Influence of H_2O Deformation on a Deviation on O-H Chemical Bond. O.O. Yushko, B.A. Okhrimenko	2	278
3. Atoms and Molecules			The Influence of H_2O Deformation on a Deviation on O-H Chemical Bond. O.O. Yushko, B.A. Okhrimenko		
3.1. Structure and properties			Enhancement Features of Infra-Red Absorption by α -Gly Molecules in the SEIRA Effect. O.M. Fesenko		
The Influence of H_2O Deformation on a Deviation on O-H Chemical Bond. O.O. Yushko, B.A. Okhrimenko			2		
Cyanine-Like and Polyenic Relaxation Paths of Merocyanine Derivatives of Malonodinitrile in the Excited State Detecting by Low Temperature Time-Resolved Fluorescence. M.M. Sevryukova, Yu.P. Piryatinski, S.V. Vasylyuk, V.M. Yashchuk, O.O. Viniychuk, A.O. Gerasov, Yu.L. Sломinskii, O.D. Kachkovsky			8		
3.2. Spectroscopy			U(2) Lie Algebraic Study of Vibrational Spectra of Fullerene C_{80} and Its Epoxide $\text{C}_{80}\text{-O}$. R. Sen, A. Kalyan, R.S. Paul, R. Das, J. Choudhury, N.K. Sarkar, R. Bhattacharjee		
Interaction Energy in Pairs of Pyridazinium Ylide-Solvent Molecules Estimated by Spectral Means within the Cell Ternary Solution Model. M. Avadanei, D.O. Dorohoi			2		
Different Polymorphic Modifications of Phenyl Salicylate. N.A. Davydova, V.I. Melnik, V.V. Nesprava, V.Ya. Reznichenko			2		
Quantum-Chemical Simulation of the Cluster Structure of Liquid <i>N</i> -Heptanol. P. Golub, V. Pogorelov, I. Doroshenko			2		
Fourier Transform Infrared Broadband Spectroscopy of the Gas Phase of HF and CO Mixtures. A.S. Sizhuk			5		
Regularities in Fullerene C_{60} Fragmentation According to Laser-Desorption Mass-Spectrometric and Quantum Chemical Data. A.B. Karpenko, V.S. Kuts, S.V. Snegir, V.A. Pokrovskiy			7		
Cyanine-Like and Polyenic Relaxation Paths of Merocyanine Derivatives of Malo-					

