

Bogdan MIHALCEA

Natl. Inst. For Laser, Plasma and Radiation Physics (INFLPR)

LIST OF PAPERS

1. A. Marcu, M. Stafe, A. Groza, M. Șerbănescu, R. Ungureanu, G. Cojocaru, C. Diplășu, B. Mihalcea, M. Ganciu, C. Neguțu, G. Giubega, and N. Puscaș, *Correlation of Laser-Accelerated Electron Energy with Electromagnetic Pulse Emission from Thin Metallic Targets*, Appl. Sci. **15** (1), 29 (2025); <https://doi.org/10.3390/app15010029>
2. Bogdan M. Mihalcea, *Contributions to the study of time dependent oscillators in Paul traps. Semiclassical approach*, Rom. J. Phys. **69** (9 - 10) 205 (2024); <https://doi.org/10.59277/RomJPhys.2024.69.205>
3. Bogdan M. Mihalcea, *Solutions of the Mathieu-Hill Equation for the Trapped Ion Harmonic Oscillator --- A Qualitative Discussion*, Mathematics **12** (19) 2963 (2024); <https://doi.org/10.3390/math12192963>
4. 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>
5. 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>; <https://doi.org/10.48550/arXiv.1910.14320>
6. Bogdan M. Mihalcea, *Quasienergy operators and general squeezed states for systems of trapped ions*, Ann. Phys. **442** 169826 (2022); <https://doi.org/10.1016/j.aop.2022.168926>; <https://doi.org/10.48550/arXiv.2108.11628>
7. 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>

8. A. Groza, M. Şerbănescu, 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>
9. M. Ganciu, A. Groza, O. Cramariuc, B. Mihalcea, M. Şerbănescu, 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*, Romanian 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/>
10. Bogdan M. Mihalcea, *Squeezed coherent states of motion for ions confined in quadrupole and octupole ion traps*, Annals of Physics **388**, p. 100-113 (2018); <https://doi.org/10.1016/j.aop.2017.11.004>
11. 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
12. 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>
13. 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
14. A. Groza, A. Surmeian, C. Diplăşu, 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
15. A. Surmeian, D. M. Maximean, B. Mihalcea, O. Stoican, B. Butoi, O. Danilă, P. Dincă, I. Bărbuţ, L. Tudor, A. Fazacaş, E. Diplăşu, 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

16. 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
17. O. Stoican, B. Mihalcea, and V. Gheorghe, *Miniaturized trapping setup with variable frequency*, Rom. Rep. Phys. **53** (3 - 8), p. 275 - 280 (2001);
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18. B. Mihalcea, C. M. Niculae and Viorica Gheorghe, *On the multipolar electromagnetic traps*, Rom. J. Phys. **44** (5-6), p. 543 - 550 (1999)
19. 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);
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20. L. Giurgiu, B. Mihalcea, M. Dincă, *On the parasitic modulation of the maser frequency by the heating current intensity*, Rev. Roum. Phys. **37** (5), p. 465 - 471 (1992)

