9th Russian National Conference on Irreversible Processes in Nature and Technics 2017 (9RNC-IPNT)

Journal of Physics: Conference Series Volume 918

Moscow, Russia
25 – 28 January 2017
Table of contents

Volume 918

9th Russian National Conference on Irreversible Processes in Nature and Technics (9RNC-IPNT)

25–27 January 2017, Bauman MSTU, Moscow, Russian Federation

Accepted papers received: 27 October 2017
Published online: 28 November 2017

Preface

9th Russian National Conference on Irreversible Processes in Nature and Technics (9RNC-IPNT)

Peer review statement

Papers

A criterion for estimating the probability of microporosity formation in castings
S N Poliakov, A Yu Korotchenko and S L Timchenko.....1

About magnetism (review)
I N Aliev, M Yu Dokukin, Z A Samedova, D G Melikyants and I S Kopylov.....5

Advanced response of Baikal macroscopic nonlocal correlation detector to solar activity
S M Korotaev, N M Budnev and V O Serdyuk.....11
Analysis of pulse-launched nanosatellite stability in the atmosphere
Yu V Gerasimov, E A Ivanov, G K Karetников, I A Konstantinova and A B Selivanov.....16

Approximate solution to a singular perturbed boundary value problem of thermal shielding
I I Latypov.....23

Approximation of mutual information in a bipartite quantum state under single-party decoherence
S V Rozanov and E O Kiktenko.....31

Calculating vibration-rotation spectrum intensities of laser-induced fluorescence for the $B^1II - X^1Σ^+$ electronic transition in a LiCs molecule
A D Smirnov and V S Boldyrev.....35

Calculation of the Intensity of Physical Time Fluctuations Using the Standard Solar Model and its Comparison with the Results of Experimental Measurements
A N Morozov.....39

The chiral cosmological models with two components
I V Fomin.....52

Denaturation of collagen structures and their transformation under the physical and chemical effects
A. Ivankin, V. Boldirev, G. Fadeev, M. Baburina, A. Kulikovskii and N. Vostrikova.....56
Determination of cracks in structural materials using the radio spectroscopy method
R Yu Gerasimov, Yu V Gerasimov and G N Fadeev.....60

Estimating the railgun plasma piston rational parameters for the nanosatellite acceleration
A G Maslov, Y V Gerasimov and V V. Korzhov.....63

Exact analytical formulae for linearly distributed vortex and source sheets in uence computation in 2D vortex methods
K S Kuzmina, I K Marchevsky and E P Ryatina.....71

Features of surface phase formation during case-hardening of iron- and titanium-based alloys
B E Vintaikin, A V Kamynin, V S Kraposhin, A E Smirnov, K V Terezanova, S A Cherenkova and V I Sheykina.....80

Fractal and topological sustainable methods of overcoming expected uncertainty in the radiolocation of low-contrast targets and in the processing of weak multi-dimensional signals on the background of high-intensity noise: A new direction in the statistical decision theory
A. A. Potapov.....86

Implementation of plasma ions in pistons as a cause of nanosatellite hull defects
A G Maslov, Y V Gerasimov and O P Plotnikova.....105

Light scattering from polar and pseudoscalar modes in doped LiNbO$_3$ and LiTaO$_3$ monocrystals
V S Gorelik, N V Sidorov, A I Vodchits, B P Gorshunov and A Yu Pyatyshev.....112
Magnetoresistance effect in ferromagnetic metal foil

S L Timchenko.....118

Measurement the Finsler transformation parameters of surround space *(when it's "the long-awaited doomsday")*

P I Ivashkin, G N Izmailov, V V Priimochenko, A M Tshovrebov and L N Zherikhina.....123

Mesoporous anodic aluminum oxide photonic crystalline films and its applications

V S Gorelik, A V Pudovkin, Y P Voinov, V V Filatov, Dongxue Bi, Guo Liang Shang and Guang Tao Fei.....127

