

International Conference on Theoretical Physics 2010

(Dubna-Nano 2010)

Journal of Physics: Conference Series Xqmw g'46:

**Dubna, Russia
5-10 July 2010**

Editors:

**Vladimir Osipov
Valentin Nesterenko
Yury Shukrinov**

ISBN: 978-1-61782-077-9

Printed from e-media with permission by:

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



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

Copyright© (2010) by the Institute of Physics
All rights reserved.

Printed by Curran Associates, Inc. (2010)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

CARBON NANOSYSTEMS

012001 Aharonov-Bohm Effect on Columnar Defects in Thin Graphite and Graphene	1
<i>Y. U. I. Latyshev, A. P. Orlov, E. G. Shustin, N. V. Isaev, W. Escoffier, P. Monceau, C. J. van der Beek, M. Konczykowski, I. Monnet</i>	
012002 Superconducting Proximity Effect in Graphene Nanostructures	7
<i>M. Hayashi, H. Yoshioka, A. Kanda</i>	
012003 Electromagnetic Response of the Composites Containing Chemically Modified Carbon Nanotubes.....	15
<i>A. M. Nemilentsau, M. V. Shuba, P. N. D'yachkov, G. Y. A. Slepyan, P. P. Kuzhir, S. A. Maksimenko</i>	
012004 Elastic Properties of Graphene-Graphane Nanoribbons.....	21
<i>O. E. Glukhova, I. N. Saliy, R. Y. Zhnichkov, I. A. Khvatov, A. S. Kolesnikova, M. M. Slepchenkov</i>	
012005 Anomalous Thermal Conductivity in Multiwalled Carbon Nanotubes with Impurities and Short-Range Order.....	29
<i>V. E. Egorushkin, N. V. Melnikova, A. N. Ponomarev, A. A. Reshetnyak</i>	
012006 Model of Fluid Flow in Nanotube: Classical and Quantum Features.....	37
<i>I. Y. Popov, S. A. Chivilikhin, V. V. Gusarov</i>	
012007 Sub-Poissonian Phonon Distributions in Suspended Carbon Nanotubes.....	45
<i>G. Piovano, F. Cavaliere, M. Sassetto</i>	
012008 The Electronic Spectra of Double-wall Zig-Zag Carbon Nanotube Affected by the Magnetic Field	49
<i>M. Pudlak, R. Pincak</i>	
012009 Conductance Through the Disclination Dipole Defect in Metallic Carbon Nanotubes	54
<i>D. V. Kolesnikov, V. A. Osipov</i>	
012010 The Effect of the Orientation of the Stone-Wales Defects on the Bands Structure of Carbon Nanotubes.....	58
<i>P. Partovi-Azar, A. Namiranian</i>	
012011 Numerical Simulation of Platonic Hydrocarbons and Fullerenes.....	62
<i>K. P. Katin, D. A. Lobanov, M. M. Maslov</i>	
012012 The Study of Formation Conditions of Carbon Films with Different Structure Dimension	66
<i>G. G. Kosakovskii, Z. Y. A. Kosakovskaya, A. M. Smolovich, M. M. Simunin, V. K. Nevolin</i>	
012013 Nanocones Rolling in Hydro-Thermal Medium and Flows in Conical Domains.....	70
<i>I. V. Blinova, K. N. Kyzyurova, I. Y. Popov</i>	
012014 Spin Transport Through a Triangular Graphene Flake	74
<i>R. Farghadan, A. Saffarzadeh, E. Saievar Iranizad</i>	
012015 Rabi Oscillations and Saturable Absorption Effect in Single-Wall Carbon Nanotubes	78
<i>A. M. Nemilentsau, G. Y. A. Slepyan, S. A. Maksimenko</i>	

