PERSONAL INFORMATION

Bogdan-Vasile MIHALCEA

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Skype Bogdan Mihalcea Yahoo

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

WORK EXPERIENCE

05. 2019 -
07.1996 – 04. 2019

Senior research scientist rank 2
Senior research scientist rank 3

National Inst. for Laser, Plasma and Radiation Physics (INFLPR)

12. 2023 -
- Appointed member of the Facility Definition Team (FDT) “Atomic Clocks” within the European Space Agency (ESA)

01. 2023 – 06. 2025
- Project Manager INFLPR, Romanian National Quantum Communications Infrastructure (RoNaQCI), Project ID: **101091562**

05. 2020 -
- Science Team Member in the ESA Candidate Mission International Space Station-Space Optical Clock-Pathfinder (I-SOC-PF)

09.2018 – 03. 2023
- Management Committee (MC) Member in the COST Action **CA 17113** *Trapped Ions: Progress in Classical and Quantum Applications* (TIPICQA)

09. 2017 – 09.2020
- Technical Manager ESA Contract No. **4000121912/17/NL/CBi** *Laser Plasma Accelerators as tools for Radiation Hardeness Assessment (RHA) Studies and Tests in support of ESA space missions*

07. 2017 – 07. 2019
- Project Manager Contract **136/2017** Romanian Space Agency (ROSA) Title: *Development of quadrupole and multipole ion trap based mass spectrometers for optical characterization and chemical analysis of atmospheric aerosol particles*

06. 2014 – 07. 2017
- Technical Manager ESA Contract No. **4000111242/14/NL/CBi** *Feasibility Study for the Use of the Cetal Infrastructure*

12. 2010 – 12. 2014
- MC member COST Action MP1001 *Ion Traps for Tomorrow Applications*

Business or sector Research & Innovation

EDUCATION AND TRAINING

10. 2011 – 11.2011

Short Term Scientific Mission (STSM)

Optical Clocks and Complex Systems Group, PTB Braunschweig

- *Sympathetic Cooling of Coulomb Crystals for Optical Clocks*

02. 1993 – 12.1997

PhD in Plasma Physics

Institute of Atomic Physics (IFA), 077125 Măgurele, Romania

- *PhD Thesis: Phase transitions of ultracold trapped ions* (12. 1997)

09. 1984 – 06.1989

Master of Science (M.Sc.) in Physics Engineering

Faculty of Physics, Univ. of Bucharest – specialized in Measurement and Control Devices

- *M.Sc. Thesis: Electronic system for thermal control of an active Hydrogen maser* (06. 1989)

PERSONAL SKILLS

Mother tongue(s) Romanian

UNDERSTANDING	SPEAKING	WRITING

Other language(s)

	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
French	C1	C1	C1	C1	C1
Italian	B2	C2	B2	B2	B2
German	B1	C1	B1	B1	B1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Communication skills

- Ability to have comprehensive conversations in multiple foreign languages
- very good communication skills developed along 30 years of career in science and teaching

Organisational / managerial skills

- leadership → Manager in many international and national contracts, with teams of up to 25 – 30 people
- initiative → responsible for initiating international and national partnerships in physics (ion traps, quantum technologies, plasma physics, photonics)
- creativity → able to write international partnerships either as coordinator or partner
- positive attitude → open, good communicator, able to motivate members of a team
- able to work in a team, either as a leader or as a team member

Job-related skills

- good command of quantum technologies, ion traps, analogue and digital electronics

Computer skills

- Excellent command of LaTeX professional editing
- Advanced user of UNIX (FreeBSD, NetBSD) and Linux (Ubuntu, Debian, RHEL, Arch Linux)
- Advanced user of text processing suites such as LibreOffice, Microsoft Office
- Good command of Python, PHP, HTML5
- Good command of Sage Mathematics, Maple, Mathematica

Other skills

- Excellent command of universal history and geography

Driving licence

- B

ADDITIONAL INFORMATION

Publications
Presentations
Projects
Conferences
Seminars
Honours and awards
Memberships
Referencesetc

Over 35 peer-reviewed papers published in physics journals and over 80 papers presented at peer-reviewed international conferences. Over 250 citations. 10 patents awarded.

