

Radu Budaca

Curriculum Vitae

"Horia Hulubei" National Institute of
Physics and Nuclear Engineering
Department of Theoretical Physics
Str. Reactorului 30, Bucharest-Magurele,
RO-077125, Romania EU.

Phone: +(4021) 4042300 (Secretariat)
Fax: +(4021) 4574440 (secretariat)
Email: rbudaca@theory.nipne.ro
Current Position: Scientific Researcher I

Personal

Sex: Male
Date of Birth: February 1, 1984
Citizenship: Romania, Republic of Moldova
Marital status: Divorced, one child

Education

Ph.D., Theoretical Physics.

University of Bucharest, Bucharest, Romania, 2012.

Thesis: *Contributions to the phenomenological and microscopic description of nuclear and atomic systems.*

Supervisor: Prof. Em. Dr. A. A. Răduță.

Master Degree, Computational Physics, Econophysics, Theoretical Physics and the Physics of Condensed Matter, Polymer Physics.

University of Bucharest, Bucharest, Romania, 2008.

Thesis: *Semiclassical description of triaxial rigid rotor.*

Supervisor: Prof. Em. Dr. A. A. Răduță.

Bachelor Degree, Physics.

University of Bucharest, Bucharest, Romania, 2006.

Thesis: *Boson representations of angular momentum.*

Supervisor: Prof. Em. Dr. A. A. Răduță.

High School Degree

"Iulia Hașdeu" High School, Chișinău, Republic of Moldova, 2002.

Art Degree

"A. Șciusev" Art School, Chișinău, Republic of Moldova, 1996.

Employment

- 02.05.2019 - 30.11.2019: Scientific Researcher III (half pay), Academy of Romanian Scientists.
- 02.05.2018 - 30.11.2018: Scientific Researcher III (half pay), Academy of Romanian Scientists.
- 01.08.2017 - 30.11.2017: Scientific Researcher III (half pay), Academy of Romanian Scientists.
- 2021 - Present: Scientific Researcher I, Department of Theoretical Physics,
"Horia Hulubei" National Institute of Physics and Nuclear Engineering.
- 2019 - 2021: Scientific Researcher II, Department of Theoretical Physics,
"Horia Hulubei" National Institute of Physics and Nuclear Engineering.
- 2013 - 2019: Scientific Researcher III, Department of Theoretical Physics,
"Horia Hulubei" National Institute of Physics and Nuclear Engineering.
- 2012 - 2013: Scientific Researcher, Department of Theoretical Physics,
"Horia Hulubei" National Institute of Physics and Nuclear Engineering.
- 2007 - 2012: Research Assistant, Department of Theoretical Physics,
"Horia Hulubei" National Institute of Physics and Nuclear Engineering.

Training

- 20.08.2017-01.09.2017: The VII International Pontecorvo Neutrino Physics School
Prague, Czech Republic.
- 16.09.2014-24.09.2014: International School of Nuclear Physics, 36th Course
"Nuclei in the Laboratory and in the Cosmos", Erice-Sicily, Italy.
- 09.07.2012-20.07.2012: International Summer School for Advanced Studies
"Dynamics of open nuclear systems", Predeal, Romania.
- 24.08.2011-04.09.2011: Helmholtz International Summer School
"Nuclear Theory and Astrophysical Applications",
Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, Russia.
- 11.04.2011-17.06.2011: Doctoral training program "Neutrinos in Nuclear-, Particle- and Astrophysics",
European Center for Theoretical Studies in Nuclear Physics and Related Areas
(ECT*), Trento, Italy.
- 01.07.2008-30.08.2008,
01.07.2009-30.08.2009,
01.05.2010-31.05.2010: Visiting student, working on a DFG program at Institute for Theoretical Physics,
University of Tübingen, Germany.
- 28.08.2006-09.09.2006: International Summer School in Nuclear Physics
"Collective motion and Phase Transitions in Nuclear Systems", Predeal, Romania.
- 25.09.2005-05.10.2005: DAAD Summer School "Trends in Contemporary Optics", Sinaia, Romania.

