

CURRICULUM VITAE
Marko Vojinović

Personal Data

Date of birth: 28. March 1978.
Place of birth: Pančevo, Republic of Serbia
Citizenship: Serbian
Marital status: Single
Contact: Group for Gravitation, Particles and Fields
Institute of Physics, University of Belgrade
Pregrevica 118, 11080 Belgrade, Serbia
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Affiliations

03/2024 – present: Full Research Professor at Group for Gravitation, Particles and Fields
Institute of Physics, University of Belgrade
[\[http://www.gravity.ipb.ac.rs/\]](http://www.gravity.ipb.ac.rs/)

10/2016 – 03/2024: Associate Research Professor at Group for Gravitation, Particles and Fields
Institute of Physics, University of Belgrade
[\[http://www.gravity.ipb.ac.rs/\]](http://www.gravity.ipb.ac.rs/)

03/2016 – 10/2016: Assistant Research Professor at Group for Gravitation, Particles and Fields
Institute of Physics, University of Belgrade
[\[http://www.gravity.ipb.ac.rs/\]](http://www.gravity.ipb.ac.rs/)

03/2013 – 03/2016: Post-doc researcher at Group of Mathematical Physics
Institute for Interdisciplinary Research, University of Lisbon
[\[http://gfm.cii.fc.ul.pt/\]](http://gfm.cii.fc.ul.pt/)

03/2012 – 03/2013: Assistant Research Professor at Group for Gravitation, Particles and Fields
Institute of Physics, University of Belgrade
[\[http://www.gravity.ipb.ac.rs/\]](http://www.gravity.ipb.ac.rs/)

03/2009 – 03/2012: Post-doc researcher at Group of Mathematical Physics
Institute for Interdisciplinary Research, University of Lisbon
[\[http://gfm.cii.fc.ul.pt/\]](http://gfm.cii.fc.ul.pt/)

10/2006 – 03/2009: Research Assistant at Group for Gravitation, Particles and Fields
Institute of Physics, University of Belgrade
[\[http://www.gravity.ipb.ac.rs/\]](http://www.gravity.ipb.ac.rs/)

10/1997 – 07/2008: Major/Master/PhD student at Theoretical Physics department
Faculty of Physics, University of Belgrade
[\[http://www.ff.bg.ac.rs/\]](http://www.ff.bg.ac.rs/)

Research Interests

- quantum gravity and general relativity
- foundations of quantum mechanics
- category theory
- field theory, unification of interactions
- quantum information theory
- algebraic topology

Publications — books

- [1] *State-Sum Models of Piecewise Linear Quantum Gravity*
A. Miković and M. Vojinović, *World Scientific*, Singapore (2023)
[ISBN: 978-981-126-931-8, DOI: 10.1142/13233]

