Jovan Odavić

Curriculum Vitae

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Personal

Name	**Jovan Odavić**, *ORCID profile*
Birth	**Novi Sad (Serbia)**, *July 1990*
Nationality	**Serbian**
Currently	**Postdoctoral researcher**, Università degli Studi di Napoli Federico II
Website	**www.jovanodavic.com**
Externals	**Twitter/X**, *ResearchGate*, Google Scholar, LinkedIn

Education

2015–2019 **Doctoral degree (PhD)**, *RWTH Aachen University*, Doctoral degree in Theoretical Physics
Aachen, Germany

2012–2014 **Master's degree (MSc)**, *Université de Cergy-Pontoise*, Theoretical Physics and Applications to Complex Systems
Paris, France

2009–2012 **Bachelor's degree (BCs)**, *University of Novi Sad, Faculty of Sciences, Department of Physics*
Novi Sad, Serbia

Research experience

2023- **Postdoctoral researcher**, *Universitá degli Studi di Napoli Federico II*, Postdoctoral researcher in the group of prof. dr. Alioscia Hamma
Naples, Italy

2020-2023 **Postdoctoral researcher**, *Institut Ruđer Bošković (IRB)*, Postdoctoral researcher at Ruđer Bošković Institute working alongside Q-team headed by prof. dr. Fabio Franchini and prof. dr. Salvatore Marco Giampaolo
Zagreb, Croatia

2015-2019 **PhD Thesis**, *RWTH Aachen University*, Institut für Theorie der statistischen Physik A - thesis title: 'Density oscillations of one-dimensional correlated electron systems from Density Functional Theory', with prof. dr. Volker Meden and prof. dr. Nicole Helbig
Aachen, Germany

2014 **Master Thesis**, *Université Paris-Sud 11*, The Laboratory of Theoretical Physics and Statistical Models (LPTMS) - thesis title: 'Universal properties of 2D statistical models at the critical point: a Conformal Field Theory approach', with prof. dr. Raoul Santachiara
Paris, France

Preprints and Publications

2025 L. Campos Venuti, **J. Odavić**, A. Hamma: *Integrability and Chaos via fractal analysis of Spectral Form Factors: Gaussian approximations and exact results*, arXiv preprint: 2505.05199; (Preprint article) https://doi.org/10.48550/arXiv.2505.05199

2025 S. Cusumano, L. C. Venuti, S. Cepollaro, G. Esposito, D. Iannotti, B. Jasser, **J. Odavić**, M. Viscardi, A. Hamma: *Non-stabilizerness and violations of CHSH inequalities*, arXiv preprint: 2504.03351; (Preprint article) https://doi.org/10.48550/arXiv.2504.03351

2025 B. Jasser, **J. Odavić**, A. Hamma: *Stabilizer Entropy and entanglement complexity in the Sachdev-Ye-Kitaev model*, arXiv preprint: 2502.03093; (Preprint article) https://doi.org/10.48550/arXiv.2502.03093

2025 M. Consiglio, **J. Odavić**, R. Bonsignori, G. Torre, M. Wieśniak, F. Franchini, S. M. Giampaolo, T. J. G. Apollaro: *Long-distance genuine multipartite Entanglement between Magnetic Defects in Spin Chains, Phys. Rev. A **111**, 032434*; (Regular article) https://doi.org/10.1103/PhysRevA.111.032434

2024 S. Cepollaro, S. Cusumano, A. Hamma, G. L. Giudice, and **J. Odavić**: *Harvesting stabilizer entropy and non-locality from a quantum field*, arXiv preprint: 2412.11918; (Preprint article) https://doi.org/10.48550/arXiv.2412.11918

2024 **J. Odavić**, M. Viscardi, and A. Hamma: *Stabilizer entropy in non-integrable quantum evolutions*, arXiv preprint: 2412.10228; (Preprint article) https://doi.org/10.48550/arXiv.2412.10228

2024 A. G. Catalano, **J. Odavić**, G. Torre, A. Hamma, F. Franchini, S. M. Giampaolo: *Magic Phase Transition and Non-local Complexity in Generalized W State*, arXiv preprint: 2406.19457; (Preprint article) https://doi.org/10.48550/arXiv.2406.19457