Project grants

- 2022-2024: Grant of Ministry of Research and Innovation, CNCS - UEFISCDI
 Project number PN-III-P1-1.1-TE-2021-0109, within PNCDI III
 Project title "Dynamics and geometry of triaxial and pear shaped nuclei"
 Capital - 450.000 Lei, Duration - 2 years, Capacity - Director
 web page: <https://budacaradu.wixsite.com/tripear>
- 2022-2023: Grant from Academy of Romanian Scientists
 Contract number 1/14.04.2022
 Project title "Descrierea proprietăților de deformare și de dezintegrare a nucleelor atomice"
 Capital - 55.000 Lei, Duration - 1.05.2022-17.12.2023, Capacity - Director
- 2018-2020: Grant of Ministry of Research and Innovation, CNCS - UEFISCDI
 Project number PN-III-P1-1.1-TE-2016-0268, within PNCDI III
 Project title "Shape phase transitions in atomic nuclei: from critical points to shape coexistence"
 Capital - 450.000 Lei, Duration - 2 years, Capacity - Director
 web page: <https://budacaradu.wixsite.com/sptan>

Talks

1. *Quadrupole-octupole dynamics of alternate parity bands in heavy even-even nuclei* (**Invited talk**), International Workshop "Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects" (SDANCA-23), Sofia, Bulgaria (September 2023).
2. *Spin dynamics of triaxial nuclei with quasiparticle alignments* (**Invited talk**), International Conference on "Chirality and Wobbling in Atomic Nuclei" (CWAN'23), Huizhou, China (July 2023).
3. *Axial quadrupole and octupole dynamics in heavy even-even nuclei* (Contribution talk), International Conference on Collective Motion in Nuclei under Extreme Conditions (COMEX7), Catania, Italy (June 2023).
4. *Semiclassical description of triaxial nuclei with rigid single-particle alignments* (Contribution talk), International Conference on Mathematical Methods in Physics (ICMMP23), Marrakesh, Morocco (April 2023).
5. *Wobbling and chiral bands with non-axial quasiparticle alignments* (Contribution talk), 10th International workshop on Quantum Phase Transitions in Nuclei and Many-Body Systems, Dubrovnik, Croatia (July 2022).
6. *Harmonic and anharmonic wobbling excitations from a semiclassical treatment of rigid quasiparticle alignments* (**Invited talk**), International Conference on Shapes and Symmetries in Nuclei: from Experiment to Theory (SSNET-22), Orsay, France (June 2022).
7. *The influence of triaxial deformation and quasiparticle alignment on the structure of chiral partner bands* (**Invited talk**), International Workshop "Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects" (SDANCA-21), Sofia, Bulgaria (September 2021).
8. *Dynamics of the chiral bands from a semiclassical approach* (Contribution talk), Fifth Topical Workshop on Modern Aspects in Nuclear Structure: "The many Facets of Nuclear Structure", Bormio, Italy (February 2020).
9. *Chiral bands with rigid quasiparticle alignments* (**Invited talk**), International Workshop "Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects" (SDANCA-19), Sofia, Bulgaria (October 2019).
10. *Semiclassical description of wobbling and chiral modes in triaxial nuclei* (Contribution talk), XXIII International School on Nuclear Physics, Neutron Physics and Applications, Varna, Bulgaria (September 2019).
11. *Chiral and wobbling vibrations in triaxial nuclei: a semiclassical approach* (Contribution talk), XVII Workshop on Nuclear Physics (WONP2019), Havana, Cuba, April (2019).
12. *Wobbling phase transition in odd mass nuclei* (Contribution talk), XI. International Conference on Nuclear Structure Properties (NSP2018), Trabzon, Turkey, September (2018).
13. *Wobbling phases of odd mass nuclei - a semiclassical description* (Contribution talk), The 9-th international workshop "Quantum Phase Transitions in Nuclei and Many-body Systems," Padova, Italy (May 2018).