Papers published in Conference Proceedings

21. M. I. Mihăilescu, V. Mărăscu and B. M. Mihalcea, *Tests Towards Building a Quantum Key Distribution (QKD) Link*, 2024 International Conference on Applied Mathematics & Computer Science (ICAMCS), Venice, Italy, 28-30 Sept. 2024, pp. 206 – 210 ;
<https://doi.org/10.1109/ICAMCS62774.2024.00033>
22. 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);
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23. B. M. Mihalcea, *Semiclassical dynamics for an ion confined within a nonlinear electromagnetic trap*, Phys. Scr. **T143** (2011) 014018;
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24. B. M. Mihalcea, *Nonlinear harmonic boson oscillator*, Phys. Scr. **T140** (2010) 014056 ;
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25. 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>
26. 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>
27. Bogdan M. Mihalcea, Gina Vişan, Liviu Giurgiu and Ştefan Rădan, *Optimization of ion trap geometries and of the signal-to-noise ratio for high resolution spectroscopy*, J. of Optoelectronics and Advanced Materials **10** (8), p. 1994 - 1998 (2008);
<https://old.joam.inoe.ro/download.php?idu=1538>
28. 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>
29. 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)
30. 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>
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32. V. Gheorghe, L. Giurgiu, D. Cacicovschi, B. Mihalcea, O. Stoican, *Modified Paul trap geometry for microplasmas*, Proc. SPIE, Vol. **2461**, p. 534 - 538 (1995);
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33. Octav C. Gheorghiu, Liviu C. Giurgiu, Bogdan M. Mihalcea, Dragoş M. Cacicovschi, Anca 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>
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35. V. Gheorghe, L. C. Giurgiu, B. M. Mihalcea, D. M. Cacicovschi and O. G. Stoican, *A single macroparticle in an electromagnetic trap*, Suppl. of the Balkan Phys. Lett., Vol. **2**, part two, p. 1120 - 1122 (1994)
36. O. Gheorghiu, B. Mihalcea, D. Cacicovschi, L. Giurgiu, A. Niculescu , *The M8 and M9 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)

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37. M. Ganciu, B. Butoi, A. Groza, B. Mihalcea, *HiPIMS magnetized plasma afterglow diagnostic* (06. 2019); arXiv: [1906.09772](https://arxiv.org/abs/1906.09772); <https://doi.org/10.48550/arXiv.1906.09772>

PREPRINTS

1. V. Gheorghe, B. Mihalcea, A. Gheorghe, *Quantum chaos in a nonlinear ion trap*, **Preprint FT-431-1997**, October 1997, Institute of Atomic Physics (I.F.A.), Bucharest
2. V. Gheorghe, B. Mihalcea, A. Gheorghe, *Bifurcations of a two-ion system*, **Preprint FT-432-1997**, October 1997, Institute of Atomic Physics (I.F.A.), Bucharest

INTERNATIONAL CONFERENCES & WORKSHOPS – Selected list

Over 75 international conferences and workshops with peer-reviewed contributions, 11 invited papers

1. Marius Mihăilescu, Valentina Mărăscu, Bogdan M. Mihalcea, *Tests towards building a Free Space Optical (FSO) Quantum Key Distribution (QKD) Link*, Proc. of the 4th International Conf. on Applied Mathematics & Computer Science, ICAMCS 2024, Venice, Italy, September 28-30, 2024. <http://icamcs.co/>
2. B. M. Mihalcea, *Evolution Operators and Generalized Squeezed States of Motion for Trapped Ions*, Optical clocks for international timekeeping Workshop, 19 – 20 October 2022, National Physics Laboratory – Teddington (UK), Online, Poster
3. B. Mihalcea, *Coherent and squeezed states associated to trapped ion systems. Applications in quantum optics and precision measurements*, 9th Meeting on CPT and Lorentz Symmetry (CPT'22), University of Indiana, Bloomington, USA, 17 – 26 May 2022; <https://lorentz.sitehost.iu.edu/cpt22/program.html> – Invited contribution
4. B. Mihalcea, *Investigations on Dynamical Stability in Quadrupole Ion Traps*, IUCSS Standard Model Extended (SME) 2021 Summer School and Workshop, University of Indiana, Bloomington, USA, 21 – 30 May 2021; <https://iucss.sitehost.iu.edu/sme2021/program.html>
5. B. Mihalcea, 8th IAA Conf. On space Systems as Critical Infrastructure: *From kilograms to kilobytes*, Title: *Mass spectrometry with ion traps. Towards extreme accuracy in metrology*, Mamaia, 27 - 28 June 2019 – Oral Paper
6. M. Ganciu, B. Butoi, A. Groza, B. Mihalcea, *HIPIMS magnetized plasma afterglow diagnostic*, HIPIMS-ST-Conference, June 19-20, 2019, Braunschweig, Germany
7. B. Mihalcea, *Mass spectrometry and quantum optics with ion traps. Space applications*, Invited Paper, Scientific Kick-Off Meeting COST Action CA 17113 Trapped Ions: Progress in Classical and Quantum Applications (TIPICQA), Granada, 6-8 March 2019
8. B. Mihalcea, *Quantum technology based on ultracold atoms. Applications in global sensing*, 7th IAA Conf. on Space Systems as Critical Infrastructure, 2 - 3 August 2018, Mamaia – Oral Paper
9. B. Mihalcea, *Cold atom interferometry-Common Optical Optimisation Laboratory (C-COOL) ESA Initiative*, Workshop CETAL 2018, 17 – 18 July 2018, Măgurele, Oral Paper
10. B. Mihalcea, *Nanosatellites for space, quantum science and national security. Optical Atomic Clocks*, 6th IAA Conf. on Space Systems as Critical Infrastructure: *Disruptive Innovation and critical space infrastructure*, 3 - 4 August 2017, Mamaia – Oral Paper

