

ALEXEI ZUBAREV

OBJECTIVE

My goal is to analyze complex systems in order to enlarge fundamental knowledge and to develop innovative applications. Research interests include but are not limited to renewable energy, nanotechnologies and nanostructures, chaos and selforganization, mesoscopic scale and quantum phenomena.

WORK EXPERIENCE

PERIOD	July 2015 — Present
EMPLOYER	National Institute for Laser, Plasma and Radiation Physics Magurele, Romania
JOB TITLE	Scientific Researcher Numerical and analytical study of plasma laser interaction and fusion plasma.
PERIOD	October 2013 — July 2015
EMPLOYER	National Institute for Laser, Plasma and Radiation Physics Magurele, Romania
JOB TITLE	Research Assistant Numerical and analytical study of 2D fluids and plasma instabilities.

EDUCATION

UNIVERSITY	University of Bucharest	Bucharest, Romania
PERIOD	October 2016 — Present	
DEGREE	Phd in Physics	
THESIS	Contributions to the Study of Quantum Information Protocols in Gaussian Open Systems	
PERIOD	October 2013 — June 2015	
DEGREE	Master in Physics	
SECTION	Advanced Materials and Nanostructures	
PERIOD	October 2010 — June 2013	
DEGREE	Bachelor in Physics	
THESIS	Graphene based periodic structures in external fields	

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COMPUTER SKILLS

Programming	Fortran, C++, Bash, Python
Mathematical programs	Wolfram Mathematica, Maxima, Octave
Operating System	Debian/Ubuntu Linux
PIC simulation	EPOCH
CFD simulations	Open FOAM
Solid state simulations	HiperChem, Accelerys
Experimental data analysis	Fytik (Raman, FTIR) NT-MDT Image Analysis (Scanning microscopy)
Cad	FreeCAD
Data visualization	GNUPlot, ParaView, Origin, Visit
Office	LaTeX, LibreOffice/Microsoft-Office, Prezi

EXPERIMENTAL TECHNIQUES

Material Synthesis	Arc discharge in liquids Sol-Gel method
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LANGUEGES

Romanian	Native speaker
Russian	Native speaker
English	Fluent Speaker
Turkish	Beginner

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Graphene based structures

- AUTHORS** A. Zubarev, D. Dragoman
TITLE Low-energy equivalence between periodically gated graphene structures and bilayer-like gated graphene.
DATA Applied Physics Letters 104.18 (2014): 183110
IF 3.302
KEYWORDS Graphene, periodic structures, transport
- AUTHORS** A. Zubarev, D. Dragoman
TITLE Ballistic charge carrier transmission through graphene multi-barrier structures in uniform magnetic field.
DATA Journal of Physics D: Applied Physics 47.42 (2014): 425302
IF 2.721
KEYWORDS Graphene, magnetic field, tunneling, transport
- AUTHORS** A. Zubarev, D. Dragoman
TITLE Tunable energy filtering of ballistic electrons in graphene.
DATA Journal of Physics D: Applied Physics 45.7 (2012): 075301.
IF 2.528
KEYWORDS Graphene, device proposal, magnetic field
- AUTHORS** A. Zubarev, D. Dragoman
TITLE Effect of Schrodinger-Dirac transformations on electron transport in graphene-based structures surrounded by conducting regions.
DATA Journal of Physics D: Applied Physics 46.24 (2013): 245301
IF 2.521
KEYWORDS Graphene, interfaces, transport
- AUTHORS** A. Zubarev, D. Dragoman
TITLE Applications of multi-barrier structures in graphene.
DATA Physica E: Low-dimensional Systems and Nanostructures 44.7 (2012): 1687-1691.
IF 1.522
KEYWORDS Graphene, device proposal, periodic structures

Renewable energy

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|----------|---|
| AUTHORS | M. Cuzminschi, R. Gherasim, V. Girleanu, A. Zubarev , I. Stamatin |
| TITLE | Innovative thermo-solar air heater |
| DATA | Energy and Buildings Volume 158, (2018), Pages 964-970 |
| IF, AIS | 4.495, 0.733 |
| KEYWORDS | Air heater, solar energy, passive house
Arrays of Josephson junctions |
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- | | |
|----------|---|
| AUTHORS | M. Cuzminschi, A. Zubarev |
| TITLE | Charging of Superconducting Layers in Arrays of Coupled Josephson Junctions for Overcritical Currents. |
| DATA | Crystals Volume 9.7 (2019): 327 |
| IF | 2.061 |
| KEYWORDS | Josephson junctions, hysteresys, charge traveling waves
Quantum intformation theory |
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- | | |
|----------|--|
| AUTHORS | M. Cuzminschi, A. Zubarev , A. Isar |
| TITLE | Quantum Fidelity of Two-Mode Gaussian States in a Thermal Reservoir |
| DATA | Proceedings of the Romanian Academy, Series A 20.3 (2019): 251-258 |
| IF, AIS | 1.752, 0.248 |
| KEYWORDS | Gaussian Sates, fidelity, open systems |
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- | | |
|----------|---|
| AUTHORS | A. Zubarev , M. Cuzminschi, A. Isar |
| TITLE | Optimal Fidelity of Teleportation Using Two-Mode Gaussian States in a Thermal Bath as a Resource |
| DATA | Romanian Journal of Physics 64.7-8 (2019): 108 |
| IF, AIS | 1.460, 0.208 |
| KEYWORDS | Gaussian Ssates, quantum teleportation, open systems |