2024 G. Torre, **J. Odavić**, P. Fromholz, S. M. Giampaolo, F. Franchini: *Long-range entanglement and topological excitations, SciPost Phys. Core 7, 050*; (Regular article) https://doi.org/10.21468/SciPostPhysCore.7.3.050

2023 **J. Odavić**, T. Haug, G. Torre, A. Hamma, F. Franchini, S. M. Giampaolo: *Complexity of frustration: a new source of non-local non-stabilizerness, SciPost Physics 15, 131*; (Regular article) https://doi.org/10.21468/SciPostPhys.15.4.131

2023 **J. Odavić**, G. Torre, N. Mijić, D. Davidović, F. Franchini, S. M. Giampaolo: *Random Unitaries, Robustness, and Complexity of Entanglement, Quantum 7, 1115*; (Regular article) https://doi.org/10.22331/q-2023-09-15-1115

2021 **J. Odavić**, P. Mali: *Random matrix ensembles in hyperchaotic classical dissipative dynamic systems*, J. Stat. Mech. 043204; (Regular article) https://doi.org/10.1088/1742-5468/abed46

2020 **J. Odavić**, N. Helbig, V. Meden: *Friedel oscillations of one-dimensional correlated fermions from perturbation theory and density functional theory*. Eur. Phys. J. B **93**, 103; (Regular article) https://doi.org/10.1140/epjb/e2020-10127-1

2019 **J. Odavić**: *Density oscillations of one-dimensional correlated electron systems from density functional theory*; (Dissertation/PhD Thesis) https://doi.org/10.18154/RWTH-2019-06134

2017 I. Sokolović, P. Mali, **J. Odavić**, S. Radošević, S. Yu. Medvedeva, A. E. Botha, Yu. M. Shukrinov, J. Tekić: *Devil's staircase and the absence of chaos in the dc- and ac-driven overdamped Frenkel-Kontorova model*. Phys. Rev. E **96**, 022210; (Regular article) https://doi.org/10.1103/PhysRevE.96.022210

2016 **J. Odavić**, P. Mali, J. Tekić, M. Pantić, M. Pavkov Hrvojević: *Application of largest Lyapunov exponent analysis on the studies of dynamics under external forces*. Communications in Nonlinear Science and Numerical Simulation **47**, 100–108; (Regular article) https://doi.org/10.1016/j.cnsns.2016.11.010

2015 **J. Odavić**, P. Mali, J. Tekić: *Farey sequence in the appearance of subharmonic Shapiro steps*. Phys. Rev. E **91**, 052904; (Regular article) https://doi.org/10.1103/PhysRevE.91.052904

Teaching Experience

2020– **Informal doctoral student training**, *Quantum Mechanics, Quantum Information and Statistical Physics at IRB and Universitá degli Studi di Napoli Federico II*, Croatia and Italy

2018–2019 **Statistical Physics BSc course**, *Teaching Assistant (TA) to Prof. Dr. S. Wessel, Institute of Condensed Matter Physics*, RWTH Aachen University (Germany)

2016–2017 **Theoretical Classical Mechanics BSc course**, *Teaching Assistant (TA) to Prof. Dr. F. Hassler, Institut für Quantentinformation*, RWTH Aachen University (Germany)

2016–2016 **Statistical Physics BSc course**, *Teaching Assistant (TA) to Prof. Dr. S. Wessel, Institute of Condensed Matter Physics*, RWTH Aachen University (Germany)

2015–2016 **Statistical Physics BSc course**, *Teaching Assistant (TA) to Prof. Dr. H. Schoeller, Institut für Theorie der statistischen Physik*, RWTH Aachen University

2015–2015 **Quantum Mechanics BSc course**, *Teaching Assistant (TA) to Prof. Dr. H.J. Kull, Institut für Theorie der statistischen Physik*, RWTH Aachen University

Computer skills & algorithmic implementation experience

- **Computer languages experience**: *Fortran*, *Mathematica*, *Python*, *Latex*, *PHP*, *MySQL*, *C*, *C++* and *Julia*
- **Scientific computing experience**:
  - Monte Carlo methods
  - Exact Diagonalization
  - Density Matrix Renormalization Group
  - Density Functional Theory
  - Tensor Networks
  - Parallel Computing (CPU & GPU)
  - IBM QisKit