11. B. Mihalcea, *Radiation Hardness Assessment (RHA) Studies and Tests on satellite onboard optoelectronic components and systems*, Workshop CETAL 2017, 4 - 6 July 2017, Măgurele; http://cetal.inflpr.ro/_files/workshop/2017/WORKSHOP%20CETAL%202017.pdf
12. B. Mihalcea, A. Groza, A. Surmeian, M. Șerbănescu, C. Diplășu, B. Butoi, P. Dincă, L. Tudor, M. Ganciu, *PW class lasers for implementing Radiation Hardness Assurance (RHA) testing of Space mission on-board equipment*, The 5th Intl. Colloquium of 'Physics of Materials', 11-12 November, 2016, Bucharest Polytechnic University; Plenary Session 1 – Invited Lectures, PM 5 Program, p. 10 (2016)
13. B. Mihalcea, *Emulation of the Jovian Radiation environment by using PW lasers*, 5th IAA Conf. on space systems as Critical Infrastructure Space and Security, 9-10 August 2016, Mamaia; Session 3 New Technologies, Invited Paper
14. C. M. Ticoș, G. Giubega, T. Georgescu, M. Ganciu, C. Diplășu, B. Mihalcea, M. Șerbănescu. I. Dăncuș, L. Neagu, A. Marcu, I. Nicolae, R. Ungureanu, G. Cojocar, O. Budrigă, L. Mitu, A. Groza, D. Ticoș, I. Ioniță, N. Bulinski, *Electron Acceleration in Gas Jet at the CETAL Petawatt laser facility*, 1st ELI-NP Summer School "Perspectives in Physics with High Power Lasers and Gamma Beams", 21-25 September 2015, Bucharest-Măgurele
15. A. Groza, A. Surmeian, C. Diplășu, C. Luculescu, B. Mihalcea, M. Ganciu, *Anodization process analysis of the aluminum surfaces in corona discharge*, 32nd ICPIG Conf., 26 -31 July 2015, Iași, Romania; Poster P3 – 44
16. A. Surmeian, C. Diplășu, A. Groza, B. Mihalcea, M. Ganciu, *A New Mass Spectrometry Analytical Method Assisted by Laser Desorption*, 32nd ICPIG Conf., 26 - 31 July 2015, Iași, Romania; Poster P1 – 49
17. B. Mihalcea, O. Stoican, V. S. Filinov, D. S. Lapitsky, A. Groza, A. Surmeian, C. Diplășu, V. E. Fortov, L. V. Deputatova, L. M. Vasilyak, V. I. Vladimirov, V. Ya. Pecherkin, R. A. Syrovatka, M. Ganciu, *Plasma Crystals of Charged Microparticles confined under Standard Temperature and Pressure (STP) conditions*, 32nd ICPIG Conf., 26 - 31 July 2015, Iași, Romania; Poster P3 – 21
18. B. Mihalcea, O. Stoican, C. Diplășu, G. Vișan, A. Groza, A. Surmeian, O. Dănilă, L. Tudor, I. Bărbuț, P. Dincă, B. Butoi, A. Fazacaș, M. Ganciu-Petcu; *Confinement of charged micro and nanoparticles in multipole Paul traps*, The 4-th Int. Colloquium Physics of Materials PM-4, 13-14, Nov. 2014, Bucharest - UPB, Romania, Section 2 Science and Characterization Methods of Materials – Oral Paper
19. B. Mihalcea, D. Sporea, M. Selagea, G. Vișan, A. Stăncălie, L. Mihai, M. Ganciu, *Frequency locking of an optical system for cooling $^{138}\text{Ba}^+$ ions*, European Conference on Trapped Ions ECTI2014, 15 - 19 September 2014, Mainz, Germania; PI-12; Book of Abstracts, p. 60 (2014)