Publications — papers

- [33] *Correspondence between 3BF and Einstein-Cartan formulations of quantum gravity*
P. Stipsić and M. Vojinović, *Class. Quant. Grav.* **42**, 195009 (2025) [[arXiv:2506.17722](#)]
- [32] *The 3BF theory as a TQFT*
T. Radenković and M. Vojinović, *Jour. Phys. A: Math. Theor.* **58**, 345203 (2025) [[arXiv:2412.21032](#)]
- [31] *Operational verification of the existence of a spacetime manifold*
N. Paunković and M. Vojinović, *Quantum* **9**, 1753 (2025) [[arXiv:2209.04783](#)]
- [30] *Symmetry breaking mechanisms of the 3BF action for the Standard Model coupled to gravity*
P. Stipsić and M. Vojinović, *Jour. Phys. A: Math. Theor.* **58**, 215201 (2025) [[arXiv:2402.17675](#)]
- [29] *Henneaux–Teitelboim gauge symmetry and its applications to higher gauge theories*
M. Đorđević, T. Radenković, P. Stipsić and M. Vojinović, *Universe* **9**, 281 (2023) [[arXiv:2305.00117](#)]
- [28] *Operational interpretation of the vacuum and process matrices for identical particles*
R. Faleiro, N. Paunković and M. Vojinović, *Quantum* **7**, 986 (2023) [[arXiv:2010.16042](#)]
- [27] *Hamiltonian analysis of the BFCG theory for a strict Lie 2-group*
A. Miković, M. A. Oliveira and M. Vojinović, *Adv. Theor. Math. Phys.* **26**, 3783 (2022) [[arXiv:1610.09621](#)]
- [26] *Equivalence principle in classical and quantum gravity*
N. Paunković and M. Vojinović, *Universe* **8**, 598 (2022) [[arXiv:2210.00133](#)]
- [25] *Topological invariant of 4-manifolds based on a 3-group*
T. Radenković and M. Vojinović, *JHEP* **07**, 105 (2022) [[arXiv:2201.02572](#)]
- [24] *Gauge symmetry of the 3BF theory for a generic semistrict Lie three-group*
T. Radenković and M. Vojinović, *Class. Quant. Grav.* **39**, 135009 (2022) [[arXiv:2101.04049](#)]
- [23] *Standard Model and 4-groups*
A. Miković and M. Vojinović, *Europhys. Lett.* **133**, 61001 (2021) [[arXiv:2008.06354](#)]
- [22] *Causal orders, quantum circuits and spacetime: distinguishing between definite and superposed causal orders*
N. Paunković and M. Vojinović, *Quantum* **4**, 275 (2020) [[arXiv:1905.09682](#)]
- [21] *Hamiltonian Analysis for the Scalar Electrodynamics as 3BF Theory*
T. Radenković and M. Vojinović, *Symmetry* **12**, 620 (2020) [[arXiv:2004.06901](#)]
- [20] *Higher gauge theories based on 3-groups*
T. Radenković and M. Vojinović, *JHEP* **10**, 222 (2019) [[arXiv:1904.07566](#)]
- [19] *Entanglement-induced deviation from the geodesic motion in quantum gravity*
F. Pipa, N. Paunković and M. Vojinović, *Jour. Cosmol. Astropart. Phys.* **09**, 057 (2019) [[arXiv:1801.03207](#)]
- [18] *Hamiltonian analysis of the BFCG formulation of general relativity*
A. Miković, M. A. Oliveira and M. Vojinović, *Class. Quant. Grav.* **36**, 015005 (2019) [[arXiv:1807.06354](#)]
- [17] *Gauge protected entanglement between gravity and matter*
N. Paunković and M. Vojinović, *Class. Quant. Grav.* **35**, 185015 (2018) [[arXiv:1702.07744](#)]

