

## Personal information

MATTEO CARLESSO

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Date of birth: 07/05/1990

Nationality: Italian

## Current position and qualifications

- I am currently holding a Research Associate (Ricercatore tempo determinato tipo A, RTDa, SSD 02/A2) position in theoretical physics at the University of Trieste since June 2023.
- I am currently affiliated with the Trieste section of INFN – Istituto Nazionale di Fisica Nucleare since June 2023.
- In 2023, I obtained the Italian national scientific qualification (“Abilitazione scientifica nazionale”) to associated professor in theoretical aspects of fundamental interactions (SSD 02/A2).
- In 2022, I obtained the Italian national scientific qualification (“Abilitazione scientifica nazionale”) to associated professor in theoretical aspects of condensed matter (SSD 02/B2).

## Current Research Interests

Quantum mechanics and its application for fundamental studies and applications to technologies, in particular: open quantum systems, foundations of quantum mechanics, tests of limits of quantum theory, quantum optomechanics, quantum thermodynamics and quantum control.

## Bibliometric information

Number of citations: 998 (Scopus), 862 (WOS), 1722 (Google Scholar)

H-index: 17 (Scopus), 15 (WOS), 22 (Google Scholar)

## Publications (see Annex)

My scientific production counts:

- 33 research articles in international peer-reviewed journals (10 as first author and 14 as corresponding author), among which:
  - 1 **Nature** (Impact Factor 48.5 -- 2021),
  - 1 **Physical Review X Quantum** (IF 11.0 -- 2022),
  - 3 **Physical Review Letters** (IF 9.0 -- 2017, 2020, 2021),
  - 1 **Communication Physics** (IF 5.4 -- 2021),
  - 5 **Physical Review D** (IF 5.3 -- 2016, 2019, 2021 x 2, 2025),
  - 1 **Quantum Science and Technology** (IF 5.0 – 2024);
- 1 review paper on collapse models testing, published in **Nature Physics** (IF 18.4 -- 2022) as first author;
- 1 review paper on quantum physics applications in space, published in **Physics Reports** (IF 29.5 -- 2022) as first and corresponding author;
- 2 chapters of a book;
- 1 chapter of an encyclopaedia;
- 8 proceedings;
- 5 preprints.
- 1 lecture notes

## Education and training

- 2014 - 2018, PhD in Physics, University of Trieste, Italy
  - Thesis title “Open Quantum System Dynamics: Application to Decoherence and Collapse models” under the supervision of Angelo Bassi.
- 2013 - 2014, Master’s degree in Physics, 110/110 cum laude, University of Trieste, Italy
- 2009 - 2012, Bachelor’s degree in Physics, 105/110, University of Trieste, Italy

### **Research Activity**

- June 2023 - present, Research Associate in Physics (Ricercatore tempo determinato tipo A (RTDA)), University of Trieste, Italy.
- June 2023 - present, Associated with the Italian National Institute for Nuclear Physics INFN, Trieste section
- June 2021 - May 2023, Research Fellow in Physics, Queen's University Belfast, UK.
- February 2018 - May 2021, Post-Doctoral Fellow in Physics (Assegno di ricerca, art. 22, L. 240/2010), University of Trieste, Italy
- February 2018 - May 2021, Associated with the Italian National Institute for Nuclear Physics INFN, Trieste section

### **Principal Investigator Activity**

- 2024 - 2026, Principal Investigator of the "Quantum Control for Testing Quantum Mechanics" project, which was awarded of the Microgrant 2023 for young researchers of the University of Trieste.

### **Teaching Activity**

- 2024/25, 2025/26, course of "Quantum Algorithms" for master students at the University of Trieste.
- 2023/24, course of "Quantum Algorithms in Open Quantum Systems" for master students at the University of Trieste.
- 2018/19, 2019/20, 2020/21, 2023/24, 2024/25, 2025/26, course of "Decoherence in Open Quantum Systems" for PhD students at the University of Trieste.
- 2022/23, course of "Project Management and Data Handling" for master students at Queen's University Belfast.
- 2021/22, course of "Linear and Dynamic Programming" for undergraduate students at Queen's University Belfast.
- 2016/2017, tutoring first-year bachelor's students in Physics at the University of Trieste
- 2015/2016, a module of the course "Information and Communication Technology Abilities" for master students at the University of Trieste.