- nodinitrile in the Excited State Detecting by Low Temperature Time-Resolved Fluorescence. M.M. Sevryukova, Yu.P. Piryatinski, S.V. Vasylyuk, V.M. Yashchuk, O.O. Viniychuk, A.O. Gerasov, Yu.L. Slominskii, O.D. Kachkovsky 8 812
- Influence of SO₂ Molecule Deformation on the Manifestation of S–O Bond Deviation. B.A. Okhrimenko, O.O. Yushko 11 1108
- Nature and Kinetics of Nonstationary Light Absorption in C₆₀ Films Induced by Femtosecond Laser Pulses. M.P. Gorishnyi, I.A. Pavlov, A.V. Kovalchuk 11 1110
- 3.3. Atomic collisions. Ionization**
- Fourier Transform Infrared Broadband Spectroscopy of the Gas Phase of HF and CO Mixtures. A.S. Sizhuk 5 505
- Electron Impact Ionization and Excitation of Uracil Molecules. M.I. Sukhoviya, M.I. Shafranyosh, M.M. Chavarga, I.I. Shafranyosh 7 752
- 4. Optics, Lasers, and Quantum Electronics**
- Optical Polarization Anisotropy, Intrinsic Stark Effect and Coulomb Effects on the Lasing Characteristics of [0001]-Oriented GaN/Al_{0.3}Ga_{0.7}N Quantum Wells. L.O. Lokot 1 12
- Emission Characteristics and Parameters of CuInSe₂ Laser Torch Plasma. M.P. Chuchman, G.E. Laslov, A.K. Shuaibov, L.L. Shimon 1 23
- Operator of Photon Density in the Phase Space. O. Chumak, N. Sushkova 1 30
- Electrooptical and Nonlinear Optical Properties of Lyotropic Liquid Crystals Doped with Electrochromic Viologens. H.B. Boryuh, G.V. Klimusheva, A.P. Polishchuk .. 2 124
- Photoinduced Refractive Index Variation in the KDP Single Crystals with Incorporated TiO₂ Nanoparticles under CW Laser Excitation. V.Ya. Gayvoronsky, M.A. Kopylovsky, V.O. Yatsyna, A.I. Rostotsky, M.S. Brodyn, I.M. Pritula 2 159
- Nonlinear Optical Response of Smectic Glasses Based on Cobalt Alkanoates. A.V. Grydyakina, Yu.A. Garbovskiy, G.V. Klimusheva, A.P. Polishchuk 2 177
- Radiation Losses in a Planar Dielectric Waveguide with a Rough Interface between Dielectric Layers. O.H. Matievosova, A.V. Kovalenko, V.N. Kurashov 3 304
- Thermal Desorption of Molecules from Metal Surfaces Induced by the Sequence of Laser Pulses. M. Kapitonova, L. Robur ... 5 514
- Capture of Atoms and Small Particles in an Optical Trap Formed by Sequences of Counter-Propagating Light Pulses with a Large Area. V.I. Romanenko, L.P. Yatsenko 9 893
- Registration of the Rotation Angle of Light-Beam Polarization Plane with the Use of Optically Transparent Ferrimagnetic Crystals. A.V. Skrypets, V.D. Tronko, M.M. Asanov 10 993
- Phase-Modulated Parametric Anti-Stokes Stimulated Raman Scattering of Cherenkov-Type in Self-Focusing Areas of Exciting Radiation. A.I. Ivanisik, O.Iu. Isaienko, P.A. Korotkov, G.V. Ponezha 10 1000
- Direct Two-Photon Excitation of Isomeric Transition in Thorium-229 Nucleus. V.I. Romanenko, Ye.G. Udovitskaya, L.P. Yatsenko, A.V. Romanenko, A.N. Litvinov, G.A. Kazakov 11 1119
- Morphology and Optical Properties of Tetragonal Ge Nanoclusters Grown on Chemically Oxidized Si(100) Surfaces. V.S. Lysenko, S.V. Kondratenko, Yu.N. Kozzyrev, M.Yu. Rubezhanska, V.P. Kladko, Yu.V. Gomeniuk, O.Y. Gudymenko, Ye.Ye. Melnichuk, G. Grenet, N.B. Blanchard 11 1132
- 5. Plasmas and Gases**
- 5.1. Plasmas**
- Emission Characteristics and Parameters of CuInSe₂ Laser Torch Plasma. M.P. Chuchman, G.E. Laslov, A.K. Shuaibov, L.L. Shimon 1 23
- Effect of Radiation Transfer on a Deviation of Dense Electric-Arc Plasma from the Equi-

