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PERSONAL INFORMATION

Bogdan Vasile MIHALCEA

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Sex Male | Date of birth 01/01/1965 | Nationality: Romanian

POSITION

Snr. Rsch. Scientist 2 at the Natl. Inst. for Laser, Plasma and Radiation Phys (INFLPR), Atomistilor Str. Nr. 40, 077125 Magurele, Ilfov County, Romania ; http://www.inflpr.ro

WORK EXPERIENCE

Replace with dates (from – to)

Replace with occupation or position held

05. 2020 -
- **Science Team member in the International Space Station – Space Optical Clock – Pathfinder (I-SOC-PF) candidate mission of the European Space Agency (ESA).**

09. 2018 – 03. 2023
- **COST Action CA 17113** *Trapped Ions: Progress in Classical and Quantum Applications (TIPICQA)* Member of the Management Committee

07. 2017 – 07. 2019
- Project Director of the Romanian Space Agency (ROSA) Contract Nr. 137/2017 *Development of quadrupole and multipole ion trap based mass spectrometers for optical characterization and chemical analysis of atmospheric aerosol particles (07. 2017 – 07. 2019)*

09. 2017 – 09. 2020
- **Technical Manager** for **ESA Contract No 4000121912/17/NL/CBi** entitled **Laser Plasma Accelerators as tools for Radiation Hardeness Assessment (RHA) Studies and Tests in support of ESA space missions (PARAHARD).**

06. 2014 – 07. 2017
- **Technical Manager** for **ESA Contract 4000111242/14/NL/CBi** entitled **Feasibility Study for the Use of the Cetal Infrastructure.**

12. 2010 – 12. 2014
- **COST Action MP1001** *Ion Traps for Tomorrow Applications (IOTA)*, Member of the Management Committee

06. 1996 – 10. 2018
- Snr. research Scientist 3 at INFLPR between 1996 and 2018

- Head of the ion trap experiment in INFLPR since 2012

09. 1994 – 06. 1998
- Associate Assistant of the Electronics Dept. from the Faculty of Physics, 1994-1998, teaching "Electronic Devices and Circuits".

09. 1998 – 06. 2000
- Associate Lecturer of the Electronics Dept. from the Faculty of Physics, 1998-2000, teaching "Electronic Devices and Circuits"

Business or sector Research & Development

EDUCATION AND TRAINING

Replace with dates (from - to)

Replace with qualification awarded

Replace with EQF (or other) level if relevant

- 02.2015 – ESA Course on Standardization, Bucharest, University of Agronomic Science and Veterinary Medicine → good knowledge of European Cooperation for Space Standardization (ECSS) and standards related to European Space Agency (ESA)

- 21-24.01.2014 ESA Course "How to Write a Successful Contractual and Financial Proposal in Response to an ESA ITT" → experience in writing ESA proposals

- 2002 → CCNA Associate

- Institute of Atomic Physics (IFA), Bucharest → PhD in Plasma Physics and ion trapping techniques. Ph.D. thesis title: "*Contributions to the study of the transition from chaos to order in rarefied microplasmas*" (IFA, Dec. 1997).

- Univ. of Bucharest, Faculty of Physics 1984-1989 → **M. Sc. in Physics Engineering (Measurement and Control Devices - Metrology)**. Diploma thesis: "Electronic system for temperature control of the Hydrogen maser", Univ. of Bucharest (1989)

▪ **Scientific Record:**

▪ ion traps, atomic spectroscopy, frequency metrology, precision measurements
▪ plasma physics
▪ strongly coupled Coulomb systems (SCCS) and many-body systems consisting of particles levitated in electrodynamic traps
▪ analog and digital electronics
▪ Quantum and nonlinear optics (nonlinear states of motion), study of classical and quantum chaos for trapped ions
▪ atomic clocks (microwave and optical)
▪ Electronic systems related to the above (electronic phase lock systems for driving professional quartz oscillators, electronic regulators, linear and SMPS, etc.)

PERSONAL SKILLS

Mother tongue(s)   Romanian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
	Replace with name of language certificate. Enter level if known.				
French	C2	C2	C1	C1	C1
Italian	C2	C2	B2	B2	B2
German	B2	C2	B2	B2	B2
	Replace with name of language certificate. Enter level if known.				

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Communication skills

▪ Very good communication skills gained as University lecturer and through scientific research activity dissemination

Organisational / managerial skills

Replace with your organisational / managerial skills. Specify in what context they were acquired.
Example:
▪ leadership → project director or scientific director in national and international projects, with teams larger than 10 people
▪ initiative (initiator and responsible for international scientific partnerships)
▪ positive attitude → open-minded, oriented towards problem solving
▪ creativity → writes and submits complex scientific proposals
▪ ability to suggest, organize and perform complex experiments
▪ ability to write scientific papers
▪ ability to present scientific results in professional workshops or to the general audience
▪ experience in leading student M.Sc. and Ph.D. activity

Job-related skills	▪ good command of plasma physics methods of investigation ▪ very good command of trapped ion physics ▪ good command of analog and digital electronic design, radiofrequency (RF) design ▪ good command of quantum mechanics, classical and quantum optics, differential systems theory, chaos theory

Digital competence	SELF-ASSESSMENT				
	Information processing	Communication	Content creation	Safety	Problem solving
	Proficient user	Proficient user	Proficient user	Proficient user	P

Levels: Basic user - Independent user - Proficient user
Digital competences - Self-assessment grid

Replace with name of ICT-certificate(s)

Replace with your other computer skills. Specify in what context they were acquired.