I am currently in the working group for the design of a new master's degree Course in Physics and Mathematics Didactics (Corso di Laurea Magistrale Interdipartimentale Interclasse in Didattica della Fisica e della Matematica) that aims to begin in 2026/27 at the University of Trieste.

### **Supervisory Activity**

From 2017 to date, I have supervised or I am still supervising 4 PhD, 4 master and 4 bachelor students independently, or in the groups of A. Bassi (University of Trieste, Italy) and M. Paternostro (Queen's University Belfast, UK). I also followed 1 bachelor student in their internship.

### **Organisation of conferences and workshops**

From 2018 to date, I have organised 2 conferences, 4 schools and 8 workshops at the University of Trieste (Italy), University of Ljubljana (Slovenia) and Queen's University Belfast (UK) with international attendance. 2 workshops were cancelled due to the Coronavirus outbreak.

### **Presentations at Conferences and Workshops**

I gave 8 invited talks, 4 invited lectures and 20 contributed talks at schools, conferences and workshops. I presented 5 posters at conferences. I gave 11 talks when visiting other groups. Overall, I attended 50+ conferences, workshops or schools on Quantum Mechanics and related topics.

### **Participation in national and international research projects**

- From 2025, I am a member of the Italian Quantum Science and Technology Society (SISTEQ).
- From 2024, I am a member of Trieste Quantum initiative of the University of Trieste.
- From 2023, I am a member of the Italian MUR founded National Quantum Science and Technology Institute (NQSTI).
- 2023 - 2024, I participated to the EPSRC-founded project INSQT (International Network in Space Quantum Technologies).

- Since 2023, I am a member of the CE-funded project QuCoM (Quantum Control of gravity with levitated Mechanics).
- 2021-2023, I participated to the EPSRC-SFI-funded project QuamNESS (Non-Equilibrium Steady-States of Quantum many-body systems: uncovering universality and thermodynamics).
- From 2022, I am involved in the international research consortium STE-QUEST (Space Time Explorer and QUantum Equivalence principle Space Test).
- 2018 - 2022, I participated to the FETOPEN TEQ (TEsting the large-scale limit of Quantum mechanics) project.
- 2017 - 2020, I participated to the EU-funded COST Action QTSpace (Quantum Technologies in Space).

### Grants

I was awarded 3 small grants for visiting other research groups.

I was awarded the “Microgrant 2023” of the University of Trieste for young researchers.

I collected several funds for the organisation of schools and workshops.

### Service to the community

I am a reviewer for the Dutch Research Council (NWO Open Competition ENW M23.5).

I am a referee for 15 international journals (50+ manuscripts): Physical Review A, Physical Review D, Physical Review E, Physical Review Letters, Physical Review Research and Physical Review X Quantum in the APS publishing group; for Journal of Physics A, New Journal of Physics and Quantum Science and Technology in the Institute of Physics (IOP) publishing group; for Optica in the OSA publishing group; for Physics Letters A in the Elsevier publishing group; for Nature Communication, Scientific Reports and Communications Physics in the Springer-Nature publishing group; for Quantum among the non-profit and community-run journals; for Zeitschrift für angewandte Mathematik und Physik.

I was awarded the status of Trusted Reviewer in recognition of an exceptionally high level of peer review competency by the Institute of Physics (IOP) publishing group.

### Referent for Visiting Scientists

I was the referent person for several Visiting Scientists.

### Social Engagement

I gave divulgation presentations to high school students in 2015, 2016 and 2017.

I helped in the organisation of Divulgations nights for general public “Caffé dei Quanti” in 2018 and 2019.