- [16] *Causal dynamical triangulations in the spincube model of quantum gravity*
M. Vojinović, *Phys. Rev. D* **94**, 024058 (2016) [[arXiv:1506.06839](#)]
- [15] *Hamiltonian analysis of the BFCG theory for the Poincaré 2-group*
A. Miković, M. A. Oliveira and M. Vojinović, *Class. Quant. Grav.* **33**, 065007 (2016) [[arXiv:1508.05635](#)]
- [14] *Solution to the Cosmological Constant Problem in a Regge Quantum Gravity Model*
A. Miković and M. Vojinović, *Europhys. Lett.* **110**, 40008 (2015) [[arXiv:1407.1394](#)]
- [13] *Cosine problem in EPRL/FK spin foam model*
M. Vojinović, *Gen. Relativ. Gravit.* **46**, 1616 (2014) [[arXiv:1307.5352](#)]
- [12] *A finiteness bound for the EPRL/FK spin foam model*
A. Miković and M. Vojinović, *Class. Quant. Grav.* **30**, 035001 (2013) [[arXiv:1101.3294](#)]
- [11] *Poincaré 2-group and quantum gravity*
A. Miković and M. Vojinović, *Class. Quant. Grav.* **29**, 165003 (2012) [[arXiv:1110.4694](#)]
- [10] *Effective action for EPRL/FK spin foam models*
A. Miković and M. Vojinović, *Jour. Phys. Conf. Ser.* **360**, 012049 (2012) [[arXiv:1110.6114](#)]
- [9] *Effective action and semiclassical limit of spin foam models*
A. Miković and M. Vojinović, *Class. Quant. Grav.* **28**, 225004 (2011) [[arXiv:1104.1384](#)]
- [8] *Large-spin asymptotics of Euclidean LQG flat-space wavefunctions*
A. Miković and M. Vojinović, *Adv. Theor. Math. Phys.* **15**, 801 (2011) [[arXiv:1005.1866](#)]
- [7] *Test membranes in Riemann-Cartan spacetimes*
M. Vasilčić and M. Vojinović, *Phys. Rev. D* **81**, 024025 (2010) [[arXiv:0812.4694](#)]
- [6] *Spinning branes in Riemann-Cartan spacetime*
M. Vasilčić and M. Vojinović, *Phys. Rev. D* **78**, 104002 (2008) [[arXiv:1010.1861](#)]
- [5] *Zero-size objects in Riemann-Cartan spacetime*
M. Vasilčić and M. Vojinović, *JHEP* **08** 104 (2008) [[arXiv:0807.0596](#)]
- [4] *Interaction of particle with the string in pole-dipole approximation*
M. Vasilčić and M. Vojinović, *Fortschr. Phys.* **56**, 542 (2008) [[arXiv:1010.1852](#)]
- [3] *Single-Pole Interaction of the Particle with the String*
M. Vasilčić and M. Vojinović, *SIGMA* **4**, 019 (2008) [[arXiv:0802.1655](#)]
- [2] *Classical spinning branes in curved backgrounds*
M. Vasilčić and M. Vojinović, *JHEP* **07** 028 (2007) [[arXiv:0707.3395](#)]
- [1] *Classical string in curved backgrounds*
M. Vasilčić and M. Vojinović, *Phys. Rev. D* **73**, 124013 (2006) [[arXiv:gr-qc/0610014](#)]

Publications — editorials

- [2] *Proceedings of the 10th Mathematical Physics Meeting: School and Conference on Modern Mathematical Physics*
Ed. B. Dragovich, I. Salom and M. Vojinović, *SFIN XXXIII*, 1–384 (2020)
Published by Institute of Physics, Belgrade, Serbia, ISBN 978-86-82441-51-9 [[electronic version](#)]
- [1] *Proceedings of the 9th Mathematical Physics Meeting: School and Conference on Modern Mathematical Physics*
Ed. B. Dragovich, I. Salom and M. Vojinović, *SFIN XXXI*, 1–324 (2018)
Published by Institute of Physics, Belgrade, Serbia, ISBN 978-86-82441-48-9 [[electronic version](#)]

