

Prof. Dr Violeta Petrović

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Employment History

2008-2013 **Assistant professor** in the Department of Physics, Faculty of Science, University of Kragujevac, Serbia.

2013-2024 **Associate professor** in the Department of Physics, Faculty of Science, University of Kragujevac, Serbia.

2024 – present **Full professor** in the Department of Physics, Faculty of Science, University of Kragujevac, Serbia.

Education

2007. **Doctor of Philosophy (Ph.D.)** in Physics.

University: Faculty of Science, University of Kragujevac, Serbia.

Thesis title: Expert systems for the analysis of electronic spectra of atoms and molecules

1997-2003. **Master of Science (M.Sc.)** in Physics.

University: Faculty of Science, University of Kragujevac, Serbia.

Thesis title: Expert systems for the threshold spectra analysis.

1992 – 1997 **Bachelor of Science (B.Sc.)** in Physics.

University: Faculty of Science, University of Kragujevac, Serbia.

Research Publications

Journal Articles

1. **V. Petrovic** and V. Bocvarski, Expert system for threshold spectra analysis, *International Journal of Modern Physics C*, Vol. 14, 433-440 (2003), ISSN: 0129-1831, (IF=0.750 31/83 2003, M22).
2. **V. Petrovic** and V. Bocvarski, Expert system for threshold spectra analysis of nitrogen molecules, *International Journal of Modern Physics C*, Vol. 16, Nb 9, 1395-1407 (2005), ISSN: 0129-1831, (IF=1.099 29/83 2005, M22).
3. **V. Petrović**, V. Bočvarski and I. Petrović, “Expert System For Threshold Spectra Analysis Of SO₂ Molecules”, *International Journal of Modern Physics C*, Vol. 18, No. 7, 1133-1148, (2007), ISSN: 0129-1831, (IF=0.841 49/92 2007, M22).
4. T.B. Miladinović, **V.M. Petrović** and V.M. Ristić, Influence of ponderomotive potential and non-zero initial momentum of ejected electron on transition rate in multiphoton ionization, *Acta Physica Polonica A*, 124, No. 4, 658 – 660 (2013); ISSN: 0587-4246; DOI:10.12693-APhysPolA.124.658, (IF = 0.604 za 2013. godinu; 65/83; M23).

5. T.B. Miladinović, **V.M. Petrović**, Quasiclassical approach to tunnel ionization in the non relativistic and relativistic regimes, *Revista Mexicana de Fisica*, 60, No. 4, 290-295, (2014); ISSN: 0035-001X, (IF = 0.339 za 2014. godinu; 74/78; M23).
6. **V.M. Petrović**, T.B. Miladinović, Influence of the spatial and temporal distribution of an incident laser beam profile on the energy distribution of ionized photoelectrons, *JETP*, 119, No. 4, 651-656 (2014); ISSN:1063-7761; DOI: 10.1134/S1063776114100082, (IF = 0.931 za 2013. godinu; 48/77; M23).
7. **V. Petrović**, T. Miladinović, V. Ristić, Single and double tunneling ionization of the noble gases exposed to a linearly or circularly polarized laser field, *Romanian Reports in Physics*, 66, No 4, 929-938 (2014); ISSN:1221-1451; (IF = 1.517 za 2014. godinu; 32/78; M22).
8. Tatjana B. Miladinović, **Violeta M. Petrović**, Relativistic angular distribution of photoelectrons in the tunneling ionization of atoms by a linearly polarized laser field, *Brazilian Journal of Physics*, 45, No. 2, 251 – 257 (2015); ISSN: 0103-9733; DOI: 10.1007/s13538-015-0303-5, (IF = 1.042 za 2015. godinu; 44/79; M22).
9. Tatjana B. Miladinović, **Violeta M. Petrović**, Behaviour of the relativistic angular and energy distributions of atoms exposed to a strong and low-frequency circularly polarized laser field, *Chinese Optics Letters*, 13, No. 7, 070005 – 4 (2015); ISSN: 1671-7694; DOI:10.3788/COL201513.070005, (IF = 1.899 za 2015. godinu; 33/87; M22).
10. Ivan Petrović, **V. Petrović**, D. Krstić, D. Nikezić and V. Bočvarski, “Expert System For Analysis Of Spectra In Nuclear metrology“, *International Journal of Modern Physics C*, Vol. 19, No. 11, 1763-1775, (2008), ISSN: 0129-1831, (IF=0.841 49/92, M22).
11. Tatjana B. Miladinović, **Violeta M. Petrović**, Laser field ionization rates in the barrier-suppression regime, *Journal of Russian Laser Research*, 36, No. 4, 312 – 319 (2015); ISSN: 1071-2836; DOI:10.1007/s10946-015-9505-0, (IF = 0.800 za 2015. godinu; 67/90; M23).
12. **Violeta M. Petrović**, Tatjana B. Miladinović, Photoelectrons angular and energy distributions from laser- ionized argon atom, *Romanian Journal of Physics*, 60, No. 9-10,1450-1461 (2015); ISSN: 1221-146X; (IF = 1.398 za 2015. godinu; 39/79; M22).
13. I. Petrović, **V. Petrović**, V. Bočvarski, D. Krstić and D. Nikezić, Expert System For Analysis of Spectra of Natural Radionuclides, *U.P.B. Sci. Bull., Series A*, Vol. 77, Iss. 3, 285, (2015), ISSN: 1223-7027, (IF = 0.405 za 2014. godinu; 72/78; M23).
14. **Violeta M. Petrović**, Tatjana B. Miladinović, Effect of the corrected ionization potential and spatial distribution on the angular and energy distribution in tunnel ionization, *Journal of Experimental and Theoretical Physics*, 122, No 5, 813-817, (2016); ISSN:1063-7761; DOI: 10.1134/S1063776116050101, (IF = 0.953 za 2015. godinu; 49/79; M23).
15. Tatjana B. Miladinović, **Violeta M. Petrović**, Behavior of tunnelling transition rate of argon atom exposed to strong low-frequency elliptical laser field, *Pramana journal of physics*, 86, No. 3, 565-573 (2016); ISSN: 0304-4289; DOI:10.1007/s12043-015-1023-7, (IF = 0.692 za 2015. godinu; M23).
16. **Violeta M. Petrović**, Tatjana B. Miladinović, Improved treatment of the turning point in tunnel ionization of atoms in a low-frequency two color laser field, *Laser Physics Letters* 13 (2016) 125401 (6pp), doi:10.1088/1612-2011/13/12/125401, (IF = 2.391 za 2015. godinu; 22/90; M21).