- 11 invited papers, 1 invited lesson Institute for Space Science (ISS) Talks, *Quantum engineering of space and time using ion traps. Optical atomic clocks.* https://www.youtube.com/watch?v=CKzEKlq_oDg
- IOP Trusted Reviewer Award June 2024
- Review Editor for *Frontiers in Physics* since 09. 2023, reviewer for 20 physics journals, among which

  Rep. Progr. Phys., Powder Technology, Physica D: Nonlin. Phys., New J. Phys., J. Plasma Phys., J. Appl. Phys, Physica Scripta, Eur. Phys. J. Plus, J. Mass Spectrom., J. Phys. D, J. Phys. B, J. Phys. Commun., etc.

- IOP Outstanding Reviewer Award 2018 (J. Phys. B) and 2019 (Physica Scripta)
- **ORCID** https://orcid.org/0000-0001-7880-8331
  - Scopus: 6507672532
- Researcher ID: **E-9934-2011**
- **Google Scholar https://scholar.google.com/citations?user=KqG5qVUAAAAJ&hl=en**
- Web page https://quest.inflpr.ro

LIST OF PAPERS

1. Bogdan M. Mihalcea, *Mathieu–Hill Equation Stability Analysis for Trapped Ions: Anharmonic Corrections for Nonlinear Electrodynamic Traps,* Photonics **11** (6) 551 (2024); https://doi.org/10.3390/photonics11060551

2. Bogdan M. Mihalcea, Vladimir Filinov, Roman Syrovatka, Leonid Vasilyak, *The physics and applications of strongly coupled Coulomb systems (plasmas) levitated in electrodynamic traps*, Phys. Rep. **1016**, p. 1 - 103 (2023); https://doi.org/10.1016/j.physrep.2023.03.004

3. B. 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), pp. 192 - 195; Editor: Ralf Lehnert, World Scientific (2023); https://doi.org/10.1142/9789811275388_0043

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

5. Bogdan M. Mihalcea, S. Lynch, *Investigations on dynamical stability in 3D quadrupole ion traps*, Appl. Sci. **11** (7) 2938 (2021); https://doi.org/10.3390/app11072938

6 M. Ganciu, B. Butoi, A. Groza, B. Mihalcea, *HiPIMS magnetized plasma afterglow diagnostic;* **arXiv**: 1906.09772; https://doi.org/10.48550/arXiv.1906.09772

7. A. Groza, M. Șerbănescu, B. Butoi, E. Stancu, M. Straticiuc, I. Burducea, A. Bălan, A. Chiroşca, B. Mihalcea, M. Ganciu, *Advances in Spectral Distribution Assessment of Laser Accelerated Protons using Multilayer CR-39 Detectors*, Appl. Sci. **9** (10) 2052 (2019);https://doi.org/10.3390/app9102052

8. M. Ganciu, A. Groza, O. Cramariuc, B. Mihalcea, M. Șerbănescu, E. Stancu, A. Surmeian, B. Butoi, D. Dreghici, A. Chiroşca and B. Cramariuc, *Hardware and software methods for radiation resistance rising of the critical infrastructures*, Rom. Cyber Security J. **1** (1), p. 3 - 13 (2019) ; https://rocys.ici.ro/spring-2019-no-1-vol-1/hardware-and-software-methods-for-radiation-resistance-rising-of-the-critical-infrastructures/

9. Bogdan M. Mihalcea, *Squeezed coherent states of motion for ions confined in quadrupole and octupole ion iraps*, Ann. Phys. (N. Y.) **388**, p. 100-113 (2018); https://doi.org/10.1016/j.aop.2017.11.004