librium State: Criterion Approach. V.A. Zhovtyansky, Yu.I. Lelyukh, Ya.V. Tkachenko	3	311	Structural Transition in a Lipid-Water Liquid System. L.A. Bulavin, D.V. Solov'ev, Yu.E. Gorshkova, O.M. Zhigunov, O.I. Ivan'kov, V.I. Gordelii, O.I. Kuklin ..	6	623
Ion-Acoustic Turbulence in Plasmas. V.P. Silin	3	322	Local Maxwellian Distribution in Fluids. L.A. Bulavin, Yu.F. Zabashtha	11	1156
The Influence of Screening Effects on the Grain Charge in a Thermal Dusty Plasma. D.Yu. Mishagli	8	824	6.2. Q u a n t u m l i q u i d s		
Estimation of the Efficiency of Material Injection into the Reflex Discharge by Sputtering the Cathode Material. Yu.V. Kovtun, E.I. Skibenko, A.I. Skibenko, V.B. Yuferov ..	9	901	On Some Helium Metallization Parameters. V.T. Shvets, S.V. Kozyts'kyi, T.V. Shvets ..	1	35
Formation of a Charged Layer in a Bounded Non-Uniform Magnetized Plasma in RF Field. V.I. Zasenkov	10	1011	Calculation of Critical Temperature for a Bose Gas with Long-Range Forces. V.S. Pastukhov	1	52
Improved Criterion of Nonequilibrium in Electric Arc Plasma Induced by Radiation Transfer. Yu.I. Lelyukh	11	1141	Raman Spectra and Intermolecular Hydrogen Bonds of Quinoline in Solutions. F.H. Tikhvatullin, A. Jumabayev, H. Hushvaktov, A. Absanov, B. Hudoyberdiyev	2	248
5.2. G a s e s a n d c o m b u s t i o n			Theory of Heat Capacity of Liquid Helium-4 for Temperatures above the Critical Point. I.O. Vakarchuk, V.S. Pastukhov, R.O. Prytula	12	1214
Emission Characteristics and Parameters of CuInSe ₂ Laser Torch Plasma. M.P. Chuchman, G.E. Laslov, A.K. Shuaibov, L.L. Shimon	1	23	6.3. L i q u i d c r y s t a l s		
Determination of Detonation Wave Velocity in an Explosive Gas Mixture. M.M. Polatayko	6	606	Electrooptical and Nonlinear Optical Properties of Lyotropic Liquid Crystals Doped with Electrochromic Viologens. H.B. Boryduh, G.V. Klimusheva, A.P. Polishchuk ..	2	124
6. Soft Matter			Photoalignment of Liquid Crystals on Chalcogenide Glass As ₂₀ Se ₈₀ Surface. N. Boyarchuk, Yu. Kurioz, K. Slyusarenko, M. Trunov, Yu. Reznikov	2	129
6.1. L i q u i d s a n d l i q u i d s y s t e m s			Nonlinear Optical Response of Smectic Glasses Based on Cobalt Alkanoates. A.V. Gridyakina, Yu.A. Garbovskiy, G.V. Klimusheva, A.P. Polischuk	2	177
Equation of State for Water in the Small Compressibility Region. V.Yu. Bardik, D. Nerukh, E.V. Pavlov, I.V. Zhyganiuk ..	1	47	Properties of Wall-Adjacent Epitropic Liquid Crystalline Layers. A.Yu. Popovskii, V.I. Mikhailenko	2	224
Temperature Dependences of Dynamic Parameters of Water in Fossil-Coal Pores. A.D. Alexeev, T.A. Vasilenko, A.K. Kirilov, O.M. Molchanov, G.A. Troitsky	3	339	Effects of UV Radiation on Helical Twisting in Cholesteric Systems Containing Photosensitive Azoxy Nematics. M.I. Serbina, N.A. Kasian, L.N.Lisetski	2	235
The Equation of State for a Water-Based Magnetic Fluid Stabilized by Lauric Acid. L.A. Bulavin, K.O. Moroz, S.P. Nedyak, V.I. Petrenko	3	350	Dielectric Properties of Nematic Liquid Crystal Modified with Diamond Nanoparticles. S. Tomylko, O.Yaroshchuk, O. Kovalchuk, U. Maschke, R. Yamaguchi	2	239
Free Energy Functional Expansion as the Generalized Approach to the Equation of State of Dense Fluids. V.Yu. Bardik, D. Nerukh, E.V. Pavlov, M.S. Vlasyuk	6	612			

6.4. Polymers, biostructures, and their solutions

- Conformational Properties of Semiflexible Polymers: Numerical Simulations. V. Blavatska, K. Haydukivska, Yu. Holovatch ... 1 41
- Nonlinear Optical Response of Smectic Glasses Based on Cobalt Alkanoates. A.V. Gridyakina, Yu.A. Garbovskiy, G.V. Klimushcheva, A.P. Polischuk 2 177
- Spectroscopic Studies of Mosquito Iridescent Virus, its Capsid Proteins, Lipids, and DNA. V.M. Kravchenko, Yu.P. Rud, L.P. Buchatski, V.I. Mel'nik, K.Yu. Mogylichak, S.P. Ladan, V.M. Yashchuk 2 183
- The Spectral Properties and Photostability of DNA, RNA, and Oligonucleotides. V.Yu. Kudrya, V.M. Yashchuk 2 187
- Physical Mechanism of Keratin Swelling. L.A. Bulavin, Yu.F. Zabashta, A.V. Kasprova, S.P. Senchurov, Yu.E. Grabovskii, S.O. Alekseev 5 520
- Structural Transition in a Lipid-Water Liquid System. L.A. Bulavin, D.V. Solov'ev, Yu.E. Gorshkova, O.M. Zhigunov, O.I. Ivan'kov, V.I. Gordelii, O.I. Kuklin .. 6 623
- Molecular Structure and Interactions of Nucleic Acid Components in Nanoparticles: *Ab Initio* Calculations. Yu.V. Rubin, L.F. Belous 7 723
- Modification of Alkaloid Structure in the Conium Drug with Fullerenes C₆₀. M.A. Zabolotnyi, A.I. Momot, G.I. Dovbeshko, E.P. Gnatyuk, G.I. Solyanyk, O.P. Dmytrenko, N.P. Kulish, K.V. Fedina 7 739
- Indirect Evidences of Conformational Regulation in Protein Reactions: How Much Can Be Learnt? L.N. Christophorov 7 746
- Structural Changes in a Fibroin Fiber Induced by an Alkaline Solution. L.A. Bulavin, Yu.F. Zabashta, A.V. Kasprova, S.P. Senchurov, O.S. Svechnikova 9 909
- Effective Atomic Charges of Canonical 2-Deoxyribonucleotides and Their Conformational Dependences. T.Yu. Nikolaienko, L.A. Bulavin, D.M. Hovorun 10 1024

