

# 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](http://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**, *Università 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

- 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 sub-harmonic 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 Università 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 Quanteninformation*, 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)

## Additional education

- **Quantum many-body methods** - 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** - 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](#)
- **Cambridge Certificate of Proficiency - C2 level**  
*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

- 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](#)