

SUBJECT INDEX TO THE 68th VOLUME OF "UKRAINIAN JOURNAL OF PHYSICS" FOR 2023

Fields and Elementary Particles	N P.
Resonance Structure of ${}^8\text{Be}$ within the Two-Cluster Resonating Group Method. N. Kalzhigitov, V.O. Kurmangaliyeva, N.Zh. Takibayev, V.S. Vasilevsky	1 3
Potential of the modified Thomas–Fermi method and its analytical representation by the example of ${}^{16}\text{O}$ nucleus interaction with ${}^{56,58,60,62,64}\text{Ni}$ isotopes. V.A. Nesterov	2 73
Reactivity Measurement Methods and the First Results of the Physical Start-up for the Nuclear Subcritical Facility “Neutron Source”. A. Bykhun, P. Gladkikh, I. Karnaughov, V. Lyashchenko, A. Mytsykov, V. Ridozub, V. Selivanov, V. Stomin, A. Tertychnyj, I. Ushakov, A. Zelinsky	3 147
Comparison between the Theoretical Calculation of Coulomb Form Factors and Experimental Data for ${}^{12}\text{C}$ and ${}^{20}\text{Ne}$ Nuclei. H.M. Dlshad, A.H. Fatalah	3 162
Mathematical Models and Methods on Higher Dimensional Bulk Viscous String Cosmology with the Framework of Lyra Geometry. M.R. Mollah, K.P. Singh, A.J. Meitei, P.R. Singh, A.K. Yadav, S.R. Devi	7 437
Proton and Neutron Pairing Properties within a Mixed Volume-Surface Pairing Type Using the Hartree–Fock–Bogolyubov Theory. M.A. Hasan, A.H. Taqi	9 577
Universal Coordinate Gaussian Basis for Calculations of the Bound States of a Few-Particle System. O.B. Gryniuk, B.E. Grinyuk	9 587
Magnetogenesis in Non-Local Models during Inflation. E.V. Gorbar, V. Gorkavenko, V.M. Gorkavenko, O.M. Teslyk	10 647
Chirality Production during Axion Inflation. E.V. Gorbar, A.I. Momot, I.V. Rudenok, O.O. Sobol, S.I. Vilchinskii, I.V. Oleinikova	11 717

Optics, Atoms and Molecules	
The Quantum Features of Correlated Photons with the Effect of Phase Fluctuation. A.G. Kumela, A.B. Gemta, A.K. Hordofa, T.A. Desta, M. Dangish, H.D. Mekonnen	2 81
Propagation of Acoustic Waves in Calcium Tungstate Crystals. O.A. Buryi, D.M. Vynnyk, T.I. Voroniak, I.V. Stasyshyn, A.T. Ratych, A.S. Andruzhchak	2 92
Decoherence in a \mathcal{PT} -Symmetric Qubit. J.M. Bhat, M.Q. Lone, S. Datta, G.N. Dar, A. Farouk	2 101
Light Pressure on Nanoparticles in the Field of the Counter-Propagating Bichromatic Waves with an Additional Relaxation Channel for the Excited State Population. V.I. Romanenko, N.V. Korrniovskaya, L.P. Yatsenko	4 219
Entanglement Dynamics Induced by a Three-Level Laser Coupled to the Squeezed Vacuum Reservoir. M. Alemu	5 295
Operator Formulation for Centered Optical Systems. I.V. Demydenko	5 309
Surface Morphology of the Films of the $\text{C}_{60}/\text{C}_{70}$ Fullerene Mixture. Identification of C_{60} and C_{70} in the $\text{C}_{60}/\text{C}_{70}$ Films Using Absorption Spectra. M.P. Gorishnyi	5 318
Plasmon Resonance Properties of Au, Cu and Ag Multilayered Structures with P(VDF-TrFE). A.L. Yampolskyi, O.V. Makarenko, D.V. Zaporooshchenko	9 594
The Role of Air in Laser-Induced Thermal Emission of Surface Layers of Porous Carbon Materials. S.E. Zelensky, O.S. Kolesnik, V.P. Yashchu	10 652
Peculiarities of Eu^{3+} Photoluminescence in Opal Photonic Crystal Films and Heterostructures Based on Them. V.S. Mukharovska, M.P. Derbachov, V.M. Moiseienko, B. Abu Sal	12 785