20. B. Mihalcea, M. Ganciu, *Use of the CETAL infrastructure to enhance Radiation Hardness Assurance (RHA) in support of ESA space missions*, 3rd International Astronomical Union (IAA) Conf. on Space Systems as Critical Infrastructure, 21 - 22, August, 2014, Mamaia, Session 1 - Invited Paper
21. M. Ganciu, B. Mihalcea, C. Diplășu, A. Groza, C. Luculescu, O. Stoican, A. Surmeian, B. Cramariuc, R. Vasilache and O. Marghitu, *Prospects of Space Radiation Environment Simulation by Using High Power Laser Infrastructures*, Invited Paper, INDLAS 2014 Conference, May 19-23, Bran, Romania
22. B. Mihalcea, D. Sporea, L. Mihai, G. Vișan, A. Stăncălie, M. Selagea, M. Ganciu, *Prospects towards an optical system for trapping and cooling of $^{138}\text{Ba}^+$ ions at CETAL*, Oral Paper, INDLAS 2014 Conference, May 19 – 23, Bran, Romania
23. M. Ganciu, B. Mihalcea, C. Ticoș, C. Diplășu, A. Groza, C. Luculescu, O. Stoican, A. Surmeian, R. Dabu, O. Marghitu, R. Vasilache, *Testing of Radiation Hardened Satellite Equipment by Using High-Power Laser Infrastructures*, Oral Paper, **First CETAL-Petawatt Workshop** 19-20 November 2013, Măgurele, Romania
24. B. M. Mihalcea, M. Ganciu, and A. Isar, *Duffing Oscillator Dynamics in Paul traps*, Abstract Book IonTech2 COST-IOTA Workshop, p. 63, Institut Henry Poincaré, Paris, 23-25 October 2013 – Poster
25. M. Ganciu, B. Mihalcea, C. Diplășu, A. Groza, O. Stoican, A. Surmeian, O. Marghitu, M. Ciobanu, A. Julea, M. Ioan Piso, *Laser Accelerated Particles in Filamentary Plasmas for Testing of Radiation Hardened Satellite Equipment by Using High-Power Laser Infrastructures*, 2nd IAA Conference on Space Systems as Critical Infrastructure, August 29-30, 2013, Mamaia, Romania – Invited paper
26. Bogdan M. Mihalcea, Mihai Ganciu-Petcu, and Aurelian Isar, *Nonlinear Behaviour of Ions confined in Anharmonic Paul Traps*, Oral Paper C-49, 20-th Central European Workshop on Quantum Optics (CEWQO), 16-20 June 2013 Stockholm, Sweden, Book of Abstracts p. 105, Royal Institute of Technology Stockholm, **ISBN 978-91-7501-868-3**
27. Bogdan M. Mihalcea, *Parametric Nonlinear Oscillator in a Paul Trap*, Poster Session, European Conference on Trapped Ions (ECTI2), 9 - 14 September 2012, Obergurgl, Austria
28. O. Stoican, B. Mihalcea, G. Vișan, *Study of the electric field generated by the multipole electrodynamic trap by means of an electrolytic tank*, *12th International Balkan Workshop on Applied Physics, 12th IBWAP 2011*, Constanta, 6-8 July 2011, S5/P32
29. Bogdan M. Mihalcea, *Time keeping and ion trapping in INFLPR and at the Faculty of Physics, Măgurele-Bucharest*, Invited Paper, Kick-off Meeting COST Action MP1001 Ion Traps for Tomorrow's Applications (IOTA), Heidelberg, Germany, 24 March 2011