QUANTUM DOTS

012016 Linear Conductance Oscillations in Quantum Wires and Stripes with Rashba Interaction	82
<i>M. Magdalena Gelabert, Llorenç Serra</i>	
012017 Interaction Effects in Quantum Dots in a Vertical Magnetic Field	90
<i>A. Puente, M. Pons, R. G. Nazmitdinov</i>	
012018 Effective Theory of Electron-Hole Exchange in Semiconductor Quantum Dots	98
<i>E. S. Kadantsev, P. Hawrylak</i>	
012019 Local Franck-Condon Factors in Suspended Carbon Nanotube Quantum Dots	106
<i>F. Cavaliere, Eros Mariani, Renaud Leturcq, Christoph Stampfer, M. Sassetto</i>	
012020 The Effects of Polarization Fields on Exciton Binding Energy in GaN Quantum Dots	114
<i>A. Asgari, S. Asadzadeh</i>	
012021 An Orbital Entanglement in Two-Electron Quantum Dots in a Magnetic Field.....	122
<i>A. Chizhov, R. G. Nazmitdinov</i>	
012022 The Scattering of Hot Electrons by Phonons in AlGaN/GaN Quantum Dot	126
<i>A. Asgari, S. Babanejad</i>	

SPECTROSCOPY AND DYNAMICS OF ATOMIC CLUSTERS

012023 Dynamics of Na Clusters In/On Insulating Substrates	133
<i>M. Bär, B. Faber, P-G. Reinhard, P. M. Dinh, E. Suraud, P. Wopperer</i>	
012024 The Self-Interaction Correction in the Time Domain.....	141
<i>P. M. Dinh, J. Messud, P-G. Reinhard, E. Suraud</i>	
012025 Nanoparticles Dynamics on a Surface: Fractal Pattern Formation and Fragmentation	149
<i>Veronika V. Dick, Ilia A. Solov'yov, Andrey V. Solov'yov</i>	
012026 20-nanogold Au₂₀(T_d) Cluster and Its Hollow Cage Isomers: Structural and Energetic Properties	160
<i>E. S. Kryachko, F. Remacle</i>	
012027 Dynamics of Magnetic Nano-Particle Assembly.....	168
<i>V. N. Kondratyev</i>	

QUANTUM TRANSPORT

012028 Magnetic Flux Structures in Various Shaped Composite Structures with D- and S-wave Superconductors (d-dots).....	173
<i>Masaru Kato, T. Koyama, M. Machida, Shuichi Kawamata, Takekazu Ishida</i>	
012029 Current Noise and Coulomb Effects in Superconducting Contacts.....	181
<i>Arte M. V. Galaktionov, Andrei D. Zaikin</i>	
012030 Intermediate Vortex States in Nanoscale Anti-Dots and Mesoscopic Superconductors	189
<i>K. Hirata, A. Thakur, S. Ooi, T. Mochiku</i>	
012031 Anomalous Non-Equilibrium Electron Transport in One-Dimensional Quantum Nano Wire at Half-Filling: Time Dependent Density Renormalization Group Study	197
<i>M. Okumura, H. Onishi, S. Yamada, M. Machida</i>	
012032 Mo₆S₃I₆ Molecular Wires: From One-Dimensional Electron Fluids to a Self-Organised Critical Self-Assembled Network	204
<i>C. Gadermaier, J. Strle, M. Uplaznik, D. Vengust, B. Bercic, D. Mihailovic</i>	
012033 Tunneling and Transport Dynamics of Trapped Bose-Einstein Condensates	210
<i>V. O. Nesterenko, A. N. Novikov, E. Suraud, J. Kvasil</i>	
012034 Persistent Current Noise	218
<i>Andrew G. Semenov, Andrei D. Zaikin</i>	
012035 Field-Emission Current from Quantum System	222
<i>G. V. Shpatakovskaya</i>	

JOSEPHSON JUNCTIONS

012036 Electrodynamics and Intrinsic Josephson Effects in Multi-Gap Superconductors	226
<i>T. Koyama, Yukihiro Ota, M. Machida</i>	
012037 Theory and Simulation of Electromagnetic Wave Emission from Intrinsic Josephson Junctions.....	232
<i>M. Machida, Y. Ota, N. Sasa, T. Koyama, H. Matsumoto</i>	
012038 Experimental and Theoretical Investigation on High-Tc Superconducting Intrinsic Josephson Junctions.....	240
<i>Alexander Grib, Yury Shukrinov, Frank Schmidl, P. Seidel</i>	
012039 A Tunneling Hamiltonian Theory of π-p Transition in d-wave Superconductor/Ferromagnetic-Insulator Heterostructures	248
<i>Shiro Kawabata, Satoshi Kashiwaya, Yukio Tanaka, Alexander A. Golubov, Yasuhiro Asano</i>	
012040 Theory of Josephson Effects in Iron-Based Multi-Gap Superconductor Junctions	255
<i>Y. Ota, M. Machida, T. Koyama</i>	
012041 Sheet Current Model for Inductances Extraction and Josephson Junctions Devices Simulation.....	263
<i>M. M. Khapaev, M. Yu Kupriyanov</i>	
012042 Study of Charge-Phase Diagrams for Coupled System of Josephson Junctions.....	271
<i>M. Hamdipour, Y. Shukrinov</i>	
012043 Peculiarities of Phase Dynamics of Coupled Josephson Junctions in CCJJ and CCJJ+DC Models.....	275
<i>Y. U. M. Shukrinov, I. R. Rahmonov, M. E. L. Demery</i>	