Publications — conference proceedings

- [12] *Higher category theory and n-groups as gauge symmetries for quantum gravity*
B. Nikolić, D. Obrić, T. Radenković, I. Salom and M. Vojinović, *Jour. Phys. Conf. Ser.* **2667**, 012019 (2023) [[electronic version](#)]
- [11] *Possibilities for Parallelizing Simplicial Complexes Simulation*
D. Cvijetić, N. Korolija and M. Vojinović, *IcEtran proceedings*, 595 (2022)
Proceedings of the IX International Conference IcETRAN, Novi Pazar, Serbia, June 6-9 2022, Ed. V. Katić, ISBN 978-86-7466-930-3. [[electronic version](#)]
- [10] *Infrastructure for Simulating n-Dimensional Simplicial Complexes*
D. Cvijetić, N. Korolija and M. Vojinović, *IcEtran proceedings*, 590 (2022)
Proceedings of the IX International Conference IcETRAN, Novi Pazar, Serbia, June 6-9 2022, Ed. V. Katić, ISBN 978-86-7466-930-3. [[electronic version](#)]
- [9] *Quantum gravity and elementary particles from higher gauge theory*
T. Radenković and M. Vojinović, *Ann. Univ. Craiova Phys.* **30**, 74 (2020)
Proceedings of the Workshop on Quantum Fields and Nonlinear Phenomena, 24-29 September 2020, Craiova, Romania. [[arXiv:2103.08037](#)]
- [8] *Construction and examples of higher gauge theories*
T. Radenković and M. Vojinović, *SFIN XXXIII*, 251 (2020)
Proceedings of the 10th Mathematical Physics Meeting: School and Conference on Modern Mathematical Physics, September 9-14 2019, Ed. B. Dragovich, I. Salom and M. Vojinović, Institute of Physics, Belgrade, Serbia. [[arXiv:2005.09404](#)]
- [7] *Quantum gravity for piecewise flat spacetimes*
A. Miković and M. Vojinović, *SFIN XXXI*, 267 (2018)
Proceedings of the 9th Mathematical Physics Meeting: School and Conference on Modern Mathematical Physics, September 18-23 2017, Ed. B. Dragovich, I. Salom and M. Vojinović, Institute of Physics, Belgrade, Serbia. [[arXiv:1804.02560](#)]
- [6] *Gravity-Matter entanglement in Regge quantum gravity*
N. Paunković and M. Vojinović, *Jour. Phys. Conf. Ser.* **701**, 012035 (2016) [[arXiv:1601.06831](#)]
- [5] *Categorical generalization of spinfoam models*
A. Miković and M. Vojinović, *Jour. Phys. Conf. Ser.* **532**, 012020 (2014) [[arXiv:1512.06252](#)]
- [4] *Spincube model of quantum gravity*
M. Vojinović, *SFIN XXVI*, 361 (2013)
Proceedings of the 7th Mathematical Physics Meeting: Summer School and Conference on Modern Mathematical Physics, September 9-19 2012, Ed. B. Dragovich and Z. Rakić, Institute of Physics, Belgrade, Serbia. [[electronic version](#)]
- [3] *Category theory in spincube model of quantum gravity*
M. Vojinović, *Proceedings of the Vth Petrov International Symposium “High Energy Physics, Cosmology and Gravity”*, April 29 - May 5 2012, Ed. S. S. Moskaliuk, TIMPANI, Kyiv, Ukraine, p. 287 (2012) [[electronic version](#)]
- [2] *Effective action for EPRL/FK spin foam models*
A. Miković and M. Vojinović, *Jour. Phys. Conf. Ser.* **360**, 012049 (2012) [[arXiv:1110.6114](#)]
- [1] *Classical string in curved backgrounds*
M. Vasilic and M. Vojinović, *SFIN XX*, 403 (2007)
Proceedings of the 4th Summer School in Modern Mathematical Physics, September 3-14 2006, Ed. B. Dragovich and Z. Rakić, Institute of Physics, Belgrade, Serbia [[electronic version](#)]

Research Projects

- Project name: [“COST Action CA23115 - Relativistic Quantum Information \(RQI\)”](#)
Institution: Institute of Physics, University of Belgrade (COST programme of European Cooperation in Science and Technology)
Status: In progress
Leadership: Charis Anastopoulos
- Project name: [“COST Action CA23130 - Bridging high and low energies in search of quantum gravity \(BridgeQG\)”](#)
Institution: Institute of Physics, University of Belgrade (COST programme of European Cooperation in Science and Technology)
Status: In progress
Leadership: Giulia Gubitosi
- Project name: [“Quantum Gravity from Higher Gauge Theory — QGHG-2021”](#)
Institution: Institute of Physics, University of Belgrade (program IDEAS of the Science Fund of the Republic of Serbia)
Status: Completed successfully
Leadership: Marko Vojinović
- Project name: [“Symmetries and Quantization 2020”](#)
Institution: Institute of Physics, University of Belgrade (program DIASPORA of the Science Fund of the Republic of Serbia)
Status: Completed successfully
Leadership: Igor Salom
- Project name: [“Symmetries and Quantization — 2020-2022”](#)
Institution: Institute of Physics, University of Belgrade (bilateral project between Portugal and Serbia)
Status: Completed successfully
Leadership: Igor Salom
- Project name: [“Causality in Quantum Mechanics and Quantum Gravity - 2018-2019”](#)
Institution: Institute of Physics, University of Belgrade (bilateral project between Austria and Serbia)
Status: Completed successfully
Leadership: Marko Vojinović (Serbia), Časlav Brukner (Austria)
- Project name: [“Quantum Gravity and Quantum Integrable Models - 2015-2016”](#)
Institution: Group of Mathematical Physics, University of Lisbon (bilateral project between Portugal and Serbia)
Status: Completed successfully
Leadership: Djordje Šijački (Serbia), Aleksandar Miković (Portugal)
- Project name: [“Strategic Project - UI 208 - 2013-2014”](#)
Institution: Group of Mathematical Physics, University of Lisbon
Status: Completed successfully
Leadership: Jean-Claude Zambrini