30. Bogdan M. Mihalcea, *Semiclassical dynamics for an ion confined within a nonlinear electrodynamic trap*, Poster, The 17-th Central European Workshop on Quantum Optics, CEWQO2010, June 6-10, Univ. of St. Andrews, Great Britain (2010)
31. B. M. Mihalcea, G. Vişan and Ion M. Mihăilescu, *Ion dynamics in a highly nonlinear electromagnetic trap*, Poster, The 17-th Central European Workshop on Quantum Optics, CEWQO2010, June 6-10, Univ. of St. Andrews, Great Britain (2010)
32. B. M. Mihalcea, *Nonlinear Harmonic Boson Oscillator*, Poster, 16th Central European Workshop on Quantum Optics, CEWQO2009, Report Series in Phys., Book of Abstracts, Univ. of Turku, Finland, Ser. L32, p. 140, **ISBN: 978-951-2939473**, Eds: Kari Härkönen, Sabrina Maniscalco, Jyrki Piilo, Kalle-Antti Suominen and Otto Vainio
33. B. M. Mihalcea and G. Vişan, *Stability analysis of the Dynamics in a Nonlinear Ion Trap*, Poster, The 16th Central European Workshop on Quantum Optics, CEWQO2009, May 23-27, 2009, Book of Abstracts, Report Series in Phys., Univ. of Turku, Finland, Ser. L32, p. 141, **ISBN: 978-951-2939473**, Eds: Kari Härkönen, Sabrina Maniscalco, Jyrki Piilo, Kalle-Antti Suominen and Otto Vainio
34. Bogdan M. Mihalcea and Ion M. Mihăilescu, *Time dependent variational principle and coherent states orbits*, Poster, 15-th Central European Workshop on Quantum Optics, CEWQO2008, Book of Abstracts, p. 59-60, Belgrade, 30 May-03 June 2008 <http://cewqo08.phy.bg.ac.rs/UserFiles/File/Cewqo08BookOfAbstracts.pdf>
35. Bogdan M. Mihalcea, *Quantum parametric oscillator in an ion trap*, Poster, 15-th Central European Workshop on Quantum Optics, CEWQO2008, Book of Abstracts, p. 61 -62, Belgrade, 30 May - 03 June 2008; <http://cewqo08.phy.bg.ac.rs/UserFiles/File/Cewqo08BookOfAbstracts.pdf>
36. Ovidiu Stoican, B. M. Mihalcea, L. M. Dincă, Gina T. Vişan, *Acoustic excitation of the charged microparticles motion in a linear electrodynamic trap*, Poster, Modern Applications of Trapped Ions, Les Houches, France, 18-23 May 2008, Abstracts, p. 30
37. B. M. Mihalcea, O. S. Stoican, Gina T. Vişan, L. M. Dincă, Ion N. Mihăilescu, *Multipole trap geometries operating under standard temperature and pressure reference conditions*, Poster, Modern Applications of Trapped Ions, Les Houches, France, 18-23 May 2008, Abstracts, p. 27
38. B. Mihalcea, G. Vişan, L. Giurgiu and Şt. Rădan, *Optimization of ion trap geometries and of the signal-to-noise ratio for high resolution spectroscopy*, Poster, XIV-th Intl. Conf. on Plasma Physics and Applications, 14-18 September 2007, Univ. Transilvania, Braşov, p. 92
39. Viorica N. Gheorghe, A. Gheorghe, Bogdan M. Mihalcea, *Quantum Dynamics of a Single Ion Confined in a Nonlinear Electromagnetic Trap*, Oral Paper, Programme of the Intl. Conf.