17. **Violeta M. Petrović**, Tatjana B. Miladinović, Kinetic energy distribution of photoelectrons in the tunnel ionization process in the case of ultrashort laser pulses, *Journal of Nonlinear Optical Physics & Materials*, Vol. 25, No. 3 (2016) 1650040 (9 pages), DOI: 10.1142/S0218863516500405, (IF = 0.616 za 2015. godinu; 75/90; M23).
18. **Violeta M. Petrović**, Tatjana B. Miladinović, Effect of electron-electron correlation on nonsequential ionization process in a linearly polarized laser field, *Romanian Journal of Physics*, 62, 202, 1-13 (2017), 1.758.
19. Delibašić, H. and **Petrović, V.**, Ellipticity-dependent ionization yield for noble atoms. Chinese Physics B, 28(8), pp. 083200-1 - 083200-6, **2019**; ISSN: 1674-1056., M22, DOI: 10.1088/1674-1056/28/8/083201, **1.469**.
20. Isaković, K., **Petrović, V.** and Delibašić, H., Energy distribution of ejected photoelectrons in K-2V process, *Romanian Reports in Physics*, 71(203), **2019**; ISSN: 1221-1451., **2.147. M22**
21. Delibasic, H., **Petrovic, V.** and Petrovic, I., Laser Breakdown in Water Induced by $\lambda=532$ nm Nanosecond Pulses: Analytical Calculation of the Number Density of Free Electrons. *Journal of the Physical Society of Japan*, 89(11), p.114501, **2020**; ISSN: 0031-9015. DOI: 10.7566/jpsj.89.114501, **1.828., M22**.
22. Isaković, K., **Petrović, V.** and Delibašić, H., The Contribution of the Atomic Excitation and Recollision Effect during Tunneling Ionization on the Transition Rate. *Journal of Experimental and Theoretical Physics*, 128(2), pp.171-177, **2019**; ISSN 1063-7761. M23, DOI: 10.1134/S1063776119010138, **1.152**.
23. Delibašić, H., Isaković, K., **Petrović, V.** and Miladinović, T., Estimation of the Influence of the Magnetic Component on the Transition Rate in a Linearly Polarized Laser Field. *International Journal of Theoretical Physics*, 57(2), pp.406-413, **2018**; ISSN 0020-7748. M23, DOI: 10.1007/s10773-017-3572-7, **1.121**.
24. Isaković, K.I., **Petrović, V.M.** and Delibašić, H.S., Simultaneous excitation and photoionization tunneling transition rate in an elliptically polarized laser field, *Laser Physics*, 28(12), p.126001, **2018**; ISSN: 1054-660X. DOI: 10.1088/1555-6611/aae184, M23 **1.231**.
25. **Petrović, V.**, Delibašić, H. and Isaković, K., Effect of the Corrected Ionization Potential on the HHG Transition Rate in a Linearly Polarized Laser. *Acta Physica Polonica A*, 134 (6), pp. 1170-1175, **2018**; ISSN: 0587-4246., **0.857. M23**
26. Ivan D. Petrović, **Violeta M. Petrović** and Tatjana B. Miladinović, "Theoretical and Expert System Study of the Photoionization Theories", *Proceedings of the National Academy of Sciences, India Section A: Physical Sciences* (**2018**) [9pp] (on-line 30 July 2018), DOI: 10.1007/s40010-018-0500-z, ISSN : 0369-8203., **0.754. M23**.
27. **Petrovic, V.**, Isakovic, K. and Delibasic, H., Theoretical study of the electron correlation and excitation effects on energy distribution in photon impact ionization, *Revista Mexicana de Física*, 65(3), pp.224-230, **2019**; ISSN: 0035-001X., DOI: 10.31349/RevMexFis.65.224, M23 **0.766**.
28. **Petrovic, V.** and Delibasic, H., Improved treatment of the photoionization process in the laser induced optical breakdown in the laser tissue, *UPB Scientific Bulletin, Series A: Applied Mathematics and Physics*, 81(4), pp.287-300, **2019**; ISSN: 1223-7027., **0.619. M23**.