Pseudo Jahn-Teller Origin of the Proton Tunneling in Zundel Cation Containing Water Clusters. I. Geru, N. Gorinchoy, I. Balan 11 1149

6.5. Amorphous materials

Non-Equilibrium Thermodynamics and Outburst Hazard of a Coal Bed. A.D. Alekseev, E.P. Feldman 6 619

7. Solid Matter

7.1. Metals

Influence of γ -Irradiation on Initial Magnetic Permeability of Amorphous and Nanocrystalline Fe-Si-B-Based Alloys. V.Yu. Povarchuk, V.K. Nosenko, A.M. Kraitchinskii, V.B. Neimash, M.M. Kras'ko, V.V. Maslov 3 345

Thermal Desorption of Molecules from Metal Surfaces Induced by the Sequence of Laser Pulses. M. Kapitonova, L. Robur ... 5 514

Role of Non-Equilibrium Vacancies in Spinodal Decomposition. N.V. Tyutyunnyk, A.N. Gusak 6 628

Effect of Nitrogen Partial Pressure on Reactive Magnetron Sputtering from Ti₁₃Cu₈₇ Metalloid Target: Simulation of Chemical Composition. A. Rahmati, M. Khanzadeh 6 642

7.2. Semiconductors

Modulation of the Direction of Radiation Emitted by an InAs/GaAs Heterolaser with InAs Quantum Dots under the Influence of Acoustic Wave. R.M. Peleshchak, O.O. Dan'kiv, O.V. Kuzyk 1 68

Two-Channel Gettering of Recombination-Active Impurity in Polycrystalline Solar Silicon. V.G. Litovchenko, V.M. Naseka, A.A. Evtukh 1 73

Modification of Optical Properties of Porous A^{III}B^V Layers Produced by Anodic Etching. N. Dmitruk, N. Berezovska, I. Dmitruk, V. Serdyuk, J. Sabataityte, I. Simkiene ... 2 145

Electromigration Degradation Model of Metal Oxide Varistor Structures. A.V. Ivanchenko, A.S. Tonkoshkur 3 330

Study of Recombination and Electric Properties of *p*-Si Crystals Irradiated with Elec-