14. *Bohr Model solution for a shape coexisting potential* (**Invited talk**), International Workshop "Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects" (SDANCA-17), Sofia, Bulgaria (October 2017).
15. *Unified description of the spontaneous fission, cluster emission and α decay of ^{222}Ra* (Contribution talk), The International Symposium on Physics of Unstable Nuclei (ISPUN17), Halong City, Vietnam (September 2017).
16. *Energy dependent collective excitations in even-even nuclei* (Contribution talk), "Advanced many-body and statistical methods in mesoscopic systems III" Conference, Buşteni, Romania (September 2017).
17. *Transition and mixing within the nuclear shape phase space* (Contribution talk), "Probing fundamental interactions by low energy excitations - Advances in theoretical nuclear physics" Workshop, Stockholm, Sweden (June 2017).
18. *Parameter-free solutions of the Bohr model with modified shape phase space* (Contribution talk), "Shapes and Symmetries in Nuclei: from Experiment to Theory" SSNET Workshop, Gif-sur-Yvette, France (November 2016).
19. *Bohr Hamiltonian with an energy dependent γ -unstable harmonic oscillator potential* (Contribution talk), TIM 15-16 Physics Conference, Timisoara, Romania (May 2016).
20. *Interplay of γ -rigid and γ -stable collective motion in neutron-rich rare earth nuclei* (**Invited talk**), International Workshop "Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects" SDANCA-15, Sofia, Bulgaria (October 2015).
21. *Interplay of γ -rigid and γ -stable collective motion in the phase transition from spherical to deformed nuclear shapes* (Contribution talk), European Nuclear Physics Conference "The Future of Nuclear Physics, Today!", Groningen, Netherlands (September 2015).
22. *Harmonic oscillator potential with a quartic anharmonicity in the prolate γ -rigid collective geometrical model* (Contribution talk), TIM14 Physics Conference "Physics without frontiers", Timisoara, Romania (November 2014).
23. *Multiple backbending in even-even nuclei* (Contribution talk), 13-th International Balkan Workshop on Applied Physics and Material Science, Constanta, Romania (July 2013).
24. *Semimicroscopic description of the backbending phenomena in deformed even-even nuclei* (Contribution talk), Second European Nuclear Physics Conference, Bucharest, Romania (September 2012).
25. *A semimicroscopical approach to the backbending phenomena in even-even nuclei* (Contribution talk), International Summer School for Advanced Studies "Dynamics of open nuclear systems", Predeal, Romania (July 2012).
26. *Closed formulas for ground band energies of nuclei with various symmetries* (Contribution talk), Helmholtz International Summer School "Nuclear Theory and Astrophysical Applications", Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research (JINR), Dubna, Russia (July 2011).

Conference Posters

Shape phase transition with a quasi exactly solvable sextic potential, "Shapes and Symmetries in Nuclei: from Experiment to Theory" SSNET Workshop, Gif-sur-Yvette, France (November 2016).

Bohr Hamiltonian with exactly solvable energy dependent potentials, 26th International Nuclear Physics Conference INPC2016, Adelaide, Australia (September 2016).

Anharmonic oscillator potentials in the prolate γ -rigid regime of the collective geometrical model, 28th EPS Nuclear Physics Divisional Conference "Nuclear Physics in Astrophysics VII", York, UK (May 2015).

Semi-microscopic description of the proton- and neutron-induced backbending phenomena in some deformed even-even rare earth nuclei, International Nuclear Physics Conference INPC2013, Firenze, Italy, (June 2013).