- Project name: “Physical implications of modified spacetime”
Institution: Institute of Physics, University of Belgrade
Status: In progress
Leadership: Maja Burić
- Project name: “Strategic Project - UI 208 - 2011-2012”
Institution: Group of Mathematical Physics, University of Lisbon
Status: Completed successfully
Leadership: Jean-Claude Zambrini
- Project name: “Algebroids, Geometry, Quantum Groups and Applications”
Institution: Faculty of Sciences and Technology, University of Coimbra
Status: Completed successfully
Leadership: Joana Margarida Mavigne Andrade A. S. Nunes da Costa
- Project name: “Constituents, Fundamental Forces and Symmetries of the Universe”
Institution: Marie Curie Research Training Network (European Community FP6),
Institute for Nuclear Research and Nuclear Energy, Sofia, Bulgaria
Status: Completed successfully
Leadership: Dieter Lüst
- Project name: “Alternative theories of gravity”
Institution: Institute of Physics, University of Belgrade
Status: Completed successfully
Leadership: Milutin Blagojević
- Project name: “Gradient theories of gravity: symmetry and dynamics”
Institution: Institute of Physics, University of Belgrade
Status: Completed successfully
Leadership: Branislav Sazdović

Education

10/2006 – 07/2008:	Faculty of Physics, University of Belgrade Theoretical Physics PhD
11/2003 – 10/2006:	Faculty of Physics, University of Belgrade Theoretical Physics Master
10/1997 – 09/2002:	Faculty of Physics, University of Belgrade GPA: 9.68 out of 10.00; Theoretical Physics Major
09/1993 – 06/1997:	High School of Mathematics in Belgrade specialized in mathematics, physics and computer science

Theses

- 07/2008 PhD thesis: "[Motion of extended objects in gravitational field with torsion](#)"
Group for Gravitation, Particles and Fields, University of Belgrade
Thesis supervisor: prof. dr Milovan Vasilic
- 10/2006 Master thesis: "[Classical string motion in curved spacetimes](#)"
Group for Gravitation, Particles and Fields, University of Belgrade
Thesis supervisor: prof. dr Milovan Vasilic
- 09/2002 Diploma thesis: "[Duality Symmetry in Born-Infeld Electrodynamics](#)"
Group for Gravitation, Particles and Fields, University of Belgrade
Thesis supervisor: prof. dr Maja Burić