012044 Influence of Josephson Current Second Harmonic on Stability of Magnetic Flux in Long Junctions.....	279
<i>P. K. H. Atanasova, T. L. Boyadjiev, Y. U. M. Shukrinov, E. V. Zemlyanaya, P. Seidel</i>	
012045 Tunnel Magnetoresistance of an Organic Molecule Junction	283
<i>Ashhadi Mojtaba, Shah Tahmasebi Nasser, Vahedi Davoud, Askari Mostafa</i>	

MODELLING

012046 Magnetic Properties of 3d Transition Metals Adsorbed on Benzene: A Density Functional Theory Study.....	289
<i>Mahdi Sargolzaei, Farideh Gudarzi</i>	
012047 The Application of Adiabatic Method for the Description of Impurity States in Quantum Nanostructures.....	294
<i>A. A. Gusev, O. Chuluunbaatar, S. I. Vinitsky, E. M. Kazaryan, H. A. Sarkisyan</i>	
012048 Two Electronic States in a Quantum Ring: Mathieu Equation Approach.....	302
<i>N. G. Aghekyan, E. M. Kazaryan, L. S. Petrosyan, H. A. Sarkisyan</i>	
012049 New Stochastic Equation for a Harmonic Oscillator: Brownian Motion with Adhesion.....	310
<i>M. Gitterman</i>	
012050 Cavity Soliton Mobility in Semiconductor Microresonators Above Laser Threshold	317
<i>R. Kheradmand, Mansour Eslami</i>	
012051 Charge Transport in the α-Helix Proteins	323
<i>D. Cevizovic, S. Galovic, S. Zekovic, Z. Ivic</i>	
012052 Mobility in Epitaxial GaN: Limitation of Electron Transport Due to Dislocation Walls	327
<i>S. Krasavin</i>	
012053 Spin and Orbital Magnetism in 3d Transition Metal Nanowires (Mn, Fe, and Co): A Density Functional Theory Study.....	331
<i>Mahdi Sargolzaei, Samaneh Ataei</i>	
012054 Study of All Optical Switching Behaviour in Semiconductor Microresonator with Nano-Active Layer	335
<i>R. Kheradmand, H. Aryan</i>	
012055 The Effects of Magnetic and Nonmagnetic Impurities on Electronic Properties of Semiconductor Multilayers.....	340
<i>L. Gharraee, A. Saffarzadeh</i>	
012056 Plasma Oscillations and Electron-Electron Interactions in 2D Electron Systems	344
<i>A. B. Dubois</i>	
012057 Lattice Heat Capacity of Mesoscopic Nanostructures	348
<i>B. Gharekhanlou, S. Khorasani, A. Vafai</i>	

APPLICATIONS AND PERSPECTIVES

012058 “Spontaneous Movable Semifluxons” - New Phenomenon Arising in Nano-Electronic Superconducting System	352
<i>Hanaa Farhan-Hassan, F. V. Kusmartsev</i>	
012059 Physical Limits for Scaling of Integrated Circuits	361
<i>Waldemar Nawrocki</i>	
012060 The Effect of Surfactants on Chemical Development of Ion Track Nanopores in Polymer	369
<i>Y. Yamauchi, P. Apel</i>	
012061 Bipolar Transistor Based on Graphene	373
<i>B. Gharekhanlou, S. B. Tousaki, S. Khorasani</i>	
012062 Nanoscale Characterization of Martensite Structures in Copper Based Shape Memory Alloys	377
<i>O. Adiguzel</i>	
012063 The Origin of Multibranch IV-Characteristics of Shunted Josephson Junction Arrays	381
<i>Alexander Grib, P. Seidel</i>	
Author Index	