University Contests

AWARD The Best Player Prize, Honorable Mention
 CONTEST **International Physicists Tournament**
 PLACE Dolgoprudny, Rusia, **March 2011**

AWARD III Grade
 CONTEST **International Physicists Tournament**
 PLACE Dolgoprudny, Rusia, **April 2012**

AWARD Year student for central and eastern Europe, Grade II (overall ranking)
 CONTEST **Academic Excellence for Moldova**
 PLACE Chisinau, Moldova, **December 2012**

Physics Olympiads

AWARD Silver Medal
 CONTEST **International Physics Olympiad**
 PLACE Zagreb, Croatia, **July 2010**

AWARD Silver Medal, Bucharest University Honorable Mention
 CONTEST **Master of Science**
 PLACE Bucharest, Romania, **February 2010**

AWARD Romanian Physical Society Honorable Mention
 CONTEST **Romanian National Physics Olympiad**
 PLACE Constanta, Romania, **February 2010**

AWARD Honorable Mention, Special Diploma from Humanitarian Fond for Cooperation
 CONTEST **Internet Olympiad "Nanotechnologies– leap into the future"**
 PLACE Moskow, Rusia, **April 2010**

AWARD Bronze Medal
 CONTEST **International Physics Olympiad**
 PLACE Merida, Maxico, **July 2009**

AWARD First Place
 CONTEST **National Vrancean-Procopiu Contest**
 PLACE Bacau, Romania, **November 2008**

AWARD Second Place
 CONTEST **CSI Interdisciplinary Olympiad**
 PLACE Zelenograd, Rusia, **October 2008**

Mathematical Olympiads

AWARD	Gold Medal
CONTEST	International “Archimedes” Contest
PLACE	Bucharest, Romania, June 2010
AWARD	Silver Medal
CONTEST	Balkan Mathematical Olympiad
PLACE	Chisinau, Moldova, Mai 2010
AWARD	Gold Medal
CONTEST	International “Archimedes” Contest
PLACE	Bucharest, Romania, June 2009
AWARD	Bronze Medal
CONTEST	Balkan Mathematical Olympiad
PLACE	Serbia, Mai 2009
AWARD	Winners Award
CONTEST	CSI Interdisciplinary Olympiad
PLACE	Zelenograd, Rusia, October 2008
AWARD	First Place
CONTEST	Changorous International Contest
PLACE	Chisinau, Moldova, November 2008
AWARD	Bronze Medal
CONTEST	Balkan Mathematical Olympiad
PLACE	Ohrid, Macedonia, Mai 2008
AWARD	Participation
CONTEST	International Mathematical Olympiad
PLACE	Madrid, Spain, July 2008
AWARD	First Place
CONTEST	CSI Interdisciplinary Olympiad
PLACE	Zelenograd, Rusia, October 2007
AWARD	Silver Medal
CONTEST	International “Archimedes” Contest
PLACE	Bucharest, Romania, June 2007
AWARD	Bronze Medal
CONTEST	Balkan Mathematical Olympiad
PLACE	Chisinau, Moldova, June 2006

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PRACTICES AND SCHOOLS

SCHOOL	Workshpop Cetal
PLACE	Magurele, Romania, July 2018
AND DATE	
SCHOOL	ELI Summer School
PLACE	Cheile Gradistei, Romania, August 2017
AND DATE	
PROGRAM	JINR Summer Student Program
PLACE	Dubna, Russia, July - August 2017
AND DATE	
SCHOOL	Mathematical Modeling of Complex Systems
PLACE	Athena, Greece, July 2014
AND DATE	
SCHOOL	Quantum Information Processing
PLACE	Julich, Germany, February - Marth 2013
AND DATE	
PRACTICE	JINR Summer Student Practice
PLACE	Dubna, Rusia July 2013
AND DATE	
STUDY	CERN
VISIT	
PLACE	Geneve, Switherland November 2012
AND DATE	
PRACTICE	JINR Summer Student Practice
PLACE	Dubna, Rusia July 2012
AND DATE	
PRACTICE	JINR Summer Student Practice
PLACE	Dubna, Rusia July 2011
AND DATE	
SCHOOL	Macromolecular Systems in Soft and Living Matters
PLACE	Julich, Germany, February 2011
AND DATE	