General Physics

- Factorization of the Lorentz Transformations. K.S. Karplyuk, M.I. Kozak, O.O. Zhmudskyy 1 19
 Influence of a Non-Uniform Electric Field on the Combustion of Liquid Hydrocarbon Fuels. A.V. Nymych, O.Y. Sydorov, V.G. Shevchuk 1 25
 Darcy–Brinkman Bio-Thermal Convection in a Porous Rotating Layer Saturated by a Newtonian Fluid Containing Gyrotactic Microorganisms. M.I. Kopp, V.V. Yanovsky 1 30
 Dipole–Monopole Crossover and Chargeless Half-Mode in an Integrable Exciton–Phonon Nonlinear Dynamical System on a Regular One-Dimensional Lattice. O.O. Vakhnenko 2 108
 Effect of the Applied Electric Field on the Thermal Properties of the Relativistic Harmonic Oscillator in One Dimension. A. Boumali, R. Allouani, A. Bouzenada, F. Serdouk 4 235
 The Influence of Deformation Space-Space on High and Low Energy Spectra of Fermionic Particles and Spectra of Heavy Quarkonia with Improved Hulthén Plus Hyperbolic Exponential Inversely Quadratic Potential. A. Maireche 5 328
 Mechanism of Non-Fluctuational Formation of Interstitial Atoms in Deformed Crystals. L.A. Bulavin, Yu.F. Zabashta, M.M. Lazarenko, L.Yu. Vergun, K.I. Hnatiuk, O.M. Alekseev, V.I. Kovalchuk 6 369
 Evaporation of Droplets of Binary Mixtures of Lower Monoxylic Alcohols in Heated Air. O.K. Kopiyka, V.V. Kalinchak, A.S. Chernenko 10 660
 Anisotropic Darcy–Brinkman Magnetic Fluid Convection under the Influence of a Time-Dependent Sinusoidal Magnetic Field. C. Balaji, S. Maruthamanikandan, C. Rudresha, V. Vidya Shree 11 730

Plasma Physics

- Effect of Sheared Magnetic Field on $\mathbf{E} \times \mathbf{B}$ Drift Instability in Plasma. S. Nasrin, S. Das, M. Bose 7 448
 Impact Collision Operator for Unbounded Electrons in a Magnetized Plasma Model. H. Guerrida, K. Chenini, M.T. Meftah, S. Douis, D.E. Zenkhri, K. Arif 8 507
 Existence of Small Amplitude Double Layers in Two-Temperature Non-Isothermal Plasma. S. Chatopadhyay 12 795

Physics of Liquids and Liquid Systems, Biophysics and Medical Physics

- Impact of the Cell Wall on Cyanide Biodegradation in the Model of the Respiratory Mechanism. V.S. Yakovliev, V.N. Ermakov, B.I. Lev 2 113

- Temperature and Pressure Effect on the Thermodynamics Coefficient $(\partial V / \partial T)_P$ of Water. L.A. Bulavin, Ye.G. Rudnikov 2 122
 Output Stream of Binding Neuron with Threshold Stimulated with Renewal Process. O.V. Shchur 3 170
 Reducible and Irreducible Components of the pH Value in Dilute Aqueous Solutions of Sodium Chloride. L.A. Bulavin, N.P. Malomuzh, O.V. Khorolskyi 3 177
 Raman Scattering Spectra and DFT Computational Analyzes of Intermolecular Interactions in Trifluoroacetic and Its Solutions. A. Jumabaev, A. Absanov, H. Hushvaktov, L. Bulavin 4 246
 Development of Neutron Reflectometry of Surface Layers of Liquid Systems. Y. Kosiachkin, L.A. Bulavin, P. Kopcansky 4 259
 Maximization of the Olfactory Receptor Neuron Selectivity in the Sub-Threshold Regime. A.K. Vidybida 4 266
 Formation of Hydrogen Bonds and Vibrational Processes in Dimethyl Sulfoxide and Its Aqueous Solutions: Raman Spectroscopy and Ab Initio Calculations. A. Jumabaev, H. Hushvaktov, B. Khidaykulov, A. Absanov, M. Onuk, I. Doroshenko, L. Bulavin 6 375
 Thermodynamic Quantities of Morse Fluids in the Supercritical Region. I.V. Pylyuk, M.P. Kozlovskii, O.A. Dobush 6 383
 The Influence of the Temperature and Chemical Potential on the Thermodynamic Coefficient $-(\partial V / \partial P)_T$ of Water. L.A. Bulavin, Ye.G. Rudnikov 6 390
 The Chemotaxis Sensitivity Function for a System with a Spherical Geometry. O.M. Vasyliev, A.O. Slobodianik 7 456
 Physical Aspects of 2014 Nobel Prize in Physiology or Medicine: 2. The First Principle and Universality Class for Grid Cells in the Brain. A.V. Chalyi, K.A. Chalyi, E.V. Zaitseva, E.N. Chaika, I.P. Kryvenko 7 462
 The Multiscale Hybrid Method with a Localized Constraint. I. A Modified Control Volume Function for the Hybridized Mass and Momentum Equations. M. Bakumenko, V. Bardik, D. Nerukh 8 517
 Influence of Irradiation on the Parameters of Facilitated Diffusion in a Model Medical-Biological Systems. T.S. Vlasenko, D.A. Gavryushenko, K.V. Chernyko, L.A. Bulavin 8 525
 Analytic Calculation of the Critical Temperature and Estimation of the Critical Region Size for a