Invited talks and visits

- 18 December 2025, Vienna, Austria
[Visit to the Relativity and Gravity Group at Technical University of Vienna](#)
- 6 - 8 May 2025, Bremen, Germany
[RQI and BridgeQG Workshop on Quantum Systems in Free Fall, University of Bremen](#)
- 18 - 29 August 2024, Hainan, China
[Visit to the Mathematics Department of the Hainan University, Hainan, Haikou, China](#)
- 10 - 15 October 2022, Vienna, Austria
[Visit to the group for Quantum Foundations and Quantum Information Theory, University of Vienna](#)
- 13 - 17 October 2020, Belgrade, Serbia
[XIX Serbian Astronomical Conference \(SAC19\), Department of Astronomy, Faculty of Mathematics, University of Belgrade](#)
- 27 - 29 September 2020, Craiova, Romania
[Workshop on Quantum Fields and Nonlinear Phenomena, University of Craiova](#)
- 13 - 17 January 2020, Hong Kong, China
[QISS HKU 2020 Workshop, Department of computer science, University of Hong Kong](#)
- 16 October - 15 December 2017, Vienna, Austria
[Visit to the group for Quantum Foundations and Quantum Information Theory, University of Vienna](#)
- 18 - 20 October 2016, Geneva, Switzerland
[Visit to the group for Philosophy of Quantum Gravity, University of Geneva](#)
- 8 - 15 November 2015, Nijmegen, Netherlands
[Visit to the Quantum Gravity group, Radboud University, Nijmegen](#)
- 29 April - 5 May 2012, Kyiv, Ukraine
[The Fifth Petrov International Symposium on High Energy Physics, Cosmology and Gravity](#)
- 9 - 10 May 2011, Marseille, France
[Visit to the Quantum Gravity group, Centre de Physique Théorique de Luminy, Marseille](#)

References

Dr. Jean Claude Zambrini
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Dr. Maja Burić
Faculty of Physics
University of Belgrade
majab@ipb.ac.rs

Dr. Aleksandar Miković
Department of Mathematics
Lusofona University
amikovic@ulusofona.pt

PhD and MSc students

- 2025-now started work on MSc thesis, *Jessica Velásquez Múnera* (University of Bremen)
[co-mentorship with Christian Pfeifer]
- 2025-now started work on MSc thesis, *Gedrich Jiann Dy* (University of Bremen)
[co-mentorship with Christian Pfeifer]
- 2024-now started work on PhD thesis, *Petar Petrašinović* (University of Belgrade)
- 2022-now started work on PhD thesis, *Mihailo Đorđević* (University of Belgrade)
- 2020-now started work on PhD thesis, *Pavle Stipsić* (University of Belgrade)
- 27.09.2024. successful MSc defense, *Petar Petrašinović* (University of Belgrade)
- 04.07.2023. successful PhD defense, *Tijana Radenković* (University of Belgrade)
- 28.09.2021. successful MSc defense, *Mihailo Đorđević* (University of Belgrade)
- 31.01.2018. successful MSc defense, *Francisco Pipa* (University of Lisbon)
[co-mentorship with Nikola Paunković]
- 02.10.2017. successful PhD defense, *Miguel Ângelo Oliveira* (University of Lisbon)
[co-mentorship with Aleksandar Miković]
- 27.09.2017. successful MSc defense, *Tijana Radenković* (University of Belgrade)

Awards

- 05/2024 “IPB Annual Award for 2023”, Award for best research, Institute of Physics Belgrade
- 02/2003 “Best Student of the Generation” Belgrade University Award
- 12/2002 “Prof. dr Lj. Čirković” Award for the best diploma thesis in physics
- 10/2001 “To a Promising Generation” Award of Norwegian Government

Grants and scholarships

- 2017 Joint Excellence in Science and Humanities (JESH) grant of the Austrian Academy of Sciences (ÖAW), Austria
- 2015 Short Term Scientific Mission (STSM) grant of the COST Action MP1405 “Quantum Structure of Spacetime”
- 2013 – 2016 Post-doctoral scholarship of the Foundation for Science and Technology, Portugal
- 2009 – 2012 Post-doctoral scholarship of the Foundation for Science and Technology, Portugal
- 2002 – 2003 Scholarship of the Serbian Ministry of Science and Environmental Protection

Computer and IT Skills

- Advanced knowledge of $\text{T}_{\text{E}}\text{X}$, Mathematica, Prolog, C, bash scripting, assembly language
- Administrative knowledge of Linux operating systems
- Administrative knowledge of network and TCP/IP services
- Experience with HPC cluster building and deployment, videoconferencing, digital video editing
- Experience with massive parallelization and GRID infrastructure

Language Skills

English (fluent), **Serbian** (native)