- trons. T.A. Pagava, D.Z. Khocholava, N.I. Maisuradze, L.S. Chkhartishvili 5 525
- Effect of Active Treatments on Photovoltaic Characteristics of Structures Based on CdTe Films. N.I. Klyui, V.P. Kostilyov, A.N. Lukyanov, A.V. Makarov, V.V. Cherenko, G.S. Khripunov, N.M. Kharchenko, A.V. Meriuts, T.M. Shelest, T.A. Lee, A.N. Klyui 5 538
- Deformation Potential Constants Ξ_u and Ξ_d in *n*-Si Determined with the Use of the Tensoresistance Effect. S.V. Luniov, L.I. Panasiuk, S.A. Fedosov 6 636
- Influence of Growth Conditions on Structural and Optical Properties of $Zn_{0.9}Cd_{0.1}O$ Films. I.I. Shtepliuk, G.V. Lashkarev, V.V. Khomyak, O.S. Lytvyn, P.D. Marianchuk, I.I. Timofeeva, A.I. Evtushenko, V.I. Lazorenko 6 653
- Study of Electrical Conductivity in WO_3 -doped Nonstoichiometric $LiTaO_3$. M. Tahiri, N. Masaif, A. Jennane, E.M. Lotfi 8 834
- Energy Spectrum of Electrons in a Three-Layer Heterosystem with Self-Organized Defect-Deformation Structures. R.M. Peshchak, O.V. Kuzyk, O.O. Dan'kiv 8 838
- Effect of Pre-Growth Annealing on the Properties of Nonpurified Cadmium Telluride Single Crystals Obtained by Sublimation Method. V.D. Popovych, Yu.P. Gnatenko, P.M. Bukivskij, P. Potera 8 844
- Mott-Hubbard Localization in a Model of the Electronic Subsystem of Doped Fullerides. Yu. Dovhopyaty, L. Didukh, O. Kramar, Yu. Skorenkyy, Yu. Drohobitskyy 9 920
- Anomalous Conductivity in ZnSe Single Crystals by X-ray Irradiation. V.Ya. Degoda, V.T. Vesna, B.V. Kozhushko, G.P. Podust 9 929
- Electronic Structure of Chromium- and Hydrogen-Doped GaInN Solid Solutions. S.V. Syrotyuk, V.M. Shved 10 1030
- Electrical and Optical Properties of $AgGaGe_2S_2Se_4$ Single Crystals. G.L. Myronchuk, G.E. Davyduk, O.V. Parasiuk, M.V. Shevchuk, O.V. Jakymchuk, S.P. Danyl'chuk 10 1050
- Stability of Trionic States in Zigzag Carbon Nanotubes. S. Marchenko 10 1055
- Influence of Tin Impurity on Recombination Characteristics in γ -Irradiated *n*-Si. M.M. Kras'ko 11 1162
- 7.3. Dielectrics
- Peculiarities in Dielectric and Magnetic-Resonance Characteristics of Nanocrystalline Potassium Tantalate. I.S. Golovina, I.N. Geifman, N.M. Prokopiv 1 61
- Study of Electrical Conductivity in WO_3 -doped Nonstoichiometric $LiTaO_3$. M. Tahiri, N. Masaif, A. Jennane, E.M. Lotfi 8 834
- Polar Properties and Hysteresis Loops in Multilayered Thin Films Ferroelectric/Virtual Ferroelectric. E.A. Eliseev, M.D. Glinchuk, A.N. Morozovska, Ya.V. Yakovenko . 10 1038
- Polarization and Pyroelectric Coefficients of Antiferrodistortive Boundaries: $SrTiO_3$ as an Example. J.V. Jakovenko, E.A. Eliseev, S.V. Svechnikov, A.N. Morozovska 12 1223
- A New $LiNH_4SO_4$ Crystal with an Isotropic Point. V.Yo. Stadnyk, M.O. Romanyuk, R.S. Brezvin 12 1231
- 7.4. Magnetics
- Electronic Structure and Magnetism of Fe-based Superconductors. G.E. Grechnev, A.S. Panfilov, A.V. Fedorchenko, V.A. Desnenko, I.P. Zhuravleva, S.L. Gnatchenko, D.A. Chareev, O.S. Volkova, A.N. Vasiliev 2 171
- The Equation of State for a Water-Based Magnetic Fluid Stabilized by Lauric Acid. L.A. Bulavin, K.O. Moroz, S.P. Nedyak, V.I. Petrenko 3 350
- Investigation of the Spontaneous Spin-Flip Phase Transition in Terbium-yttrium Iron-Garnet by the Magneto-optic Method. D.R. Djuraev, L.N. Niyazov, K.S. Saidov, B.Yu. Sokolov 5 531
- Magneto-optical Study of Spin-Orientation Phase Transition in $NdFe_3(BO_3)_4$ Single Crystal. V.A. Bedarev, M.I. Pashchenko, D.N. Merenkov, L.N. Bezmaternykh, V.L. Temerov 6 648