Fluid Model. I.V. Pylyuk, M.P. Kozlovskii, O.A. Dobush.....	9 601	Structural and Optical Characterisation of Size-Selected Glutathione-Capped Colloidal Cu-In-S Quantum Dots. Y.M. Azhniuk, Ye.O. Havryliuk, B.V. Lopushanska, V.V. Lopushansky, A.V. Gomonnai, D.R.T. Zahn.....	3 190
Monitoring of the Enzymatic Reactions Course by Differential Microwave Dielectrometry Method in Real Time. K.S. Kuznetsova, V.A. Pashynska, Z.E. Eremenko, O.I. Shubnyi, A.V. Martynov, A.A. Prokopenko.....	9 608	Features of the Generation of Energy States in the Lu _{1-x} V _x NiSb Semiconductor. V.V. Romaka, V.A. Romaka, Yu.V. Stadnyk, L.P. Romaka, Y.O. Plevachuk, A.M. Horyn, V.Z. Pashkevych, P.I. Haraniuk.....	4 274
Approximating Electrostatic Potential of Molecules with Point Charges Mimicking the Electron Pairs. T.Yu. Nikolaienko, L.A. Bulavin	10 673	The Role of tin in the Formation of Micro- and Nano-Structured Surfaces of Layered Si-Sn-Si Films. V.B. Neimash, P.E. Shepelyavyi, A.S. Nikolenko, V.V. Strelchuk, V.I. Chegel, I.V. Olkhovyk, S.O. Voronov	4 284
On the Minimal Model of Kinetic Cooperativity. L.N. Christophorov	10 684	Symmetry of Energy States in α -LiIO ₃ Crystals Taking Time-Inversion Invariance into Account. A.P. Naumenko, V.O. Gubanov	6 397
Temperature and Concentration Dependences of the Zeta Potential of Albumin Macromolecules in the Aqueous-Salt Solution. O.D. Stoliaryk, A.A. Guslisty, O.V. Khorolskyi	11 742	Carrier Decay Lifetimes in the Narrow-gap Hg _{1-x} Cd _x Te at the Interband and Intraband Excitations. S. Staryi, I. Lysjuk, O. Golenkov, Z. Tsybrii, S. Danilov, J. Gumenjuk-Sichevska, K. Andrieieva, M. Smolii, F. Sizov	8 543
Intermolecular Interactions in Liquid Propionic Acid and Its Solutions: Raman and DFT Study. A. Jumabaev, A.A. Absanov, H.A. Hushvaktov, L.A. Bulavin	11 750	Magnetic-Resonance and Tribological Properties of Organoplastics Based on Copolymer BSP-7. M.O. Graschenkova, A.-M.V. Tomina, O.I. Burya, S.V. Krasnovyd, A.A. Konchyts', B.D. Shanina	9 619
Fullerene-Amyloid Complexes as Perspective Nanocomposites: Molecular Docking Studies. V.M. Trusova, P.E. Kuznetsov, O.A. Zhytniakivska, U.K. Tarabara, K.A. Vus, G.P. Gorbenko ...	12 807	Reduction of Recombination Losses in Near-Surface Diffusion Emitter Layers of Photosensitive Silicon n ⁺ -p-p ⁺ Structures. V.P. Kostylyov, A.V. Sachenko, T.V. Slusar, V.V. Chernenko	9 628
Liquid Crystals and Polymers			
Features of Network Formation in Solutions of Rigid-Chain Polymers. Yu.F. Zabashta, V.I. Kovalchuk, O.S. Svechnikova, S.V. Kondratenko, S.O. Alekseev, A.V. Brytan, L.Yu. Vergun, L.A. Bulavin	2 132	Structural and Morphological Properties of Nanometer Carbon Films Obtained by Electron Beam Sputtering of Graphite. V.O. Yukhymchuk, V.M. Dzhagan, O.F. Isaeva, P.M. Lytvyn, A.A. Korchovy, T.M. Sabov, V.B. Lozinskii, V.S. Yefanov, V.O. Osokin, Yu.A. Kurapov	11 764
Control over Laser Beam Intensities in Liquid Crystal Valves When Recording Dynamic Volume Gratings. V. Mystetskyi, S. Bugaychuk	7 474	Laser-Induced Transformations in Thermally Evaporated Thin TlInSe ₂ Films Studied by Raman Spectroscopy. Y.M. Azhniuk, A.V. Gomonnai, V.V. Lopushansky, O.O. Gomonnai, T. Babuka, V.Y. Loya, I.M. Voynarovych	12 816
Structural Features of Lamellar-Chain Hydrogels. Yu.F. Zabashta, V.I. Kovalchuk, P. Kopčanský, I. Safarik, M.M. Lazarenko, L.Yu. Vergun, L.A. Bulavin	8 536	Physics of Magnetic Phenomena and Physics of Ferroics	
Semiconductors and Dielectrics			
Spectral Characteristics of Passivated CdTe Quantum Dots with Coordinate-Dependent Parameters. I.M. Kupchak, D.V. Korbutyak	1 38	Prospects to Use Amorphous Fe-Ni-Si-B Ribbons in Contactor Cores. N.M. Rafiyev, V.I. Ahmadov, A.A. Isaeva	3 201
Fluctuations of Piezoelectric Polarization in III-Nitride Quantum Wells. A.V. Zinovchuk, D.A. Stepanchikov, R.Yu. Vasylieva, V.S. Slipokurov	1 47	Investigation of Static Shear Stress in a Suspension of Co _{0.2} Ni _{0.8} Fe ₂ O ₄ Nanoparticles in Sesame Oil. H. Lafta Sadeq	6 412
A Theoretical Estimation of Optical, Vibrational and Structural Properties of II-VI Quaternary Alloy Zn _{0.5} Cd _{0.5} S _y Se _{1-y} . R.K. Jhakal, M.D. Sharma, U. Paliwal	3 184		

