Curriculum Vitae

MICHAŁ BOBULA

Institute of Theoretical Physics, University of Warsaw

@ mbobula@fuw.edu.pl he/him/his

Link to Google Scholar Link to InpireHEP profile ORCID no. 0000-0002-4928-9568

EMPLOYMENT

Postdoctoral researcher

University of Warsaw

November 2026 – November 2029

Postdoctoral researcher

University of Wrocław

October 2025 – September 2026

RESEARCH GRANTS

Grant no. SONATINA 2026/60/C/ST2/00157 funded by Polish National Center for Science (Narodowe Centrum Nauki — NCN)

Principal Investigator

November 2026 – November 2029

Grant no. OPUS 2020/37/B/ST2/03604 funded by Polish National Center for Science (Narodowe Centrum Nauki — NCN)

Investigator (Principal Investigator: Prof. Tomasz Pawłowski)

April 2022 – December 2025

EDUCATION

PhD Studies in Physics

University of Wrocław

October 2021 – August 2025

- Thesis title: *Effective models of quantum gravitational collapse.*
  Supervisor: Prof. Tomasz Pawłowski.

Master Studies in Physics

University of Wrocław

October 2019 – June 2021

- Thesis title: *Information Paradox: from Hawking radiation to Page Curve.*
  Supervisor: Dr. Remigiusz Durka.

Bachelor Studies in Physics

University of Wrocław

October 2016 – September 2019

- Thesis title: *Coupled harmonic oscillators on the event horizon and the entropy of black holes.*
  Supervisor: Prof. Jerzy Kowalski-Glikman.

LIST OF PUBLICATIONS

1. M. Bobula, T. Pawłowski (2026). Asymmetric Quantum Oppenheimer-Snyder Collapse. arXiv:2608.05818 [gr-qc].

2. M. Bobula, F. Fazzini (2026). Quantum gravitational stellar evolution beyond shell-crossing singularities. Phys. Rev. D 113, 106016. https://doi.org/10.1103/165q-lwmd.

3. M. Bobula, T. Pawłowski (2025). Causal structure of nonhomogeneous dust collapse in effective loop quantum gravity. Phys. Rev. D 112, 064056. https://doi.org/10.1103/z5sz-mcl5.

4. M. Bobula, T. Pawłowski (2025). Quantum dust collapse with cosmological constant and methods for constructing conformal diagrams. Phys. Rev. D 112, 026005. https://doi.org/10.1103/tt4w-vx12.

5. M. Bobula (2025). Cosmic inflation prevents singularity formation in collapse into a Hayward black hole. Class. Quantum Grav. 42 065027. https://doi.org/10.1088/1361-6382/adbc40.

6. M. Bobula, T. Pawłowski (2023). Rainbow Oppenheimer-Snyder collapse and the entanglement entropy production. Phys. Rev. D 108, 026016. https://doi.org/10.1103/PhysRevD.108.026016.

CONFERENCE TALKS

1. The 11th Conference of the Polish Society on Relativity.
talk titled: "Cosmic inflation prevents black hole singularity formation".
21-24 of July 2025 — Wrocław, Poland

2. FAU^2 Workshop on quantum gravity across scales.
talk titled: "Causal structure of nonhomogeneous dust collapse in effective loop quantum gravity".
20-22nd of May 2025 — Erlangen, Germany

3. 12th Tux Winter Workshop on Quantum Gravity.
talk titled: "Do we live inside a Hayward black hole?".
10-14th of February 2025 — Tux, Austria

4. 5th EPS Conference on Gravitation "Unlocking Gravity Through Computation"
talk titled: "Do we live inside a Hayward black hole?".
9-11th of December 2024 — Prague, Czech Republic

5. Seventeenth Marcel Grossman Meeting. Parallel session "Inflation: perturbations, initial singularities and emergent universes".
talk titled: "A non-singular universe out of Hayward black hole".
7-12th of July 2024 — Pescara, Italy

6. 59. Winter School of Theoretical Physics and third COST Action CA18108 Training School "Gravity – Classical, Quantum and Phenomenology".
talk titled: "Rainbow Oppenheimer-Snyder collapse and the entanglement entropy production".
12-21st of February 2023 — Wojanów, Poland

7. 10th Tux Winter Workshop on Quantum Gravity.
(remote) talk titled: "Rainbow Oppenheimer-Snyder collapse and the entanglement entropy production".
13-17th of February 2023 — Tux, Austria

8. LOOPS'22, École Normale Supérieure de Lyon.
talk titled: "Radiation in quantum gravitational collapse".
18-22nd of July 2022 — Lyon, France

RESEARCH STAYS ABROAD

Chair for Quantum Gravity, Friedrich-Alexander University of Erlangen-Nuremberg

Research stay at prof. Kristina Giesel's group.