- The Localization of a Spherical Ferromagnetic Microparticle in an Oscillating Magnetic Field in a Liquid Stream. O.Yu. Gorobets, M.M. Potyemkin 9
- 7.5. Surface and contact phenomena
- Distinctive Optical Properties of Polysilane/TiO₂ Nanocomposite Films. N. Ostapenko, D. Peckus, W. Gulbinas, S. Suto, A. Watanabe 2 208
- Structure and Electroluminescent Properties of Thin Tetracene Layers on Gold Island Films. L. Viduta, T. Gavrilko, A. Marchenko, V. Nechytaýlo, A.Senenko, R. Fedorovich, P. Shabatyn 2 260
- Adsorption of Molecular Oxygen onto Si_{1-x}Ge_x/Si(001) Surface. A.A. Greenchuk, T.V. Afanasieva, I.P. Koval, M.G. Nakhodkin 3 355
- Chlorine Atomic Chains on Ag(111) Surface. N.V. Petrova, I.N. Yakovkin, O.M. Braun 3 361
- Influence of Coadsorbed Strontium Atoms on Surface Diffusion in Lithium Submonolayer Films on Tungsten (112) Face. A.T. Loburets, S.A. Zaika, A.G. Naumovets 6 661
- Regularities in Fullerene C₆₀ Fragmentation According to Laser-Desorption Mass-Spectrometric and Quantum Chemical Data. A.B. Karpenko, V.S. Kuts, S.V. Snegir, V.A. Pokrovskiy 7 767
- Experimental and Theoretical Studies of Laser Desorption/Ionization of Methylene Blue from the Surface of Thermally Exfoliated Graphite. V.A. Gabovich, V.A. Pokrovsky, E.M. Demianenko, A.G. Grebenyuk 7 773
- Physical Properties of Sensor Structures on the Basis of Silicon *p-n* Junction with Interdigitated Back Contacts. O.V. Kozynets', S.V. Litvinenko 12 1234
- 7.6. Superconductivity
- Electronic Structure and Magnetism of Fe-based Superconductors. G.E. Grechnev, A.S. Panfilov, A.V. Fedorchenko, V.A. Desnenko, I.P. Zhuravleva, S.L. Gnatchenko, D.A. Chareev, O.S. Volkova, A.N. Vasiliev 2 171
- Theory of Heat Capacity of Liquid Helium-4 for Temperatures above the Critical Point. I.O. Vakarchuk, V.S. Pastukhov, R.O. Prytula 12 1214
- 8. Nanosystems**
- Modification of Optical Properties of Porous A^{III}B^V Layers Produced by Anodic Etching. N. Dmitruk, N.Berezovska, I. Dmitruk, V. Serdyuk, J. Sabataityte, I. Simkiene ... 2 145
- Secondary Emission From Synthetic Opal Infiltrated by Colloidal Gold and Glycine. G.I. Dovbeshko, O.M. Fesenko, V.V. Boyko, V.R. Romanyuk, V.S. Gorelik, V.N. Moiseyenko, V.B. Sobolev, V.V. Shvalagin 2 154
- Abnormal Low Linewidth Temperature Broadening Observed for YVO₄:Eu Nanocrystals. P.O. Maksimchuk, A.A. Masalov, V.V. Seminko, O.G. Viagin, V.K. Klochkov, Yu.V. Malyukin 2 193
- Distinctive Optical Properties of Polysilane/TiO₂ Nanocomposite Films. N. Ostapenko, D. Peckus, W. Gulbinas, S. Suto, A. Watanabe 2 208
- Optical Vibrations Spectra of C₂₄ and C₄₈ Cage Clusters and Simple Cubic Fullerite. L.I. Ovsiannikova, A.P. Naumenko, V.V. Kartuzov, A.S. Smolyar 2 214
- Characterization of Nanodispersed Graphite. Yu.S. Perets, I.V. Ovsienko, L.L. Vovchenko, L.Yu. Matzui, O.A. Brusilovetz, I.P. Pundyk 2 219
- Size and Temperature Dependence of the Surface Plasmon Resonance in Silver Nanoparticles. O.A. Yeshchenko, I.M. Dmitruk, A.A. Alexeenko, A.V. Kotko, J. Verdal, A.O. Pinchuk 2 266
- Influence of γ -Irradiation on Initial Magnetic Permeability of Amorphous and Nanocrystalline Fe-Si-B-Based Alloys. V.Yu. Povarchuk, V.K. Nosenko, A.M. Kraitchinskii, V.B. Neimash, M.M. Kras'ko, V.V. Maslov 3 345
- Interaction between an Isotropic Nanoparticle and Drifting Electrons in a Quantum Well. V.A. Kochelap, S.M. Kukhtaruk 3 367