Magnetocaloric Effect in the One-Dimensional Spin-1/2 XX Model with Two Periodically Varying g -Factors. O.R. Baran	7	488	N.Y. Akhanova, An.D. Zolotarenko, D.V. Schur, M.T. Gabdullin, M. Ualkhanova, T.V. Myronenko, A.D. Zolotarenko, M.V. Chymbai, O.E. Dubrova	1	57			
Surface Physics			Development of Technology for Obtaining Nanosized Heterostructured Films by Ion-Plasma Deposition. M.T. Normuradov, Sh.T. Khozhiev, K.T. Dovranov, X.T. Davranov, M.A. Davlatov, F.K. Khollakov				3	210
Synthesis of Surface Structures during Laser-Stimulated Evaporation of a Copper Sulfate Solution in Distilled Water. I.I. Bondar, V.V. Suran, O.Y. Minya, O.K. Shuaibov, Yu.Yu. Bilak, I.V. Shevera, A.O. Malinina, V.N. Krasilnets	2	138	Interstitial Impurities in Alloys with B19 Structure. S.Yu. Zaginaichenko, Z.A. Matysina, An.D. Zolotarenko, N.A. Shvachko, Ol.D. Zolotarenko, E.P. Rudakova, N.Y. Akhanova, M. Ualkhanova, D.V. Schur, M.T. Gabdullin, T.V. Myronenko, A.D. Zolotarenko, M.V. Chymbai, O.E. Dubrova				6	424
Corrosion Effect on the Adhesive Strength of a Contact between a Hard Indenter and a Soft Elastomer: An Experimental Study. I.A. Lyashenko, V.L. Popov	5	349	Synthesis and Characterization of a Novel Nano-composite Polymer. A.S. Al-Kabbi, S.J. Abbas				9	638
Surfaces with Lowered Electron Work Function: Problems of Their Creation and Theoretical Description. A Review. M.V. Strikha, A.M. Gorriachko	8	549	Effect of Calcination Temperature and Substitution of Erbium on Structural and Optical Properties of Nickel Zinc Ferrite Nanoparticles. K. Vijaya Kumar, S.D. Bhavani				11	772
Plasmonic Phenomena in Biconical and Bipyramidal Metal Nanoparticles. A.V. Korotun	10	695	Chronicle					
Specific Features of Surface Research of $ZnO-SiO_2$ Films by Multifractal Analysis. N.O. Balytska, P.P. Moskvin, G.V. Skyba, L.V. Rashkovetskyi, V.B. Kryzhanivskyy, L.G. Polonskyi	12	822	In Memory of Ernst Anatoliyovich Pashitskii (1936–2023). E.G. Galkina, V.I. Pentegov, A.V. Semenov, S.M. Ryabchenko, M.V. Bondar	5	361			
To the Dimensional Effect in Nanostructured Systems. R.D. Vengrenovich, B.V. Ivanskii, V.I. Kryvetskyi, I.V. Fesiv, S.V. Yarema	1	53	Mykola Petrovych Malomuzh (on his 75th birthday).....	7	503			
Comparative Analysis of Products of Electric Arc Synthesis Using Graphite of Different Grades. Ol.D. Zolotarenko, E.P. Rudakova, I.V. Zagorulko,			Vadym Yevhenovich Lashkaryov, the Outstanding Ukrainian Physicist of the 20th Century, the Discoverer of the $p - n$ Junction in Semiconductors (Dedicated to the 120th Anniversary of his Birthday). M.V. Strikha	10	705			