Scholarships, Fellowships and Awards

- 2022: *The European Physical Journal* distinguished referee.
- 2020: IOP trusted reviewer.
- 2014: Support Fellowship, International School of Nuclear Physics, 36th Course "Nuclei in the Laboratory and in the Cosmos", Erice-Sicily, Italy.
- 2012: Support Fellowship, International Summer School for Advanced Studies "Dynamics of open nuclear systems", Predeal, Romania.
- 2011: Support Fellowship, Helmholtz International Summer School "Nuclear Theory and Astrophysical Applications", Bogoliubov Laboratory of Theoretical Physics, JINR, Dubna, Russia.
- 2011: **Doctoral Training Program Fellowship**, ECT*, Trento, Italy.
- 2009: **Horia Hulubei award**, Romanian Academy. For the set of papers: *Manifestation of the atomic clusters as many body systems of small and medium particles.*
- 2008-2012: **Ph.D. Scholarship**, University of Bucharest. For students from Republic of Moldova. Only three for the whole University.
- 2007, 2008: Șerban Țițeica prize, "Horia Hulubei" National Institute of Physics and Nuclear Engineering. Best scientific contribution of young scientists under 35 years.
- 2006-2008: Master Scholarship, University of Bucharest. For students from Republic of Moldova.
- 2006: Support Fellowship, International Summer School in Nuclear Physics "Collective motion and Phase Transitions in Nuclear Systems", Predeal, Romania.
- 2005: Support Fellowship, DAAD Summer School "Trends in Contemporary Optics", Sinaia, Romania.

Professional Activities

Reviewer for 53 manuscripts submitted to the following journals: Scientific Reports (2024), Physics Letters B (2021), Annals of Physics (New York) (2019), Journal of Physics G: Nuclear and Particle Physics (2019, 2020, 2021, 2022, 2023), Chinese Physics C (2017), The European Physical Journal A (2015, 2017, 2021, 2×2022, 2023), Nuclear Physics A (2×2016, 2017, 2020, 2021, 2×2023), Modern Physics Letters A (2×2018, 2019, 2022), The European Physical Journal Plus (2018, 2×2019, 2022, 2023), Physica Scripta (2020, 2023), Acta Physica Polonica A (2016), International Journal of Modern Physics E (3×2016, 2017, 2018, 2020, 2×2022, 2023), Chinese Journal of Physics (2019), Romanian Journal of Physics (2013, 2017), Computation (2018), Entropy (2020), Applied Sciences (2021), Symmetry (2021, 2023, 2024), Atoms (2023).

Deputy head of the Department of Theoretical Physics, "Horia Hulubei" National Institute of Physics and Nuclear Engineering. (2023 - present)

Member of the Scientific Board of the Department of Theoretical Physics, "Horia Hulubei" National Institute of Physics and Nuclear Engineering. (2019 - 2021; 2022 - present)

Member in the Ph.D. guidance committee for 3 students.

Ph.D. thesis referee for 1 student.

Languages

Native in Romanian. Fluent in both written and spoken Russian and English.

Computer and Programming Skills

- Operating systems: Experienced on user level with Microsoft Windows and with the most flavors of Linux.
- Programming: Advanced skills on numerical algorithms in Fortran and symbolic calculus in Mathematica and Maple. Generic knowledge of C++ and Pascal.
- Data Analysis: Experienced with Origin, Mathematica, Maple and Grace.
- Editing: Good skills in Latex, Microsoft Office and Open Office Suites.