Modeling sound propagation in a waveguide with a gas-saturated sedimentary layer

M V Yarina.....138

Modes of nanosatellite aerodynamic oscillations in atmosphere

Yu V Gerasimov, E A Ivanov, G K Karetnikov, I A Konstantinova and A B Selivanov.....144

Nonlinear localized elastoplastic waves in a rod

V.I. Erofeev, A.V. Leonteva and A.O. Malkhanov.....149

Nonreciprocal optical element of ring laser gyroscope based on the effect of light entrainment with moving medium

V O Gladyshev, D D Goryushkina and V N Kuryatov.....155

On a certain laminar dynamo model

V V Novikov and L N Fevralskikh.....159
Optimal control problem for linear fractional-order systems, described by equations with Hadamard-type derivative

Sergey Postnov.....165

Optimization of the matrices structural parameters for the synthesis of restricted access media (RAM) adsorbents for chromatography

S Yu Bogoslovskii, V V Echeistov and V S Boldyrev.....186

Parameter optimization of electrolytic process of obtaining sodium hypochlorite for disinfection of water

S Yu Bogoslovskii, N N Kuznetsov and V S Boldyrev.....191

Photoluminescence and polariton dispersion law in terbium nitrate hydrate crystals

V S Gorelik and M G Burdanova.....195

On the nature of crystal plasticity under compression

M N Magomedov.....206

On the polymorphism of silicon and germanium

M N Magomedov.....210

Projector approach to the general linear equation with variables from the subring of the rational functions and a factorable coefficient

T G Voytik, G S Poletaev and S A Yatsenko.....215
Pseudoscalar lattice modes in the amino acid crystals and DNA
V S Gorelik, V P Sverbil, B P Gorshunov and A I Seredin.....219

QCL spectroscopy combined with the least squares method for substance analysis
D A Samsonov, A S Tabalina and I L Fufurin.....227

Raman spectra of lithium compounds
V S Gorelik, Dongxue Bi, Y P Voinov, A I Vodchits, B P Gorshunov, N I Yurasov and I I Yurasova.....233

Reflection spectra and their angular dependences of one-dimensional photonic crystals based on aluminium oxide
V S Gorelik, M M Yashin, A V Pudovkin and A I Vodchits.....241

Simulation of droplet impact onto a deep pool for large Froude numbers in different open-source codes
V N Korchagova, M V Kraposhin, I K Marchevsky and E V Smirnova.....246

Simulation of forming a flat forging
K Solomonov, L Tishchuk and N Fedorinin.....259

Soliton sustainable socio-economic distribution
M A Dresvyannikov, M V Petrova and A M Tshovrebov.....264
Solution of the $k$-space diffusion equation for the problem of a Langmuir plasmons motion in an inhomogeneous turbulent plasma

V V Gorev and D E Strekalov.....270

Stimulated low-frequency Raman scattering in plant virus suspensions

E K Donchenko, O V Karpova, A D Kudryavtseva, S M Pershin, V I Savichev, M A Strokov, N V Tcherniega and K I Zemskov.....275

Structural investigation of laser luminescent response in a rotating ruby crystal

V O Gladyshev, D S Prozorovskiy, D I Portnov and V L Kauts.....281

Supplementary education program for school students "The measurements in nature and technology"

E Burkova, A Kravtsov and G Pogodin.....286

The behavior of nanosatellite body materials during electromagnetic launch

Yu V Gerasimov, I A Konstantinova, L A Konstantinova, R G Rakhimov and A B Selivanov.....288

The interference response of space microsatellite having the form of the Luneberg lens

V O Gladyshev and A G Strunin.....293

The model of interaction between the elements of construction and the layered medium

V G Fomin.....299

Combinational processes in uranil structures

V S Gorelik, V M Korshunov, A I Vodchits, Yu P Voinov and A A Lobyoko.....301