I was interviewed for the following newspapers:

- Smithsonian Magazine: *A New Experiment Hopes to Solve Quantum Mechanics’ Biggest Mystery*, author: Ramin Skibba, [www.smithsonianmag.com/science-nature/new-experiment-hopes-solve-quantum-mechanics-biggest-mystery-180974132/](http://www.smithsonianmag.com/science-nature/new-experiment-hopes-solve-quantum-mechanics-biggest-mystery-180974132/)
- LiveScience: *Tweak to Schrödinger’s cat equation could unite Einstein’s relativity and quantum mechanics, study hints*, author: Andrey Feldman, <https://www.livescience.com/physics-mathematics/quantum-physics/tweak-to-schrodingers-cat-equation-could-unite-einsteins-relativity-and-quantum-mechanics-study-hints>
- Wired-Italia: *Paradosso di Schrödinger, una nuova soluzione per conciliare quantistica e relatività*, author: Sandro Iannaccone, <https://www.wired.it/article/paradosso-schrodinger-nuova-soluzione-conciliare-quantistica-relativita/>

### Scientific visits to other research groups

From 2016 to date, I visited 11 research groups founded by different organisations.

### Knowledge of Languages

English: Very good

Italian: Excellent, native

Slovenian: Sufficient

## ANNEX - PUBLICATIONS

**Publications in peer-reviewed journals** (\* - these authors contributed equally, † - corresponding author)

- 35 O. Angeli<sup>†</sup>, M. Carlesso  
Entanglement in Markovian hybrid classical-quantum theories of gravity  
Physical Review D **112**, 024047 (2025)  
Link to the Journal: <https://journals.aps.org/prd/abstract/10.1103/jzht-fbwt>
- 34 R. Muffato, T.S. Georgescu, J. Homans, T. Guerreiro, Q. Wu, D.A. Chisholm, M. Carlesso, M. Paternostro, H. Ulbricht<sup>†</sup>  
Generation of classical non-Gaussian states by squeezing a thermal state into nonlinear motion of levitated optomechanics  
Physical Review Research **7**, 013171 (2025)  
Link to the Journal: <https://journals.aps.org/prresearch/abstract/10.1103/PhysRevResearch.7.013171>
- 33 D.G.A. Altamura<sup>†</sup>, A. Vinante, M. Carlesso  
Improved bounds on collapse models from rotational noise of the Laser Interferometer Space Antenna Pathfinder mission  
Physical Review A **111**, L020203 (2025)  
Link to Journal: <https://journals.aps.org/pra/abstract/10.1103/PhysRevA.111.L020203>
- 32 E. Lenler-Eriksen, M. Drewsen, M. Carlesso<sup>†</sup>  
Testing Continuous Spontaneous Localization model with charged macro-molecules  
New Journal of Physics **26**, 113008 (2024)  
Link to the Journal: <https://iopscience.iop.org/article/10.1088/1367-2630/ad904a>
- 31 L. Figurato<sup>†</sup>, M. Dirindin, J.L. Gaona Reyes, M. Carlesso, A. Bassi, S. Donadi  
*On the effectiveness of the collapse in the Diosi-Penrose model*  
New Journal of Physics **26**, 113004 (2024)  
Link to the Journal: <https://iopscience.iop.org/article/10.1088/1367-2630/ad8c77>
- 30 Q. Wu<sup>†</sup>, D. Chisholm, R. Muffato, T. Georgescu, J. Homans, H. Ulbricht, M. Carlesso, M. Paternostro  
Squeezing below the ground state of motion of a continuously monitored levitating nanoparticle  
Quantum Science and Technology **9**, 045038 (2024)  
Link to the Journal: <https://iopscience.iop.org/article/10.1088/2058-9565/ad7284>
- 29 D. A. G. Altamura<sup>†</sup>, M. Carlesso, S. Donadi, A. Bassi  
*Noninterferometric rotational test of the continuous spontaneous localization model: Enhancement of the collapse noise through shape optimization*  
Physical Review A **109**, 062212 (2024)  
Link to the Journal: <https://journals.aps.org/pra/abstract/10.1103/PhysRevA.109.062212>
- 28 G. Di Bartolomeo<sup>†</sup>, M. Carlesso  
*Experimental bounds on linear-friction dissipative collapse models from levitated optomechanics*  
New Journal of Physics **26**, 043006 (2024)  
Link to the Journal: <https://iopscience.iop.org/article/10.1088/1367-2630/ad3842>
- 27 J. L. Gaona Reyes, L. Menéndez Pidal, M. Faizal, M. Carlesso<sup>†</sup>  
*Spontaneous collapse models lead to the emergence of classicality of the Universe*  
Journal High Energy Physics **2024**, 193 (2024)  
Link to the Journal: [https://doi.org/10.1007/JHEP02\(2024\)193](https://doi.org/10.1007/JHEP02(2024)193)
- 26 G. Di Bartolomeo, M. Carlesso<sup>†</sup>, K. Piscicchia, C. Curceanu, M. Derakhshani, L. Diósi  
*Linear-friction many-body equation for dissipative spontaneous wave-function collapse.*  
Physical Review A **108**, 012202 (2023).  
Link to the Journal: <https://journals.aps.org/pra/abstract/10.1103/PhysRevA.108.012202>
- 25 Q. Wu, M.A. Ciampini, M. Paternostro, M. Carlesso<sup>†</sup>;  
*Quantifying protocol efficiency: A thermodynamical figure of merit for classical and quantum state-transfer protocols.*  
Physical Review Research **5**, 023117 (2023).