10. Bogdan M. Mihalcea, *Study of quasiclassical dynamics of trapped ions using the coherent state formalism and associated algebraic groups*, Rom. J. Phys. **62** (5-6), 113 (2017); https://rjp.nipne.ro/2017_62_5-6/RomJPhys.62.113.pdf

11. B. M. Mihalcea, L. C. Giurgiu, C. Stan, G. T. Vişan, M. Ganciu, V. Filinov, D. Lapitsky, L. Deputatova, and R. Syrovatka, *Multipole electrodynamic ion trap geometries for microparticle confinement under standard ambient temperature and pressure conditions*, J. Appl. Phys. **119** (11) 114303 (2016) ; https://doi.org/10.1063/1.4943933

12. B. M. Mihalcea, C. Stan, L. C. Giurgiu, A. Groza, A. Surmeian, M. Ganciu, V. Filinov, D. Lapitsky, L. Deputatova, L. Vasilyak, V. Pecherkin, V. Vladimirov, and R. Syrovatka, *Multipole traps as tools in environmental studies*, Rom. J. Phys. **61** (7 - 8), p. 1395 - 1411 (2016); https://rjp.nipne.ro/2016_61_7-8/RomJPhys.61.p1395.pdf

13. A. Groza, A. Surmeian, C. Diplașu, C. Negrilă, B. Mihalcea, M. Ganciu, Rom. J. Phys. **61** (3 - 4), p. 648 - 656 (2016); https://rjp.nipne.ro/2016_61_3-4/RomJPhys.61.p648.pdf

14. A. Surmeian, D. M. Maximean, B. Mihalcea, O. Stoican, B. Butoi, O. Danilă, P. Dincă, I. Bărbuț, L. Tudor, A. Fazacaș, E. Diplașu, P. Chapon, M. Ganciu, UPB Sci. Bull. A **77** (4), p. 273 - 280 (2015) **;** https://www.scientificbulletin.upb.ro/rev_docs_arhiva/full6e3_630793.pdf

15. B. M. Mihalcea, *Semiclassical dynamics for an ion confined within a nonlinear electromagnetic trap*, Phys. Scr. **T143** (2011) 014018; https://doi.org/10.1088/0031-8949/2011/T143/014018

16. B. M. Mihalcea, *Nonlinear harmonic boson oscillator*, Phys. Scr. **T140** (2010) 014056; https://doi.org/10.1088/0031-8949/2010/T140/014056

17. B. M. Mihalcea and G. Vişan, *Nonlinear Ion Trap Stability Analysis*, Phys. Scr. **T140** (2010) 014057; https://doi.org/10.1088/0031-8949/2010/T140/014057

18. B. M. Mihalcea, *Quantum parametric oscillator in a radiofrequency trap*, Phys. Scr. **T135** 014006 (2009); https://doi.org/10.1088/0031-8949/2009/T135/014006

19. B. M. Mihalcea, G. Vişan, L. Giurgiu and Şt. Rădan, *Optimization of ion trap geometries and of the signal-to-noise ratio for high resolution spectroscopy*, J. Optoelectron. Adv. Mater. **10** (8), p. 1994 - 1998 (2008); https://old.joam.inoe.ro/download.php?idu=1538

20. C. Mandache, O. Gheorghiu, T. Acsente, B. Mihalcea, O. Stoican, A. Niculescu, L. Giurgiu, *Frequency standards and time metrology in Romania*, Proc. of the 2004 IEEE Int. Freq. Control Symposium and Exposition, Montreal, Aug. 23 - 27 2004, Editor M. P. Yuhas, p. 693 - 697 (2005) ; https://doi.org/10.1109/FREQ.2004.1418547

21. B. Mihalcea and O. Stoican, *Microparticle dynamics in a nonlinear electromagnetic trap*, Rom. J. Phys., **47** (5 - 6), p. 597 - 605 (2002) ; https://rjp.nipne.ro/2002_47_5-6.html