Peer reviewed publications

1. **R. Budaca**, A. I. Budaca, P. Baganu, *Quadrupole-octupole collective excitations in medium mass nuclei*, Physica Scripta **99**, 035309 (2024).
2. **R. Budaca**, P. Baganu, A. I. Budaca, *Axial quadrupole and octupole dynamics in heavy even-even nuclei*, Il Nuovo Cimento C **47**, 25 (2024).
3. **R. Budaca**, *Properties of the single-particle spectrum generated by the mixed fractional rotation group*, Journal of Physics G: Nuclear and Particle Physics **51**, 045102 (2024).
4. **R. Budaca**, *A semiclassical perspective on nuclear chirality*, Frontiers of Physics **19**, 24301 (2024). [1 citation¹]
5. **R. Budaca**, P. Baganu, A. I. Budaca, *Quadrupole-octupole shape and dynamics of ^{222}Ra* , The European Physical Journal A **59**, 242 (2023).
6. **R. Budaca**, A. I. Budaca, *Spin dynamics of triaxial odd mass nuclei with quasiparticle alignments*, Journal of Physics G: Nuclear and Particle Physics **50**, 125101 (2023).
7. **R. Budaca**, C. M. Petrache, *Beyond the harmonic approximation description of wobbling excitations in even-even nuclei with frozen alignments*, Physical Review C **106**, 014313 (2022). [4 citations]
8. **R. Budaca**, P. Baganu, A. I. Budaca, *Nuclear collective motion of heavy nuclei with axial quadrupole and octupole deformation*, Physical Review C **106**, 014311 (2022). [3 citations]
9. A. Ait Ben Mennana, R. Benjedi, **R. Budaca**, P. Baganu, Y. El Bassem, A. Lahbas, and M. Oulne, *Shape and structure for the low-lying states of the ^{80}Ge nucleus*, Physical Review C **105**, 034347 (2022). [3 citations]
10. B. F. Lv, C. M. Petrache, **R. Budaca**, A. Astier, K. K. Zheng, P. Greenlees, H. Badran, T. Calverley, D. M. Cox, T. Grahn, J. Hilton, R. Julin, S. Juutinen, J. Konki, J. Pakarinen, P. Papadakis, J. Partanen, P. Rahkila, P. Ruotsalainen, M. Sandzelius, J. Saren, C. Scholey, J. Sorri, S. Stolze, J. Uusitalo, B. Cederwall, A. Ertoprak, H. Liu, S. Guo, J. G. Wang, H. J. Ong, X. H. Zhou, Z. Y. Sun, I. Kuti, J. Timár, A. Tucholski, J. Srebrny, C. Andreoiu, *Experimental evidence for transverse wobbling bands in ^{136}Nd* , Physical Review C **105**, 034302 (2022). [6 citations]
11. **R. Budaca**, A. I. Budaca, *Deformation dependence of the screened decay law for proton emission*, Nuclear Physics A **1017**, 122355 (2022) .[7 citations]
12. **R. Budaca**, A. I. Budaca, *Stepped infinite square well potential for collective excitations in even-even nuclei*, European Physical Journal Plus **136**, 983 (2021). [1 citation]
13. A. Ait Ben Mennana, R. Benjedi, **R. Budaca**, P. Baganu, Y. EL Bassem, A. Lahbas, M. Oulne, *Mixing of the coexisting shapes in the ground states of ^{74}Ge and ^{74}Kr* , Physica Scripta **96**, 125306 (2021). [4 citations]
14. **R. Budaca**, *From chiral vibration to tilted-axis wobbling within broken chiral symmetry*, Physics Letters B **817**, 136308 (2021). [1 citation]
15. **R. Budaca**, *Reconciliation of wobbling motion with rotational alignment in odd mass nuclei*, Physical Review C **103**, 044312 (2021). [5 citations]
16. **R. Budaca**, A. I. Budaca *Alpha decay of heavy and super heavy nuclei with a generalized electrostatic potential*, Chinese Physics C **44**, 124102 (2020). [10 citations]
17. A. I. Budaca, **R. Budaca** *Triaxiality and state-dependent shape properties of Xe isotopes*, Physical Review C **101**, 064318 (2020). [5 citations]
18. P. Baganu, A. Lahbas, **R. Budaca**, *Quasi-exact description of the γ -unstable shape phase transition*, Modern Physics Letters A **35**, 2050085 (2020). [7 citations]

¹Citations in ISI indexed journals without self citations.