- Link to the Journal: <https://journals.aps.org/prresearch/abstract/10.1103/PhysRevResearch.5.023117>
- 24 M. Carlesso, S. Donadi, L. Ferialdi, M. Paternostro, H. Ulbricht, A. Bassi<sup>†</sup>;  
*Present status and future of non-interferometric tests of collapse models.*  
Nature Physics **18**, 243-250 (2022).  
Link to the Journal: <https://www.nature.com/articles/s41567-021-01489-5>
- 23 Q. Wu<sup>†</sup>, L. Mancino, M. Carlesso, M.A. Ciampini, L. Magrini, N. Kiesel, M. Paternostro;  
*Non-equilibrium quantum thermodynamics of a particle trapped in a controllable time-varying potential.*  
Physical Review X Quantum **3**, 010322 (2022).  
Link to the Journal: <https://journals.aps.org/prxquantum/abstract/10.1103/PRXQuantum.3.010322>
- 22 A. Belenchia\*, M. Carlesso<sup>†\*</sup>, Ö. Bayraktar, D. Dequal, I. Derkach, G. Gasbarri, W. Herr, Y.L. Li, M. Rademacher, J. Sidhu, DKL Oi, S.T. Seidel, R. Kaltenbaek, C. Marquardt, H. Ulbricht, V.C. Usenko, L. Wörner, A. Xuereb, M. Paternostro, A. Bassi<sup>†</sup>;  
*Quantum Physics in Space.*  
Physics Reports **951**, 1 (2022).  
Link to the Journal: <https://www.sciencedirect.com/science/article/pii/S0370157321004142>
- 21 G. Di Bartolomeo<sup>†</sup>, M Carlesso, A Bassi;  
*Gravity as a classical channel and its dissipative generalization.*  
Physical Review D **104**, 104027 (2021)  
Link to the Journal: <https://journals.aps.org/prd/abstract/10.1103/PhysRevD.104.104027>
- 20 A. Gundhi<sup>†</sup>, J.L. Gaona Reyes<sup>†</sup>, M. Carlesso and A. Bassi;  
*Impact of Dynamical Collapse Models on Inflationary Cosmology.*  
Physical Review Letters **127**, 091302 (2021).  
Link to the Journal: <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.127.091302>
- 19 A. Belenchia, M. Carlesso, S. Donadi, G. Gasbarri, H. Ulbricht, A. Bassi and M. Paternostro<sup>†</sup>.  
*Test quantum mechanics in space – invest US\$1 billion.*  
Nature **596**, 32-34 (2021).  
Link to the Journal: <https://www.nature.com/articles/d41586-021-02091-8>
- 18 G. Gasbarri<sup>†</sup>, A. Belenchia<sup>†</sup>, M. Carlesso, S. Donadi, A. Bassi, R. Kaltenbaek, M. Paternostro and H. Ulbricht.  
*Testing the foundation of quantum physics in space via Interferometric and non-interferometric experiments with mesoscopic nanoparticles.*  
Communications Physics **4**, 155 (2021).  
Link to the Journal: <https://www.nature.com/articles/s42005-021-00656-7>
- 17 J.L. Gaona Reyes<sup>†</sup>, M. Carlesso, A. Bassi.  
*Gravitational interaction through a feedback mechanism.*  
Physical Review D **103**, 056011 (2021).  
Link to the Journal: <https://journals.aps.org/prd/abstract/10.1103/PhysRevD.103.056011>
- 16 S. Rijavec<sup>†</sup>, M. Carlesso, A. Bassi, V. Vedral and C. Marletto.  
*Decoherence effects in non-classical tests of gravity.*  
New Journal of Physics **23**, 043040 (2021).  
Link to the Journal: <https://iopscience.iop.org/article/10.1088/1367-2630/abf3eb>
- 15 M. Carlesso<sup>†</sup>, H.R. Naeij and A. Bassi.  
*Perturbative algorithm for rotational decoherence.*  
Physical Review A **103**, 032220 (2021).  
Link to the Journal: <https://journals.aps.org/prl/abstract/10.1103/PhysRevA.103.032220>
- 14 S.L. Adler, A. Bassi and M. Carlesso<sup>†</sup>.  
*The continuous spontaneous localization Layering Effect from a Lattice Perspective.*  
Journal of Physics A **54**, 085303 (2021).  
Link to the Journal: <https://iopscience.iop.org/article/10.1088/1751-8121/abdbc8>
- 13 A. Vinante<sup>†</sup>, M. Carlesso, A. Bassi, A. Chiasera, S. Varas, P. Falferi, B. Margesin, R. Mezzena, and H. Ulbricht.  
*Narrowing the parameter space of collapse models with ultracold layered force sensors.*