- Micro- to Nano-Photonics ROMOPTO2006, 28 Aug - 1 Sep. 2006, Sibiu, p. 31
40. B. M. Mihalcea, Viorica N. Gheorghe, A. Gheorghe, *Quasiclassical dynamics of a single ion in a nonlinear electromagnetic trap*, Poster, 20-th International Conference on Atomic Physics, Innsbruck, Austria, 16 - 21 July 2006, Book of Abstracts, p. 521
 41. B. Mihalcea, V. N. Gheorghe, A. Gheorghe, *Quasiclassical dynamics of a single ion in a nonlinear electromagnetic trap*, Satellite Meeting of the 20-th Intl. Conf. on Atomic Phys. (ICAS), Innsbruck, Austria, 23 - 24 July 2006, Book of Abstracts, P39
 42. O. Stoican, B. Mihalcea, L. Giurgiu and I. N. Mihăilescu, *Miniaturized hexapolar Paul trap setup*, Satellite Meeting of the 20-th Intl. Conf. on Atomic Phys. (ICAS), Innsbruck, Austria, 23-24 July 2006, Book of Abstracts, P40
 43. A. Gheorghe, B. Mihalcea, *Equilibrium Configurations of Linear Trapped Ionic Crystals*, XII-th Conference on Plasma Physics and Applications, 1-3 Sept. 2003, Iași, Romania, Abstracts, p. 36 – 37
 44. B. Mihalcea and O. Stoican, *Microparticle dynamics in a multipolar electromagnetic trap*, Poster, Proc. of the XI-th Intl. Conf. on Plasma Physics, Constanța, 6-8 Sept. 2001, p. 50 – 53
 45. O. Stoican and B. Mihalcea, *Miniaturized device for generating microplasmas under standard temperature and pressure conditions*, XI-th Intl. Conf. Plasma Physics and Appl., Constanța, 6 - 8 Sept. 2001
 46. M. Ganciu, V. Zoița, A. Groza, A. Surmeian, B. Mandache, B. Mihalcea, F. Gherendi, Th. Julea, I. I. Popescu, M. Apostol, M. Mirea, A. Răduță, *Fast pulsed X-Ray sources for isomer triggering studies*, Invited paper, Intl. Gamma Ray Workshop, Private communication, Telluride, USA, 29 - 31 May 2001
 47. Viorica Gheorghe, O. Stoican, D. Cacicovschi, B. Mihalcea and R. Molnar, *On the microplasmas optical pumping methods*, 17-th Gen. Conf. of the Turkish Physical Society, Alanya, Turkey, 27-31 October 1998, p. 59
 48. Viorica N. Gheorghe, B. M. Mihalcea and A. Gheorghe, *Ion dynamics in a nonlinear Paul trap*, Proc. of the 6-th ECAMP Conf., vol. 22D, Siena, Italy, 14 - 18 July 1998, p. VI-11
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EXPERTISE

Solid managerial competence, with over 25 years of experience in coordinating complex research themes (with different partners from research institutes and universities from EU and Romania), and a large number of projects awarded. These are:

1. *Consultant for review for ISS capabilities - Facility Definition Team "Atomic Clock", Directorate of Human and Robotic Exploration Programmes, ESTEC Noordwijk.*
Duration: 12. 2023 – 12. 2024
2. ***Romanian National Quantum Communications Infrastructure***, Call: EU Secure Quantum Communications Infrastructure (DIGITAL-2021-QCI-01), Acronym: RoNaQCI, Project Manager: Polytechnic University Bucharest (UPB), Position: Project Manager for Natl. Inst. for Laser, Plasma and Radiation Phys. (INFLPR). Duration: 01. 2023 – 06. 2025
3. ***International Space Station – Space Optical Clock – Pathfinder (I-SOC-PF)***, European Space Agency (ESA) candidate mission. Position: Science Team member since 05.2020 - .
4. ***Trapped Ions: Progress in Classical and Quantum Applications (TIPICQA)***, COST Action CA 17113, Duration: 09.2018 – 03.2023. Position: Member of the Management Committee
5. ***Laser Plasma Accelerators as tools for Radiation Hardness Assessment (RHA) Studies and Tests in support of ESA space missions***, ESA Contract No. **4000121912/17/NL/CBi**, Acronym: PARAHARD. Duration: 09.2017 - 09.2020, Position: Technical Manager
6. ***Development of quadrupole and multipole ion trap based mass spectrometers for optical characterization and chemical analysis of atmospheric aerosol particles***, Romanian Space Agency (ROSA) **Contract Nr. 136/20.** 07. 2017, STAR Programme C3 call, Duration: 07. 2017 - 07. 2019. Position: Project Manager

7. ***Feasibility Study for the Use of the Romanian Cetal Infrastructure***, ESA Contract No. **4000111242/14/NL/CBi**, Duration: 06.2014 - 07.2017, Position: Technical Manager
8. *Laser-Plasma Acceleration of Particles for Radiation Hardness Testing (LEOPARD)*, ROSA Project Competence Centre in Space Technologies ID-327, Duration: 11.2013-11.2016, Position: Assistant Project Manager
9. COST Action **MP1001**, ***Ion Traps for Tomorrow Applications (IOTA)***, Duration: 12.2010 - 12.2014, Position: Member of the Management Committee
10. Ministry of Research & Innovation Romania, PROGRAMME LAPLAS 2/ Project PN 06-36.03.01, 2006 - 2008, *Investigation of nonlinear optics, high-resolution spectroscopy, and quantum metrology using confined atomic particles*, Position: Member of the research team
11. Ministry of Research & Technol. (MCT) Romania, Contract **CEEX 05-D11-55/2005**: *Nonlinear structures and scalability limits for quantum logic in ion traps*. Acronym: ELECTROCUANT (10.2005 - 07.2008), Position: Scientific Project Manager.
12. Ministry of Research & Technol. (MCT) Contract **CEEX 06-D11-37/2006**: *Study of quantum logic and quantum metrology based on electromagnetic traps. Applications in high-precision spectroscopy and in monitoring of environment pollution*. Acronym: LOGICUANT (10.2006 - 09.2008) , Position: Scientific Project Manager
13. Ministry of Research & Technol. (MCT) Contract **CERES 4-142/12. 11. 2004**: *Hamiltonian dynamics for ions stored in electromagnetic fields. Prospects for non-linear Paul traps towards achieving quantum logic*, (11.2004 - 09.2006), Position: Scientific Project Manager
14. Ministry of Research & Technol. (MCT) Contract 22 / PN 17 03-02: *Preparation and study of non-classical states of motion for trapped atoms and ions* (2003 - 2006). Position: Scientific Project Manager
15. Ministry of Research & Technol. (MCT) Grant B54/2001: *The dynamics of an ion confined in an electromagnetic, nonlinear Paul type trap* (11.2001 - 12.2002), Position: Grant Director

16. Ministry of Research & Technol. (MCT) Contract 555/A54: *Researches on microplasmas with an aim to develop a future time-frequency atomic standard based on trapped ions* (2000 - 2002), Position: Project Manager
17. Ministry of Research & Technol. (MCT) Contract B29/A20: *Researches on microparticle trapping in multipolar electromagnetic traps* (1999 - 2001), Position: Project Manager
18. Romanian Natl. Agency for Sci. Technol. & Innovation (ANSTI) Grant 555/2000: *Classical study on the micromotion of ions confined in electromagnetic Paul traps* (2000), Position: Grant Director
19. Ministry of Research & Technol. (MCT) Grant 5086-5087/1999: *Researches on microparticle storage in electromagnetic traps* (11.1999 - 12.2000), Position: Grant Director