19. **R. Budaca**, A. I. Budaca, P. Baganu, *Application of the Bohr Hamiltonian with a double-well sextic potential to collective states in Mo isotopes*, Journal of Physics G: Nuclear and Particle Physics **46**, 125102 (2019). [15 citations]
20. **R. Budaca**, P. Baganu, *Comment on “Elimination of degeneracy in the γ -unstable Bohr Hamiltonian in the presence of an extended sextic potential”*, Physical Review C **100**, 049801 (2019). [1 citation]
21. **R. Budaca**, *Role of triaxiality in the structure of chiral partner bands*, Physics Letters B **797**, 134853 (2019). [2 citations]
22. **R. Budaca**, P. Baganu, A. I. Budaca, *Geometrical model description of shape coexistence in Se isotopes*, Nuclear Physics A **990**, 137 (2019). [12 citations]
23. A. I. Budaca, **R. Budaca**, *Description of critical point nuclei within an energy dependent geometric model*, The European Physical Journal Plus **134**, 145 (2019). [8 citations]
24. **R. Budaca**, A. I. Budaca, *Coexistence, mixing and fluctuation of nuclear shapes*, EPL **123**, 42001 (2018). [11 citation]
25. **R. Budaca**, *Semiclassical description of chiral geometry in triaxial nuclei*, Physical Review C **98**, 014303 (2018). [5 citations]
26. **R. Budaca**, *Tilted-axis wobbling in odd-mass nuclei*, Physical Review C **97**, 024302 (2018). [18 citations]
27. **R. Budaca**, P. Baganu, A. I. Budaca, *Bohr model description of the critical point for the first order shape phase transition*, Physics Letters B **776**, 26 (2018). [22 citations]
28. **R. Budaca**, A. I. Budaca, *Proton emission with a screened electrostatic barrier*, The European Physical Journal A **53**, 160 (2017). [15 citations]
29. A. I. Budaca, **R. Budaca**, *Energy dependent collective excitations in Os and Pt isotopes*, Physica Scripta **92**, 084001 (2017). [6 citations]
30. M. Mirea, **R. Budaca**, A. Sandulescu, *Spontaneous fission, cluster emission and alpha decay of ^{222}Ra in a unified description*, Annals of Physics (New York) **380**, 154 (2017). [22 citations]
31. **R. Budaca**, A. I. Budaca, *Shape phase space mixing in critical point nuclei*, Physical Review C **94**, 054306 (2016). [11 citations]
32. **R. Budaca**, *Bohr Hamiltonian with an energy dependent γ -unstable Coulomb-like potential*, The European Physical Journal A **52**, 314 (2016). [12 citations]
33. **R. Budaca**, P. Baganu, M. Chabab, A. Lahbas, M. Oulne, *Extended study on a quasi-exact solution of the Bohr Hamiltonian*, Annals of Physics (New York) **375**, 65 (2016). [35 citations]
34. **R. Budaca**, A. I. Budaca, *Emergence of Euclidean dynamical symmetry as a consequence of shape phase mixing*, Physics Letters B **759**, 349 (2016). [17 citations]
35. A. I. Budaca, **R. Budaca**, I. Silisteanu, *Extended systematics of alpha decay half lives for exotic superheavy nuclei*, Nuclear Physics A **951**, 60 (2016). [67 citations]
36. **R. Budaca**, *Spherical vibrator model with an energy increasing stiffness*, Physics Letters B **751**, 39 (2015). [4 citations]
37. **R. Budaca**, A. I. Budaca, *Competing γ -rigid and γ -stable vibrations in neutron rich Gd and Dy isotopes*, The European Physical Journal A **51**, 126 (2015). [9 citations]
38. P. Baganu, **R. Budaca**, *Sextic potential for γ -rigid prolate nuclei*, Journal of Physics G: Nuclear and Particle Physics **42**, 105106 (2015). [44 citations]
39. **R. Budaca**, A. Sandulescu, M. Mirea, *Quasifission mass distributions in the synthesis of ^{274}Lv with ^{26}Mg and ^{36}S projectiles*, Modern Physics Letters A **30**, 1550129 (2015). [15 citations]