- Physical Review Letters **125**, 100404 (2020).  
Link to the Journal: <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.125.100404>
- 12 Di Zheng, Yingchun Leng, Xi Kong, Rui Li, Zizhe Wang, Xiaohui Luo, Jie Zhao, Chang-Kui Duan, Pu Huang<sup>†</sup>, Jiangfeng Du<sup>†</sup>, Matteo Carlesso, and Angelo Bassi.  
*Room temperature test of the continuous spontaneous localization model using a levitated micro-oscillator.*  
Physical Review Research **2**, 013057 (2020).  
Link to the Journal: <https://journals.aps.org/prresearch/abstract/10.1103/PhysRevResearch.2.013057>
- 11 M. Carlesso<sup>†</sup>, A. Bassi, M. Paternostro and H. Ulbricht.  
*Testing the gravitational field generated by a quantum superposition.*  
New Journal of Physics **21**, 093052 (2019).  
Link to the Journal: <https://iopscience.iop.org/article/10.1088/1367-2630/ab41c1>
- 10 S.L. Adler, A. Bassi, M. Carlesso<sup>†</sup> and A. Vinante.  
*Testing Continuous Spontaneous Localization with Fermi liquids.*  
Physical Review D **99**, 103001 (2019).  
Link to the Journal: <https://journals.aps.org/prd/abstract/10.1103/PhysRevD.99.103001>
- 9 J. Nobakht, M. Carlesso<sup>†</sup>, S. Donadi, M. Paternostro and A. Bassi.  
*Unitary unraveling for the dissipative continuous spontaneous localization model: Application to optomechanical experiments.*  
Physical Review A **98**, 042109 (2018).  
Link to the Journal: <https://journals.aps.org/pra/abstract/10.1103/PhysRevA.98.042109>
- 8 M. Carlesso<sup>†</sup>, L. Ferialdi<sup>†</sup> and A. Bassi.  
*Colored collapse models from the non-interferometric perspective.*  
European Physics Journal D **72**, 159 (2018).  
Link to the Journal: <https://link.springer.com/article/10.1140/epjd/e2018-90248-x>
- 7 M. Carlesso<sup>†</sup>, A. Vinante and A. Bassi.  
*Multilayer test masses to enhance the collapse noise.*  
Physical Review A **98**, 022122 (2018).  
Link to the Journal: <https://journals.aps.org/pra/abstract/10.1103/PhysRevA.98.022122>
- 6 M. Carlesso<sup>†</sup>, M. Paternostro, H. Ulbricht, A. Vinante and A. Bassi<sup>†</sup>.  
*Non-interferometric test of the continuous spontaneous localization model based on rotational optomechanics.*  
New Journal of Physics **20**, 083022 (2018).  
Link to the Journal: <https://iopscience.iop.org/article/10.1088/1367-2630/aad863>
- 5 A. Vinante<sup>†</sup>, R. Mezzena, P. Falferi, M. Carlesso and A. Bassi.  
*Improved noninterferometric test of collapse models using ultracold cantilevers.*  
Physics Review Letters **119**, 110401 (2017).  
Link to the Journal: <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.119.110401>
- 4 M. Carlesso<sup>†</sup> and A. Bassi<sup>†</sup>.  
*Adjoint master equation for Quantum Brownian Motion.*  
Physics Review A **95**, 052119 (2017).  
Link to the Journal: <https://journals.aps.org/pra/abstract/10.1103/PhysRevA.95.052119>
- 3 S. McMillen, M. Brunelli, M. Carlesso, A. Bassi, H. Ulbricht, M.G.A. Paris, and M. Paternostro.  
*Quantum-limited estimation of continuous spontaneous localization.*  
Physical Review A **95**, 012132 (2017).  
Link to the Journal: <https://journals.aps.org/pra/abstract/10.1103/PhysRevA.95.012132>
- 2 M. Carlesso<sup>†</sup>, A. Bassi, P. Falferi, and A. Vinante.  
*Experimental bounds on collapse models from gravitational wave detectors.*  
Physical Review D **94**, 124036 (2016).  
Link to the Journal: <https://journals.aps.org/prd/abstract/10.1103/PhysRevD.94.124036>
- 1 M. Carlesso<sup>†</sup> and A. Bassi<sup>†</sup>.  
*Decoherence due to gravitational time dilation: Analysis of competing decoherence effects.*