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Simulations of Josephson junctions behavior

AUTHOR	M. Cuzminschi, A. Zubarev
TITLE	Chaos in systems of highly dissipative Josephson junctions
EVENT	18th International Balkan Workshop on Applied Physics and Materials Science , Constanta, Romania, (July 2018)
AUTHOR	M. Cuzminschi, M. Gusanu, A. Zubarev
TITLE	Plasma traveling waves in stacks of highly dissipative Josephson junctions
EVENT	TIM18 Physics Conference , Timisoara, Romania, (May 2018)
AUTHORS	M. Cuzminschi, A. Zubarev , Yu. M. Shukrinov
TITLE	Hardware chaos generator for superconducting nano-circuits.
EVENT	XXI International Symposium “Nanophysics and Nanoelectronics” , Nizhny Novgorod, Russia (March 2018)
AUTHORS	M. Cuzminschi, A. Zubarev , Yu. M. Shukrinov
TITLE	Stable traveling waves in highly dissipative array of coupled Josephson junctions.
EVENT	XXI International Symposium “Nanophysics and Nanoelectronics” , Nizhny Novgorod, Russia (March 2018)
AUTHORS	M. Cuzminschi, A. Zubarev , Yu. M. Shukrinov
TITLE	Influence of Radiation on the Chaos in a Coupled System of Josephson Junctions with Large Dissipation
EVENT	XXI International Scientific Conference of Young Scientists and Specialists (AYSS-2017) , Dubna, Russia (Oct 2017)
AUTHORS	A. Zubarev , M. Cuzminschi, Yu. M. Shukrinov
TITLE	Influence of External Radiation upon the Second Hysteresis Zones
EVENT	XXI International Scientific Conference of Young Scientists and Specialists (AYSS-2017) , Dubna, Russia (Oct 2017)
AUTHORS	A. Zubarev
TITLE	The c-axis traveling charge wave in a system of coupled Josephson junctions with large dissipation
EVENT	Advanced many-body and statistical methods in mesoscopic structures , Busteni, Romania (Sept 2017)
AUTHORS	A. Zubarev , M. Cuzminschi, Yu. M. Shukrinov
TITLE	Manifestation of chaotic behavior in a system of coupled Josephson junctions with large dissipation
EVENT	8th International Student Summer School “Nuclear Physics - Science and Applications” , Brasov, Romania (Aug 2017)

AUTHORS M. Cuzminschi, **A. Zubarev**, Yu. M. Shukrinov
TITLE **Manifestation of collective behavior in coupled systems of Josephson junctions**
EVENT **8th International Student Summer School "Nuclear Physics - Science and Applications"**, Brasov, Romania (Aug 2017)

AUTHORS M. Cuzminschi, **A. Zubarev**, Yu. M. Shukrinov, I. Stamatina
TITLE **Multi-state arrays of Josephson junctions with high dissipation**
EVENT **EMRS 2017 Spring meetin**, May the 22th–26th 2017, Strasbourg, France

AUTHORS **A. Zubarev**, M. Cuzminschi, Yu. M. Shukrinov
TITLE **Influence of dissipation and coupling on collective behavior in systems of Josephson junctions**
EVENT **XXI International Symposium "Nanophysics and Nanoelectronics"**, March the 13th-16th 2017, Nizhny Novgorod, Russia

AUTHORS M. Cuzminschi, **A. Zubarev**, Yu. M. Shukrinov
TITLE **Chaos in a coupled system of Josephson junctions with large dissipation.**
EVENT **XXI International Symposium "Nanophysics and Nanoelectronics"**, March the 13th-16th 2017, Nizhny Novgorod, Russia

Graphene based structures

AUTHORS **A. Zubarev**
TITLE **Graphene based devices for solar investigations.**
EVENT **STORM 2015**, Mamaia, Romania (Sept 2015)

AUTHORS **A. Zubarev**
TITLE **Investigation of Monolayer-Bilayer Composite Graphene Structures.**
EVENT **International Semiconductor Conferince 2014**, Sinaia, Romania (Oct 2014)

AUTHORS **A. Zubarev**, D. Dragoman
TITLE **Calculus of transmission in graphene gated structures using effective mass method.**
EVENT **International Semiconductor Conferince 2013**, Sinaia, Romania (Oct 2013)

AUTHORS **A. Zubarev**, D. Dragoman
TITLE **Applications of devices with multibarrier structures in graphene.**
EVENT **International Semiconductor Conferince 2012**, Sinaia, Romania (Oct 2012)