Peculiarities of Current Transport in Titanium Oxide-Silicon Heterostructures. Yu.S. Milovanov, I.V. Gavrilchenko, V.Ya. Gayvoronsky, G.V. Kuznetsov, V.A. Skryshesky	5	545	Experimental and Theoretical Studies of Laser Desorption/Ionization of Methylene Blue from the Surface of Thermally Exfoliated Graphite. V.A. Gabovich, V.A. Pokrovsky, E.M. Demianenko, A.G. Grebenyuk ..	7	773
Dependence of Light Scattering Cross-Section by Metal Nanoparticles on Their Shape. P.M. Tomchuk	5	552	Effect of Nonlinear Electron-Electron Interaction on Electron Tunneling Through an Asymmetric Two-Barrier Resonance Tunnel Structure. M.V. Tkach, Ju.O. Seti, I.V. Boyko	8	849
Interaction of DNA with Silver Nanoparticles. G.M. Glibitskiy, V.V. Jelali, M.O. Semenov, A.D. Roshal, D.M. Glibitskiy, O.Yu. Volyansliy, G.G. Zegrya	7	695	NMR Study of Non-Equilibrium State of Fullerene C ₆₀ in <i>N</i> -Methyl-2-Pyrrolidone. O.B. Karpenko, V.V. Trachevskij, O.V. Filonenko, V.V. Lobanov, M.V. Avdeev, T.V. Tropin, O.A. Kyzyma, S.V. Snegir ..	8	860
Glucose Oxidase Immobilization onto Carbon Nanotube Networking. V.A. Karachevtsev, A.Yu. Glamazda, E.S. Zarudnev, M.V. Karachevtsev, V.S. Leontiev, A.S. Linnik, O.S. Lytvyn, A.M. Plokhotnichenko, S.G. Stepanian	7	700	Axial Stiffness of Multiwalled Carbon Nanotubes as a Function of the Number of Walls. V. Zavalniuk	9	933
Carriers Spectra of Functionalized Semiconducting Nanowire and Conformational Transition in Molecules. V.A. Lykakh, E.S. Syrkin	7	710	Polar Properties and Hysteresis Loops in Multilayered Thin Films Ferroelectric/Virtual Ferroelectric. E.A. Eliseev, M.D. Glinchuk, A.N. Morozovska, Ya.V. Yakovenko ..	10	1038
Fluorecently Labeled Bionanotransporters of Nucleic Acid Based on Carbon Nanotubes. D.S. Novopashina, E.K. Apartsin, A.G. Venyaminova	7	718	Stability of Trionic States in Zigzag Carbon Nanotubes. S. Marchenko	10	1055
Molecular Structure and Interactions of Nucleic Acid Components in Nanoparticles: <i>Ab Initio</i> Calculations. Yu.V. Rubin, L.F. Belous	7	723	Phonon Spectra and Electron-Phonon Interaction in a Combined Cylindrical Semiconductor Nanotube. O.M. Makhanets, N.R. Tsiupak, V.I. Gutsul	10	1060
Novel Photoluminescence-Enhancing Substrates for Image Formation of Biological Objects. G.I. Dovbeshko, O.M. Fesenko, V.V. Boyko, V.F. Gorchev, S.O. Karakhin, N.Ya. Gridina, V.S. Gorelik, V.N. Moiseenko	7	732	Morphology and Optical Properties of Tetragonal Ge Nanoclusters Grown on Chemically Oxidized Si(100) Surfaces. V.S. Lysenko, S.V. Kondratenko, Yu.N. Kozzyrev, M.Yu. Rubezhanska, V.P. Kladko, Yu.V. Gomeniuk, O.Y. Gudymenko, Ye.Ye. Melnichuk, G. Grenet, N.B. Blanchard	11	1132
Modification of Alkaloid Structure in the Conium Drug with Fullerenes C ₆₀ . M.A. Zabolotnyi, A.I. Momot, G.I. Dovbeshko, E.P. Gnatyuk, G.I. Solyanyk, O.P. Dmytrenko, N.P. Kulish, K.V. Fedina	7	739	Structural and Photoluminescence Properties of ZnO Nanowires. G.Yu. Rudko, I.V. Dubrovin, A.I. Klimovskaya, E.G. Gule, P.M. Lytvyn, Yu.M. Lytvyn, S.P. Turanska	12	1239
Indirect Evidences of Conformational Regulation in Protein Reactions: How Much Can Be Learnt? L.N. Christophorov	7	746			
Synthesis of Nanotubes from Mesoporous Nanocrystalline Titanium Dioxide. N.I. Ermokhina, V.A. Nevinskiy, P.A. Manorik, V.G. Ilyin, N.N. Tsiba, A.M. Puziy, N.N. Shcherbatuuk, D.O. Klymchyuk	7	761			
			9. General Problems of Theoretical Physics		
			9.1. Thermodynamics, statistical physics, and kinetics		
			Method for the Calculation of Free Energy in a Three-Dimensional Ising-Like System		