Physics Letters A **380**, 31–32, pp. 2354 – 2358 (2016).

Link to the Journal: <https://www.sciencedirect.com/science/article/pii/S0375960116302407?via%3Dihub>

### Chapter in specialist book and encyclopaedia

- 3 M. Carlesso<sup>†\*</sup> and S. Donadi\*  
*Spontaneous Collapse Models*  
Chapter in *Encyclopedia of Mathematical Physics (Second Edition)* edited by R. Szabo and M. Bojowald, Academic Press, 2025  
Link to the chapter: <https://www.sciencedirect.com/science/article/pii/B978032395703800104X>
- 2 M. Carlesso<sup>†</sup> and M. Paternostro<sup>†</sup>.  
*From Basic Science to Technological Development: The Case of Two Avenues*  
Chapter in *Photonic Quantum Technologies: Science and Applications* edited by Benyoucef, M., Wiley Online Library, 2023  
Link to the book: <https://onlinelibrary.wiley.com/doi/book/10.1002/9783527837427>
- 1 M. Carlesso<sup>†</sup> and M. Paternostro<sup>†</sup>.  
*Opto-mechanical tests of collapse models.*  
Chapter in *Do Wave Functions Jump? Perspectives of the Work of GianCarlo Ghirardi* edited by Allori, V., Bassi, A., Dürr, D., Zanghi, N., Fundamental Theories of Physics series, Springer International Publishing, 2019  
Link to the book: <https://www.springer.com/gp/book/9783030467760>