Additional education

- **Julia High-Performance computing at CINECA** - Julia is a JIT-compiled, dynamically typed language with a clean syntax. Moreover, it is a general-purpose language suitable for computational sciences and high-performance computing.
  Cineca is a non-profit consortium, made up of 69 Italian universities, 27 national public research centers, the Italian Ministry of Universities and Research, and the Italian Ministry of Education, and was established in 1969.
  Bologna (Italy)
  More information

- **Quantum many-body methods at Les Houches** - 7th Les Houches School in Computational Physics: Dynamics of Complex Quantum Systems, from Theory to Computation.
  Les Houches School of Physics is a renowned institution for theoretical physics located in Les Houches, a village in the French Alps near Chamonix.
  Les Houches (France)
  More information

- **Parallel computing at Jülich** - Introduction to parallel programming with MPI and OpenMP.
  The Jülich Supercomputing Centre (JSC) is a major research facility in Jülich, Germany. It is part of the Forschungszentrum Jülich (Jülich Research Centre), one of Europe's largest interdisciplinary research centers.
  Jülich (Germany)
  More information

- **English Certificate of Proficiency - C2 level Cambridge**
  The Cambridge Certificate of Proficiency in English (CPE), also known as C2 Proficiency, is the highest-level qualification offered by Cambridge Assessment English.
  Administered in Belgrade (Serbia)
  More information

Soft skills

- **Teaching** (see Teaching Experience)
- **Organization** (Informal Friday Talks - RWTH Aachen University - doctoral student seminar/journal club)

- **Languages**:
  - *English* - C2 level
  - *German* - Intermediate level B1/B2
  - *French* - Intermediate level B1
  - *Italian* - Beginner level A1/A2
  - *Serbian* - Mother tongue

Talks

2025 **Strings, Holography and Chaos seminar**, *Institute of Physics Belgrade, 06/2025*, https://www.ipb.ac.rs/vesti/seminar-jovan-odavic/
Belgrade, Serbia

2023 **The Summit Meeting**, *IRB and NTU Singapore, Excitation Energy Transport in Physical, Chemical, and Biological Systems, 08/2023*
Split, Croatia

2022 **8th TLjZ meeting**, *ICTP (Trieste), 8th Trieste-Ljubljana-Zagreb* Meeting Statistical Physics and Condensed Matter Theory, 12/2022*
Trieste, Italy

2021 **NQSP seminar**, *University of Ljubljana, Nonequilibrium quantum and statistical physics group (NQSP) seminar, 04/2021*
Ljubljana, Slovenia

2019 **DTCC seminar**, *Institut Rudjer Bošković, Colloquium of the Department Computational Biophysics and the Department of Theoretical and Computational Chemistry (DTCC), 10/2019*
Zagreb, Croatia

2019 **SCL seminar**, *Institute of Physics Belgrade, Scientific Computing Laboratory (SCL) seminar, Center for the Study of Complex Systems, 09/2019*
Belgrade, Serbia

2019 **SFKM 2019**, *The 20th Symposium on Condensed Matter Physics (SFKM), 10/2019*
Belgrade, Serbia

Relevant Awards

2018 **Best poster award**: workshop of the Research Training Group 1995 - Quantum Many-body Methods in Condensed Matter Systems

2012 **Merit master thesis scholarship**: Bourses master Ile-de-France, scholarship for research master programs in the city of Paris

Industry experience

2024 **Inveriant - Consultation services (September-November 2024)**: Inveriant is a Singaporean R&D (Research and Development) and Consulting company in the field of Quantum Technologies. Created in 2022, it works in optimizing quantum circuits with a specific focus on algorithms for solving hidden subgroup problems.

Projects

2021-2023 **HRZZ - Croatian Science Foundation**: Team member. PI: Davor Davidović, Title: *Scalable high-performance algorithms for future heterogeneous distributed computer systems*. The aim of this project is to develop new and improve existing computational methods and algorithms of numerical linear algebra that are able to exploit large heterogeneous systems while achieving very high performance. More information

2025 **CINECA - LEONARCO supercomputer resources**: PI, Title: *Pathways to Quantum Chaos*. The project takes advantage of robust high-performance computing (HPC) offered by LEONARDO supercomputer - ranked 9 (end of 2024) in the world in terms of computing power. More information