40. **R. Budaca**, A. I. Budaca, *Conjunction of γ -rigid and γ -stable collective motion in the critical point of the phase transition from spherical to deformed nuclear shapes*, Journal of Physics G: Nuclear and Particle Physics **42**, 085103 (2015). [12 citations]
41. P. Baganu, **R. Budaca**, *Analytical solution for the Davydov-Chaban Hamiltonian with sextic potential for $\gamma = 30^\circ$* , Physical Review C **91**, 014306 (2015). [45 citations]
42. **R. Budaca**, *Harmonic oscillator potential with a sextic anharmonicity in the prolate γ -rigid collective geometrical model*, Physics Letters B **739**, 56 (2014). [24 citations]
43. **R. Budaca**, *Quartic oscillator potential in the γ -rigid regime of the collective geometrical model*, The European Physical Journal A **50**, 87 (2014). [19 citations]
44. A. A. Raduta, **R. Budaca**, *Deformation properties of the projected spherical single particle basis*, Annals of Physics (New York) **347**, 141 (2014). [5 citations]
45. **R. Budaca**, A. A. Raduta, *Semi-microscopic description of the double backbending in some deformed even-even rare earth nuclei*, Journal of Physics G: Nuclear and Particle Physics **40**, 025109 (2013). [1 citation]
46. **R. Budaca**, A. A. Raduta, *Compact formulas for rotational bands energies in transuranic region*, Romanian Journal of Physics, Vol. **57**(7-8), 1088 (2012).
47. A. A. Raduta, **R. Budaca**, A. Faessler, *Analytical description of the coherent state model for near vibrational and well deformed nuclei*, Annals of Physics (New York) **327**, 671 (2012). [12 citations]
48. A. A. Raduta, **R. Budaca**, *Semimicroscopic description of the backbending phenomena in some deformed even-even nuclei*, Physical Review C **84**, 044323 (2011). [2 citations]
49. A. A. Raduta, **R. Budaca**, *Sum rule for a Schiff-like dipole moment*, International Journal of Modern Physics B **25**, 467 (2011).
50. A. A. Raduta, Al. H. Raduta, **R. Budaca**, *Collective properties of deformed atomic clusters described within a projected spherical basis*, Journal of Superconductivity and Novel Magnetism **24**, 645 (2011).
51. A. A. Raduta, **R. Budaca**, A. Faessler, *Closed formulas for ground band energies of nuclei with various symmetries*, Journal of Physics G: Nuclear and Particle Physics **37**, 085108 (2010). [5 citations]
52. A. A. Raduta, **R. Budaca**, *Extension of the Thomas-Reiche-Kuhn sum rule to a Schiff-like dipole moment*, Romanian Journal of Physics **55**(1-2), 75 (2010).
53. A. A. Raduta, **R. Budaca**, Al. H. Raduta, *Collective dipole excitations in sodium clusters*, Physical Review A **79**, 023202 (2009). [3 citations]
54. A. A. Raduta, **R. Budaca**, C. M. Raduta, *Semiclassical description of triaxial rigid rotor*, Physical Review C **76**, 064309 (2007). [9 citations]

SCOPUS indexed papers

1. **R. Budaca**, *Quasi-exact solvability of the D -dimensional sextic potential in terms of truncated bi-confluent Heun functions*, Annals of the Academy of Romanian Scientists: Series on Mathematics and its Applications **12**, 87 (2020).
2. **R. Budaca**, *Applications of double well potentials in the collective nuclear motion*, Annals of the Academy of Romanian Scientists: Series on Mathematics and its Applications **11**, 115 (2019).
3. **R. Budaca**, *Symmetry properties of the Coulomb potential with a linear dependence on energy*, Annals of the Academy of Romanian Scientists: Series on Mathematics and its Applications **9**, 205 (2017).