### Conference proceedings

- 8 A. Abdalla, *et al.*  
*Terrestrial Very-Long-Baseline Atom Interferometry: Summary of the Second Workshop*  
EPJ Quantum Technology 12, 42 (2025)  
Link to the Journal: <https://link.springer.com/article/10.1140/epjqt/s40507-025-00344-3>
- 7 S. Abend, *et al.*  
*Terrestrial Very-Long-Baseline Atom Interferometry: Workshop Summary.*  
AVS Quantum Science 6, 2 (2024)  
Link to the Journal: <https://pubs.aip.org/avs/aqs/article/6/2/024701/3290457>
- 6 M. Carlesso<sup>†</sup>  
*Quantum Physics in Space*  
Proceedings of the 57<sup>th</sup> Rencontres de Moriond, 28/1-3/2 2023.  
Link to the Journal: <https://doi.org/10.58027/bsnq-2422>
- 5 M. Carlesso<sup>†</sup>  
*Collapse models and gravitational decoherence at test: How far can we push the limits of quantum mechanics?*  
In Proceedings SPIE 12447, Quantum Sensing, Imaging, and Precision Metrology, 1244713. Quantum West San Francisco, 28/1-3/2 2023.  
Link to the Journal: <https://doi.org/10.1117/12.2657706>
- 4 Q. Wu and M. Carlesso<sup>†</sup>  
*Non-equilibrium quantum thermodynamics of a particle trapped in a controllable time-varying potential.*  
In Proceedings SPIE 12447, Quantum Sensing, Imaging, and Precision Metrology, 1244714. Quantum West San Francisco, 28/1-3/2 2023.  
Link to the Journal: <https://doi.org/10.1117/12.2657707>
- 3 M. Carlesso<sup>†</sup> and S. Donadi.  
*Collapse Models: Main Properties and the State of Art of the Experimental Tests.*  
In Advances in Open Systems and Fundamental Tests of Quantum Mechanics. Proceedings of the 684. WE-Heraeus-Seminar, Bad Honnef, Germany, 2–5 December 2018.  
Link to the Journal: <https://link.springer.com/book/10.1007%2F978-3-030-31146-9>
- 2 M. Carlesso<sup>†</sup> and A. Bassi.  
*Current tests of collapse models: How far can we push the limits of quantum mechanics?*

In Quantum Information and Measurement (QIM) V: Quantum Technologies, S1C.3 (2019). Proceedings of Quantum Information and Measurement (QIM) V, University of Rome “La Sapienza”, Rome, April 4-6, 2019.  
Link to the Journal: <https://www.osapublishing.org/abstract.cfm?URI=QIM-2019-S1C.3>

- 1 M. Carlesso and A. Bassi<sup>†</sup>.  
*Tests of the quantum superposition principle: current experiments on Earth, future experiments in Space.*  
In Proceedings of The Fifteenth Marcel Grossmann Meeting-MG15, University of Rome “La Sapienza”, Rome, July 1-7, 2018.  
Link to preprint: <http://dbserver.icra.it:8080/mg15/pdf/PT3-598BA712LO.pdf>

### Preprints

- 5 A. Gundhi, L. Diosi, M. Carlesso  
*Towards relativistic generalization of collapse models*  
Link to arXiv: <https://arxiv.org/abs/2507.06954>
- 4 R. Muffato, T.S. Georgescu, M. Carlesso, M. Paternostro, H. Ulbricht  
*Coherent expansion of the motional state of a massive nanoparticle beyond its linear dimensions*  
Link to arXiv: <https://arxiv.org/abs/2408.09596>
- 3 G. Zicari, M. Carlesso, A. Trombettoni, M. Paternostro  
*Criticality-amplified quantum probing of a spontaneous collapse model*  
Link to arXiv: <https://arxiv.org/abs/2407.09304>
- 2 H. Ahlers, *et al.*  
*STE-QUEST: Space Time Explorer and QUantum Equivalence principle Space Test*  
Link to arXiv: <https://arxiv.org/abs/2211.15412>
- 1 M. Carlesso<sup>†</sup>, M. Paternostro, H. Ulbricht and A. Bassi.  
*When Cavendish meets Feynman: A quantum torsion balance for testing the quantumness of gravity.*  
Link to arXiv: <https://arxiv.org/abs/1710.08695>

### Lecture notes

M. Carlesso  
Lecture Notes on Quantum Algorithms in Open Quantum Systems  
Link to arXiv: <https://arxiv.org/abs/2406.11613>