29. **Petrović, V.**, Delibašić, H. and Petrović, I., Strong-field tunneling ionization rate based on Landau-Dykhne transition theory, *Journal of Experimental and Theoretical Physics*, 160 (1), pp. 5-12, **2021**; ISSN: 1063-7761., DOI: 10.31857/S0044451021070014, **1.290**. M23
30. Delibasic, H., **Petrovic, V.**, Petrovic, I., Molpeceres, C. and Lauzurica, S., Numerical modeling of plasma formation in skin tissues induced by nanosecond pulsed laser. *The European Physical Journal D*, 75(5), pp.1-6, **2021**; ISSN: 1434-6060
DOI: 10.1140/epjd/s10053-021-00170-z, M23 **1.425**.
31. **Petrovic, V.**, Delibasic Markovic, H., and Petrovic, I., Coulomb corrected nonadiabatic instantaneous ionization rate and the electron trajectory in an elliptically polarized laser field. *Results in Physics*, 51, p.106718, **2023**; ISSN: 2211-3797., M21 **5.3**.
DOI: 10.1016/j.rinp.2023.106718
32. **Petrovic, V.**, Delibasic Markovic, H., and Petrovic, I., Ionization rate in an elliptically polarized laser field with respect to momentum at the tunnelling exit point for noble atoms. *Results in Physics*, 53, p. 107005, **2023**; ISSN: 2211-3797. M21 **5.3**.
DOI: 10.1016/j.rinp.2023.107005
33. M. Kurtovića, **V. Petrović**, and I. Petrović, The Influence of the Effective Ionization Potential and Initial Momentum on the Barrier-suppression Ionization Rate in a Circularly Polarized Laser Field, ISSN 1068-3356, *Bulletin of the Lebedev Physics Institute*, **2023**, Vol. 50, No. 10, pp. 420–428. M23 **0,4**.
34. Delibasic Markovic, H., K. Kaleris, N. A. Papadogiannis, and **V. Petrovic**, “Comparative analytical and numerical investigation of the plasma density in atmospheric air generated by nanosecond laser pulses,” *Laser Physics Letters*, vol. 21, no. 3, pp. 1–10, 2024, ISSN: 1612-202X. doi: 10.1088/1612-202X/ad1cd9.
35. Delibasic Markovic, H., **V. Petrovic**, and I. Petrovic, “Impact of coulomb interactions on ionization rates of noble gases in multi-cycle laser fields,” *Romanian Reports in Physics*, vol. 76, no. 201, 2024. url: <https://rrp.nipne.ro/IP/AP714.pdf>.
36. Delibasic Markovic, H., **V. Petrovic**, and I. Petrovic, “Non-sequential double ionization of the alkaline earth atoms with a near-single cycle laser pulse in a linearly polarized laser field,” *Journal of Theoretical and Experimental Physics*, vol. 165, no. 2, 2024, In Press.
37. Delibasic Markovic, H., **V. Petrovic**, and I. Petrovic, “Theoretical study of ionization dynamics under chirped few-cycle laser pulses,” *Romanian Reports in Physics*, 2024, In Press.

Books and Chapters

1. **V. Petrovic** and Delibasic Markovic, H., *Practicum with Collection of Exercises in Digital Electronics*. Kragujevac, Serbia: Faculty of Science, University of Kragujevac, 2021., Co-published with the Ministry of Education, Science, and Technological Development of the Republic of Serbia as part of the "Higher Education Development" program, Project Title: "Improvement of Teaching in Digital Electronics, Digital Signal Processing, Physics Teaching Methodology, and Informatics Teaching Methodology", isbn: 978-86-6009-082-1.
2. **Violeta Petrović**, *Interaction of photons with atomic systems*. Kragujevac, Serbia: Faculty of Science, University of Kragujevac, ISBN 978-86-6009-899-9, 2024.

Research Projects

2024 – present ■ Science Fund of the Republic of Serbia, GRANT 6821, Atoms and (bio)molecules dynamics and collisional processes on short time scale - ATMOLCOL.

2020 – 2024 ■ COST project CA18222, “Attosecond Chemistry”.

2019 – 2023 ■ COST project CA17126, “Towards understanding and modelling intense electronic excitation”.

2018 – 2019 ■ RS-171020, "Physics of collisions and photo processes in atomic, (bio)molecular and nanosized systems".

2017 ■ COST project CM1204, “XLIC – XUV/X-ray light and fast ions for ultrafast chemistry”.