ISI indexed Proceedings papers

1. A. I. Budaca, **R. Budaca**, *Collective excitations in even-even nuclei with a stepped infinite square well potential*, EPJ Web of Conferences **290**, 02014 (2023), 2p.
2. P. Baganu, **R. Budaca**, M. Chabab, A. Lahbas, M. Oulne, *Quasi-exact solutions for the Bohr Hamiltonian with sextic oscillator potential*, Journal of Physics: Conference Series **1555**, 012012 (2020), 7p.
3. **R. Budaca**, *Semiclassical description of wobbling and chiral modes in triaxial nuclei*, Journal of Physics: Conference Series **1555**, 012013 (2020), 7p.
4. P. Baganu, **R. Budaca**, A. I. Budaca, *Bohr Hamiltonian with a potential having spherical and deformed minima at the same depth*, EPJ Web of Conferences **194**, 01007 (2018), 5p. [1 citation]
5. **R. Budaca**, *Anharmonic oscillator potentials in the prolate γ -rigid regime of the collective geometrical model*, Journal of Physics: Conference Series **940**, 012032 (2018), 3p.
6. A. I. Budaca, **R. Budaca** and I. Silisteanu, *Updated empirical estimations of α decay half lives for superheavy nuclei*, AIP Conference Proceedings **1796**, 020016 (2017), 6p.
7. **R. Budaca**, *Bohr Hamiltonian with an energy dependent γ -unstable harmonic oscillator potential*, AIP Conference Proceedings **1796**, 020007 (2017), 6p.
8. P. Baganu, **R. Budaca**, *Shape phase transition in γ -rigid prolate nuclei*, AIP Conference Proceedings **1796**, 020008 (2017), 6p. [3 citations]
9. P. Baganu, **R. Budaca**, *$Z(4)$ -Sextic: A γ -rigid solution of the Bohr Hamiltonian with sextic oscillator potential for β and $\gamma = 30^\circ$* , AIP Conference Proceedings **1681**, 040014 (2015), 4p.[1 citation]
10. **R. Budaca**, *Harmonic oscillator potential with a quartic anharmonicity in the prolate γ -rigid collective geometrical model*, AIP Conference Proceedings **1694**, 020010 (2015), 6p.
11. P. Baganu, **R. Budaca**, *Anharmonic vibrations around a triaxial nuclear deformation "frozen" to $\gamma = 30^\circ$* , AIP Conference Proceedings **1694**, 020006 (2015), 6p.
12. **R. Budaca**, A. A. Raduta, *Semi-microscopic description of the proton- and neutron-induced backbending phenomena in some deformed even-even rare earth nuclei*, EPJ Web of Conferences **66**, 02017 (2014), 4p.
13. A. A. Raduta, **R. Budaca**, *A semi-microscopic approach to the backbending phenomena in even-even nuclei*, Journal of Physics: Conference Series **413**, 012028 (2013), 5p. [1 citation]

Other publications

1. **R. Budaca**, *The influence of triaxial deformation and quasiparticle alignment on the structure of chiral partner bands*, Bulgarian Journal of Physics **48**, 467 (2021).
2. A. Ait Ben Mennana, R. Benjedi, P. Baganu, **R. Budaca**, A. I. Budaca, Y. EL Bassem, A. Lahbas, M. Oulne, *Shape coexistence in ^{74}Ge , ^{74}Se and ^{74}Kr investigated by phenomenological and microscopic models*, Bulgarian Journal of Physics **48**, 475 (2021).
3. **R. Budaca**, *Collective excitations in atomic nuclei with energy-dependent potentials*, Annals of the Academy of Romanian Scientists Series on Series on Physics and Chemistry **5**, 7 (2020).
4. **R. Budaca**, *Chiral bands with rigid quasiparticle alignments*, Bulgarian Journal of Physics **46**, 411 (2019).
5. P. Baganu, **R. Budaca**, A. Lahbas, A. I. Budaca, *Shape phase transition, shape coexistence and mixing phenomena within the bohr model*, Bulgarian Journal of Physics **46**, 420 (2019).
6. P. Baganu, **R. Budaca**, A. I. Budaca, *Shapes Coexistence in the Frame of the Bohr Model*, Nuclear Theory **38**, 68 (2019).
7. **R. Budaca** P. Baganu, A. I. Budaca, *Bohr model solution for a shape coexisting potential*, Bulgarian Journal of Physics **44**, 319 (2017). [1 citation]

8. P. Buganu, **R. Budaca**, *Quadrupole shape phase transitions in the γ -rigid regime*, Bulgarian Journal of Physics **42**, 513 (2015).
9. **R. Budaca**, A. I. Budaca, *Interplay of γ -rigid and γ -stable collective motion in neutron-rich rare earth nuclei*, Bulgarian Journal of Physics **42**, 503 (2015).

Last updated: March 13, 2024