

LUCA MARCHETTI

Curriculum Vitæ

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RESEARCH: NON-PERTURBATIVE QUANTUM GRAVITY

Quantum Gravity Physics and Phenomenology

Cosmology: inflation, dynamical dark energy, and inhomogeneities from quantum gravity.

Black holes: quantum aspects of black holes and their impact on gravitational-wave physics.

Foundations of Quantum Gravity

Renormalization: phase structure and universality aspects of quantum gravity.

Relational Physics: relational description of classical and quantum gravity.

EMPLOYMENT

- 2024 - today **Postdoctoral Fellowship**, *Okinawa Institute of Science and Technology and Kavli Institute for the Physics and Mathematics of the Universe*
- 2023 - 2024 **Postdoctoral Fellowship**, *Department of Mathematics and Statistics, UNB Fredericton*
(Co-funded by UNB and AARMS)
- 2022 **Postdoctoral Fellowship**, *Arnold Sommerfeld Center, LMU Munich*
(Funded by Fondazione Angelo della Riccia)

EDUCATION

- 2018 - 2022 **Ph.D. in Physics**, *University of Pisa (in cotutelle with LMU Munich), Cum Laude*
- 2015 - 2018 **Master's Degree in Theoretical Physics**, *University of Pisa, 110L/110*
- 2012 - 2015 **Bachelor's Degree in Physics**, *University of Pisa, 110L/110*

PUBLICATIONS

12 journal publications (230+ citations); 3 additional articles to be submitted soon.

🌐 See [here](#) for a full list of publications and below for selected publications.

- [1] L. Marchetti, D. Oriti, A.G.A. Pithis and J. Thürigen, *Mean-Field Phase Transitions in Tensorial Group Field Theory Quantum Gravity*, *Phys. Rev. Lett.* **130** (2023) 141501 [2211.12768].
- [2] L. Marchetti and D. Oriti, *Effective relational cosmological dynamics from Quantum Gravity*, *JHEP* **05** (2021) 025 [2008.02774].
- [3] L. Marchetti and D. Oriti, *Effective dynamics of scalar cosmological perturbations from quantum gravity*, *JCAP* **07** (2022) 004 [2112.12677].

GRANTS AND AWARDS

- 2022 **AARMS Postdoctoral Fellowship**, CAD 53,000
- 2021 **Fondazione Angelo della Riccia Grant**, *Cosmological perturbation theory from Quantum Gravity*, PI, €17,700

PUBLIC PRESENTATIONS

48 presentations to conferences, workshops (among which, 9 invited) and seminar series.

Selected Conference and Workshops Invited Talks

- Oct. 2026 Perimeter Institute (Canada), *Relativity Reframed: Quantum Reference Frames and Gravity*
- May. 2026 Zhejiang U. (China), *Loops '26 international conference on quantum gravity*
- Feb. 2026 Tux (Austria), *13th Tux winter workshop on quantum gravity*
- Sep. 2025 UCM Madrid (Spain), *The universe in the math, in the sky and in the lab*
- Nov. 2023 UWO London (Canada), *Cosmology and Quantum Gravity Beyond Spacetime*
- Mar. 2023 LMU Munich (Germany), *Foundations of Observational, Classical and Semi-Classical Gravitational Physics and The Problem of Agency and Laws of Nature*

ACADEMIC ROLES

Organizational roles

- Oct. 2026 Chair of the LOC of the conference *From Quantum Gravity to Cosmology* (Kavli IPMU Chiba, TBA).
- Aug. 2026 Member of the LOC of the conference *Quantum Crossroads* (Kavli IPMU Chiba, TBA).
- Oct. 2025 Member of the LOC of the conference *Quantum Reference Frames 2025* (OIST Okinawa).
- Oct. 2024 Member of the LOC of the conference *Quantum Extreme Universe: Matter, Information, and Gravity* (OIST Okinawa).
- Jun. 2024 Chair of the LOC of the conference *Atlantic General Relativity 2024* (UNB Fredericton).
- Dec. 2022 Member of the LOC of the workshop *Quantum gravity, Hydrodynamics and Emergent Cosmology* (LMU Munich).
- 2023 - today Organizer of group seminar series at UNB and OIST throughout appointment.

Institutional roles

- 2023 - today Founder and coordinator of the international *Quantum Spacetime and Primordial Perturbations (QSP)* network. Senior members include: M. Sasaki, R. Brandenberger, S. Gielen, K. Giesel, L. Heisenberg, D. Oriti, M. Sakellariadou, T. Thiemann, J. Weller, E. Wilson-Ewing.
- 2022 - 2023 Member of the COST action *CA18108 - Quantum gravity phenomenology in the multi-messenger approach (QG-MM)*.
- 2024 - today Member of the *International Society on Loop Quantum Gravity*;  islqg.com.
- 2021 - today Member of the *International Society for Quantum Gravity*;  isqg.org.

Refereeing

- 2022 - today Reviewer for several academic journals, including *Classical and Quantum Gravity*, *Foundations of Physics*, and *International Journal of Modern Physics D*.

Mentoring

- 2026 - today Supervisor of Master's students Lincolnd da Silva Pereira (USP Sao Paulo) and Mukund Metta (IISER Mohali); co-supervisor of Research Intern Jakob Steck (OIST Okinawa).
- 2024 - today Co-supervisor of PhD student Julian De Vuyst (OIST Okinawa).
- 2023 - 2024 Co-supervisor of PhD student Hassan Mehmood (UNB Fredericton).
- 2021 - 2023 Co-supervisor of 3 Master's students (LMU Munich): Tom Ladstätter, Patrick Fisher and David Garcia.

"INTRODUCTION TO PHYSICAL COSMOLOGY"

- 2018 - today I drafted a book on physical cosmology soon to be published by Edizioni della Normale in collaboration with Dr. M. Monelli (Kavli IPMU, Chiba) and Prof. A. Ferrara (SNS, Pisa);  front matter and book description available [here](#).

TECHNICAL SKILLS

Latex:  Mathematica:  Python: 

PUBLIC ENGAGEMENT

May 2019 Speaker at *Pint of Science* event in Pisa titled “Black Holes: a window on Quantum Gravity”.