May, 2025 — Erlangen, Germany

Instituto de Estructura de la Materia (IEM-CSIC)

Research stay at prof. Guillermo A. Mena Marugán's group.

April 2024 – July 2024 — Madrid, Spain

SEMINARS

1. Relativity Seminar, University of Warsaw

talk titled: "Bounce versus long squeeze in quantum gravitational collapse"

7th of November 2025 — Warsaw, Poland

2. International Loop Quantum Gravity Seminar

Nonsingular black hole symposium. Panelist with the talk titled "Cosmic inflation prevents black hole singularity formation".

4th of February 2025 — Worldwide online seminar

3. Chair for Quantum Gravity, University of Erlangen–Nuremberg

talk titled: "Bounce vs. long squeeze: on two different outcomes of quantum gravitational collapse".

17th of December 2024 — Erlangen, Germany

4. Gravity Group, University of New Brunswick

talk titled: "Bounce vs. long squeeze: on two different outcomes of quantum gravitational collapse".

6th of December 2024 — Fredericton, Canada

5. Theoretical Physics Department, Complutense University of Madrid

talk titled: "A non-singular universe out of Hayward black hole".

25th of June 2024 — Madrid, Spain

6. Szczecin Cosmology Group, University of Szczecin

talk titled: "Loop Quantum Oppenheimer-Snyder scenarios".

10th of January 2024 — Szczecin, Poland

7. Theoretical Physics Division, National Centre for Nuclear Research

talk titled: "Rainbow Oppenheimer-Snyder collapse and the entanglement entropy production".

31st of May 2023 — Warsaw, Poland

OTHER MERITS

1. Teaching experience

During my career I had a pleasure to run **exercise classes (tutorials)** for the following courses:

- Computer Laboratory of Mathematical Methods,[1] (Winter 21/22, Summer 22/23, Winter 23/24, Winter 24/25)
- Utility Software[2] (Winter 21/22, Winter 22/23, Winter 23/24),
- Mathematical Analysis III (Winter 25/26)
- Introduction to Theoretical Mechanics and Special Theory of Relativity (Winter 25/26)
- Classical Electrodynamics (Winter 25/26)
- Discrete Mathematics (Summer 25/26)

I delivered the following **lectures**:

- Introduction to Differential Geometry (Summer 25/26)

2. Science popularisation

I appeared on the local FM radio station "Radio LUZ" in a broadcast commenting on the Nobel Prize in Physics 2023.

3. Organisational activities

Head of the physics-oriented student scientific club "Migacz" at the University of Wrocław — Academic years 2018/2019 and 2019/2020.
Served as Chief Organizer of:

[1] This course was dedicated for mastering Wolfram Mathematica software.
[2] This course was dedicated for mastering softwares: Bash, GNUplot, LaTeX, Maxima.

- Winter Kindergarten of Theoretical Physics 2019[3]. (Karpacz, Poland, February 2019).
- Winter Kindergarten of Theoretical Physics 2020, link to the website. (Karpacz, Poland, February 2020).

I also contributed to the organisation of the following events:

- Winter School of Theoretical Physics and third COST Action CA18108 Training School "Gravity – Classical, Quantum and Phenomenology". (Wojanów, Poland, February 2023).
- Lower Silesia Science Festival 2023[4]. (Wrocław, Poland, September 2023).
- FAU[2] Workshop on quantum gravity across scales. (Erlangen, Germany, May 2025).

[3] A student-focused satellite event and conference associated with the Karpacz Winter School of Theoretical Physics, organized by the University of Wrocław.

[4] This was a science popularisation event taking place in Wrocław and nearby cities.