Synthesis of nanomaterials

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AUTHOR	A. Zubarev , M. Cuzminschi, A.-M. Iordache, S.-M. Iordache
TITLE	Synthesis of superconducting ceramic via sol-gel method
EVENT	18th International Balkan Workshop on Applied Physics and Materials Science , Constanta, Romania, (July 2018)
AUTHOR	A. Zubarev , M. Cuzminschi, A. M. Iordache, S. M. Iordache, I. Stamatina
TITLE	Synthesis of multilayer graphene via arc discharge in decaline
EVENT	TIM18 Physics Conference , Timisoara, Romania, (May 2018)
AUTHORS	A. Zubarev , M. Cuzminschi, A.-M. Iordache
TITLE	MaProduction of new nanocarbon forms by arc discharge in submerged liquid
EVENT	8th International Student Summer School "Nuclear Physics - Science and Applications" , Brasov, Romania (Aug 2017)
AUTHORS	A. Zubarev , I. Stamatina
TITLE	Synthesis of exotic carbon material in non-equilibrium dense plasmas
EVENT	17th Conference on Plasma Physics and Applications (CPPA 2017) , Magurele, Romania, (June 2017)
AUTHORS	A. Zubarev , Ana-M. Iordache, A. Balan, A. Cucu, M. Iordache, M. Cuzminschi, I. Stamatina
TITLE	Synthesis of nanocarbon structures using arc discharge in submerged organic Liquid
EVENT	EMRS 2017 , Mai 2017 (Strasbourg, France)
AUTHORS	I. Stamatina, C. Serban, A. Zubarev , A. Balan, W. H. Albanda, C. Ceaus, S. M. Iordache, S. N. Stamatina, E. Vasile
TITLE	Titanium compounds-synthesis in arc discharge in submerged water
EVENT	EMRS 2017 , Mai 2017 (Strasbourg, France)
AUTHORS	A. Zubarev , A.-M. Iordache, I. Stamatina
TITLE	Theoretical analysis of spirographene quantum dots.
EVENT	EMRS 2015 , Mai 2015 (Nits, France)
AUTHORS	A.-M. Iordache, A. Zubarev , S.-M. Iordache, S. Stamatina, I. Stamatina
TITLE	Nanocarbon synthesis by electrical discharge in carbon containing liquids.
EVENT	EMRS 2015 , Mai 2015 (Nits, France)
AUTHORS	I. Stamatina, A. Zubarev , A.-M. Iordache, S.-M. Iordache, S. Stamatina
TITLE	Spirographene the new exotic material.
EVENT	EMRS 2015 , Mai 2015 (Nits, France)

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AUTHORS I. Ion, **A. Zubarev**, I. Stamatina.
TITLE **Comparative analysis graphene and spirographene quantum dots.**
EVENT **International Physics Conference TIM-12**, Timisoara, Romania (Nov 2012)

AUTHORS I. Ion, **A. Zubarev**, A. Cucu, A. Andronie, S. Iordache, S. Stamatina and I. Stamatina.
TITLE **Graphene's proprieties obtained from Graphite and Graphite Oxides.**
EVENT **EMRS 2011**, Mai 2011 (Nits, France)

Plasma and Fluid Dyniamiscs

AUTHORS **A. Zubarev**, F. Spinianu, M. Vlad
TITLE **Self-organization in mesoscopic plasmas.**
EVENT **The Joint Meeting on Quantum Fields and Nonlinear Phenomena**, Sinaia, Romaia (April 2018)

AUTHORS **A. Zubarev**
TITLE **Estimation of Filamentation Delay for High-Intensity Laser-Irradiated Plasma.**
EVENT **ELI Summer School**, Cheile Gradistei, Romania (Aug 2017)

AUTHORS **A. Zubarev**, F. Spinianu, M. Vlad
TITLE **2D coherent motion, Painleve III and Random Matrices.**
EVENT **The Joint Meeting on Quantum Fields and Nonlinear Phenomena**, Sinaia, Romaia (Mart 2016)

AUTHORS F. Spineanu, M. Vlad, **A. Zubarev**
TITLE **Stationary asymptotic states in 2D MHD**
EVENT **4th PhD. Schools on "Mathematical Modeling of Complex Systems"**, Athena, Greece (Jule 2014)

Renewable energy

AUTHORS R. Gherasim, I. Stamatina, M. Cuzminschi, V. Rata, **A. Zubarev**
TITLE **Solar converters for passivated buildings in rural and urban settlements.**
EVENT **21st National Conference with international participation "Progress in Cryogenics and Isotopes Separation"**, Romania, Călimanesti-Căciulata Resort, Vâlcea County, October, 19-21, 2016

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