▪ excellent command of LaTeX professional editing software
▪ good command of Matlab, Mathematica and Maple, for numerical modelling of the underlying physical processes
▪ CCNA Associate (Dec. 2002).
▪ very good command of GIMP (graphics and image processing)
▪ good command of electronic design software such as Kicad and Fritzing
▪ basic command of C, C++, PHP, MySQL and Python programming (phpMySQL, Code::Blocks, Geany, Spyder3)
▪ good command of open-source mathematics software system: Sage Mathematics
▪ very good command of gnuplot
▪ excellent command of ArchLinux, FreeBSD, NetBSD, Debian, etc
▪ very good command of LibreOffice and Microsoft Office suite (word processor, spread sheet, presentation software)

Other skills	Replace with other relevant skills not already mentioned. Specify in what context they were acquired. Example: ▪ very solid command of universal history and geography
Driving licence	Replace with driving licence category/-ies. Example: B

ADDITIONAL INFORMATION

- \> 33 papers in ISI journals, more than 70 articles in international conference proceedings with referees
- 10 patents (5 patents on methods related to ion traps)
- More than 210 citations
- 2 lectures (invited lessons)
- IOP Outstanding Reviewer Award winners in 2018 for Journal of Physics B: Atomic, Molecular and Optical Physics
- IOP Outstanding Reviewer Award winners in 2019 for Physica Scripta

Referee for the following journals:

- **European Phys. J. Plus**
- **European Phys. J. D**
- **J. Applied Phys.**
- **J. Phys. B**
- **Plasma Physics and Controlled Fusion**
- **J. Phys. D**
- **J. Phys. G**
- **Physica Scripta**
- **New Journal of Physics**
- **Applied Sciences**
- **Photonics**
- **Quantum Reports**
- **Symmetry**
- **J. Phys. Communications**
- **Atoms**

Topic Editor for Photonics (MDPI Basel) since 03.2021

ANNEXES

Recent papers

1. Bogdan M. Mihalcea, *Coherent states for trapped ions. Applications in quantum optics and precision measurements,* Proc. of the Ninth Meeting on CPT and Lorentz Symmetry (CPT'22), Indiana University, Bloomington, May 17–26, 2022, World Scientific ; https://doi.org/10.48550/arXiv.2206.12604

2. Bogdan M. Mihalcea, *Quasienergy operators and generalized squeezed states for systems of trapped ions*, Ann. Phys. **442** (7) 169826 (2022); https://doi.org/10.1016/j.aop.2022.168926

3. Bogdan M. Mihalcea, S. Lynch, *Investigations on Dynamical Stability in 3D Quadrupole Ion Traps*, Applied Sciences **11** (7) 2938 (2021); https://doi.org/10.3390/app11072938

4. Bogdan M. Mihalcea, V. Filinov, R. Syrovatka, L. Vasilyak, *The physics and applications of strongly coupled plasmas levitated in electrodynamic traps,* https://arxiv.org/abs/1910.14320 (2019); under evaluation

5. A. Groza, M. Serbanescu, B. Butoi, E. Stancu, M. Straticiuc, I. Burducea, A. Balan, A. Chirosca, B. Mihalcea, M. Ganciu, *Advances in Spectral Distribution Assessment of Laser Accelerated Protons using Multilayer CR-39 Detectors*, Applied Sciences **9** (10) 2052 (2019), https://doi.org/10.3390/app9102052

6. Bogdan M. Mihalcea, Squeezed Coherent States of Motion for Ions Confined in Quadrupole and Octupole Ion Traps, Annals of Physics **388** (1), p. 100-113 (2018); https://doi.org/10.1016/j.aop.2017.11.004

7. B. Mihalcea, *Study of Quasiclassical Dynamics of Trapped Ions Using the Coherent State Formalism and Associated Algebraic Groups*, Rom. Journ. Phys. **62** (5-6) 113 (2017); https://www.nipne.ro/rjp/2017_62_5-6/RomJPhys.62.113.pdf

8. B. Mihalcea et al, *Multipole electrodynamic ion trap geometries for microparticle confinement under SATP conditions*, J. Appl. Phys. **119** 114303 (2016); https://doi.org/10.1063/1.4943933

9. B. Mihalcea et al., *Multipole Traps as Tools in Environmental Studies*, Rom. Journ. Phys. **61** (7-8), p. 1395-1411 (2016); https://www.nipne.ro/rjp/2016_61_7-8/RomJPhys.61.p1395.pdf

▪ CCNA diploma (valid 2002-2006)

▪ ESA Diploma from Course "How to Write a Successful Contractual and Financial Proposal in Response to an ESA ITT" (24.01.2014);

▪ English certified translator Diploma since 1985

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