Taking Into Account a Correction for the Interaction Potential Averaging. I.R. Yukhnovskii, M.P. Kozlovskii, I.V. Pylyuk	1	80	Derivation of a Model Hamiltonian in the “Short Time Scale” Limit. A.S. Sizhuk, S.M. Yezhov	6	670
Nature of Hydrogen Bond in Water. P.V. Makhlaichuk, M.P. Malomuzh, I.V. Zhyganiuk	2	113	Dynamical and Macroscopic Descriptions of the Strongly Driven Gas Medium of Interacting Atoms. A.S. Sizhuk, S.M. Yezhov	8	864
Generalized Deformed Oscillators in the Framework of Unified $(q, \alpha, \beta, \gamma, \nu)$ -Deformation and Their Oscillator Algebras. I.M. Burban	4	396	On the Relativistic Quantum Mechanics of a Particle in Space with Minimal Length. Ch.M. Scherbakov	9	940
Model Equations and Formation of Structures in Media with Memory. A.S. Makarenko	4	408	The Quantum Entropy as an Ultimate Visiting Card of the de Broglie–Bohm Theory. D. Fiscaletti	9	946
Generalized Exterior Algebras. N. Marchuk	4	422	Dynamics of Low-Energy Laser-Produced Tin Plasma. M.P. Chuchman, L.V. Mesarosh, A.K. Shuaibov	12	1244
Category of Vilenkin–Kuznetsov–Smorodinsky–Smirnov Trees. S.S. Moskaliuk, N.M. Moskaliuk	4	426	10. Nonlinear Processes		
On $T(n, 4)$ Torus Knots and Chebyshev Polynomials. A.M. Pavlyuk	4	439	Special Form of the Singular Function for the Continuous Part of Spectral Data in the Inverse Scattering Method. V.O. Vakhnenko	1	95
Dynamics of Transient Processes in Irreversible Kinetic Models. V.I. Teslenko, O.L. Kapitanchuk	5	573	Localized States in a Nonlinear Medium Containing a Plane Defect Layer with Nonlinear Properties. I.V. Gerasimchuk, P.K. Gorbach, P.P. Dovichopoli	6	678
Role of Non-Equilibrium Vacancies in Spinodal Decomposition. N.V. Tyutyunnyk, A.N. Gusak	6	628	Effect of Nonlinear Electron-Electron Interaction on Electron Tunneling Through an Asymmetric Two-Barrier Resonance Tunnel Structure. M.V. Tkach, Ju.O. Seti, I.V. Boyko	8	849
On the Possible Existence of Non-Fisher Universality Classes. A.I. Ivanitskyi, K.A. Bugaev	9	964	Phase-Modulated Parametric Anti-Stokes Stimulated Raman Scattering of Cherenkov-Type in Self-Focusing Areas of Exciting Radiation. A.I. Ivanisik, O.Iu. Isaienko, P.A. Korotkov, G.V. Ponezha	10	1000
Modeling of Microstructural Changes in Irradiated Systems Using the Phase Field Crystal Method. D.O. Kharchenko, V.O. Kharchenko, S.V. Kokhan, I.O. Lysenko	10	1069	11. Astrophysics and Cosmology		
Relaxation of Spatially Uniform Distribution Function in the Case on Non-Uniform Energy Distribution. A.S. Sizhuk, S.M. Yezhov	12	1250	The Negative Result of Gravitational Tests for Multidimensional Kaluza–Klein Models. M. Eingorn, A. Zhuk	4	443
9.2. Quantum mechanics			Notes on the Production of Matter in the Universe. V.E. Kuzmichev, V.V. Kuzmichev	4	457
Operator of Photon Density in the Phase Space. O. Chumak, N. Sushkova	1	30	Noncommutative Geometry and Applications to Astrophysics. S.S. Moskaliuk, M. Wohlgenannt	4	462
Interaction between an Isotropic Nanoparticle and Drifting Electrons in a Quantum Well. V.A. Kochelap, S.M. Kukhtaruk	3	367			
The Geometrodynamic Nature of the Quantum Potential. D. Fiscaletti	5	560			

Power Spectrum of Radiation from a Gaussian Source Microlensed by a Point Mass: Analytic Results. V.I. Zhdanov, D.V. Gorpinchenko 10 1083

Comparative Analysis of Standard Λ CDM and Λ CS Models. V.E. Kuzmichev, V.V. Kuzmichev 11 1169

General Properties of Higher-Spin Fermion Interaction Currents and Their Test in πN -Scattering. Yu.V. Kulish, E.V. Rybachuk.. 11 1179

Scalar Cosmological Perturbations on the Brane. A.V. Viznyuk, Yu.V. Shtanov 12 1257

12. Physics Experiment Techniques

Mysterious Quantum Effects Observed with Neutrons. H. Rauch 4 469

Dynamics of Particles with High Initial Transverse Velocities in a Magnetic Field with Cusp Geometry. A.G. Belikov, V.G. Papkovich 8 877

13. Chronicle, Bibliographic Data, and Personalia

In Memory of Maksym Tymofiiiovych Kostyshin 1 100

In Memory of Mykhailo Pavlovyeh Lisitsa (15.01.1921–10.01.2012) 3 381

Kornii Denysovych Tovstyuk (to the 90-th Anniversary of His Birthday) 3 383

Alexei Zinovievich Petrov 4 483

Yevgen Dmytrovyeh Volkov (03.03.1934–16.01.2012) 5 584

Gennadii Fedorovich Filippov (to the 80th Anniversary of His Birthday) 6 684

In Memory of Konstyantyn Mykolaiovych Stepanov 9 982

Bohdan Ivanovych Lev (to the 60-th anniversary of his birthday) 9 984