22. O. Stoican, B. Mihalcea, and V. Gheorghe, *Miniaturized trapping setup with variable frequency*, Rom. Rep. Phys. **53** (3 - 8), p. 275 - 280 (2001); http://rrp.nipne.ro/archive/RRP-3-8-2001-transa-3-attachments_2011_05_06/art28.pdf

23. B. Mihalcea, C. M. Niculae and Viorica Gheorghe, *On the multipolar electromagnetic traps*, Rom. J. Phys. **44** (5-6), p. 543 - 550 (1999);

24. V. Gheorghe, L. Giurgiu, O. Stoican, D. Cacicovschi, R. Molnar and B. Mihalcea, *Ordered structures in a variable length a. c. trap*, Acta Physica Polonica A **93** (4), p. 625 - 629 (1998) ; https://doi.org/10.12693/APhysPolA.93.625;

25. Viorica Gheorghe, L. Giurgiu, O. Stoican, B. Mihalcea, D. Cacicovschi, *On the stored ion diagnosis*, Invited Paper, Scientific Annals of the Al. I. Cuza University Iaşi, **Tom XL-XLII**, s.I.c. Plasma Physics, 1994 - 1996, p. 145 - 149 (1997)

26. V. Gheorghe, L. Giurgiu, O. Stoican, B. Mihalcea, D. Cacicovschi, S. Comănescu, *Parametrical excitation in a linear air trap*, Technical Digest 6 - th EQEC Conf., Hamburg, Sept. 1996, p. 112 - 113; https://doi.org/10.1109/EQEC.1996.561703

27. V. Gheorghe, L. Giurgiu, O. Stoican, B. Mihalcea, D. Cacicovschi, S. Comănescu, *Linear microparticle trap operating in air*, CPEM Digest 1996 (Conf. Precision Electromagnetic Measurements, Braunschweig, 17 - 20 June 1996), p. 304 – 305; https://doi.org/10.1109/CPEM.1996.547085

28. V. Gheorghe, L. Giurgiu, D. Cacicovschi, B. Mihalcea, O. Stoican, *Modified Paul trap geometry for microplasmas*, Proc. SPIE, Vol. **2461**, p. 534 - 538 (1995); https://doi.org/10.1117/12.203474

29. O. C. Gheorghiu, L. C. Giurgiu, B. M. Mihalcea, D. M. Cacicovschi, A. Niculescu – *The M8 and M9 Hydrogen Masers as the national frequency standard at the National Institute of Metrology - Bucharest*, Proc. of the 9th European Time Frequency Forum (EFTF95), 8 - 10 March 1995, Besançon, France, p. 397 – 399;
https://www.eftf.org/fileadmin/conferences/eftf/documents/Proceedings/proceedingsEFTF1995.pdf

30. L. Giurgiu, O. Stoican, D. Cacicovschi, B. Mihalcea, V. Gheorghe, *An optical bridge for stored ion diagnosis*, Proc. 5th European Quantum Electronics Conf. (EQEC), 29 Aug. - 2 Sept. 1994, Amsterdam, Publisher: **IEEE**, p. 53 - 54 ; **DOI:** 10.1109/EQEC.1994.698118

31. V. Gheorghe, L. C. Giurgiu, B. M. Mihalcea, D. M. Cacicovschi and O. G. Stoican, *A single macroparticle in an electromagnetical trap*, Suppl. of the Balkan Phys. Lett., Vol. **2**, part two, p. 1120 - 1122 (1994)

32. O. Gheorghiu, B. Mihalcea, D. Cacicovschi, L. Giurgiu, A. Niculescu, *The M8 and M9 active Hydrogen masers as the National Frequency Standard at the Natl. Inst. of Metrology - Bucharest*, Suppl. of the Balkan Phys. Letters, vol. **2**, part two, p. 1142 - 1147 (1994)

33. L. Giurgiu, B. Mihalcea, M. Dincă, *On the parasitic modulation of the active H maser frequency by the heating current intensity*, Rev. Roum. Phys. **37** (5), p. 465 - 471 (1992)