ALL. B

Decreto Rettore Università di Roma “La Sapienza” n 1771/2025 del 16.06.2025

GIUSEPPE VITAGLIANO
Curriculum Vitae

Place Vienna
Date 31/07/2025

Part I – General Information

Full Name	Giuseppe Vitagliano
Date of Birth	
Place of Birth	
Citizenship	Italian
Spoken Languages	Italian (Mother tongue), English (Advanced), Spanish (Advanced), German (Intermediate), Catalan (Basic), Basque (Basic)

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,…)
Bachelor's degree	2007	Università di Pisa	final grade: 110 Cum laude
Master’s degree	2010	Università di Pisa	final grade: 110 Cum laude
PhD	2015	Universidad del Pais Vasco (UPV/EHU)	final grade: Excellent, cum laude and international mention

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
Nov 2023	March 2026	Technical University of Vienna (TU Wien)	Senior Postdoc, Principal investigator of FWF projects
Jun 2022	Apr 2023	Technical University of Vienna (TU Wien)	Senior Postdoc, Principal investigator of FWF projects
Apr 2021	May 2022	Institute for Quantum Optics and Quantum Information (IQOQI) Vienna	Senior Postdoc in the Young Independent Research Group
Jun 2019	Mar 2021	Institute for Quantum Optics and Quantum Information (IQOQI) Vienna	Senior Postdoc (Lise-Meitner Fellow)
May 2018	Sep 2018	Institute for Quantum Optics and Quantum Information (IQOQI) Vienna	Senior Postdoc (Lise-Meitner Fellow)
Apr 2017	Apr 2018	Institute for Quantum Optics and Quantum Information (IQOQI) Vienna	Postdoctoral researcher

Oct 2015	Mar 2017	University of the Basque Country (UPV/EHU)	Postdoctoral researcher
Dec 2010	Oct 2015	University of the Basque Country (UPV/EHU)	PhD student

IIIB – Other Appointments

Start	End	Institution	Position
May 2023	Oct 2023		Career break: paternity leave
Sep 2018	June 2019		Career break: paternity leave

Part IV – Teaching and supervision experience

Year	Institution	Lecture/Course
2025	FH Technikum Wien	Quantum Information II (6 CFU), preparation made, course to be given starting Sept 2025
2025	FH Technikum Wien	Quantum Sensing (6 CFU), preparation made, course to be given starting Sept 2025
2023	TU Wien	Co-Supervision of Bita Olamaei
2024	TU Wien	Co-Supervision of Julia Mathé (PhD)
2023	TU Wien	Co-Supervision of Julia Mathé (Masters thesis)
2022	TU Wien	Co-Supervision of Dimpi Thakuria
2020	IQOQI Vienna	Co-Supervision of Shuheng Liu
2019	IQOQI Vienna	Co-Supervision of Paul Appel

Part V - Society memberships, Fellowships, Awards and Honors

Year	Title
2025	Ramòn y Cajal Fellow (Spanish national Tenure track fellowship)
2025	Società Italiana di Scienze e Tecnologie Quantistiche (Senior member)
2018	Lise-Meitner fellowship (Austrian Science Fund FWF)
2010	PhD Fellowship from Scuola Internazionale Superiore di Studi Avanzati (SISSA) , (declined)
2002-2004	Several regional and national prizes for scientific competitions (like International Mathematics and Physics Olympics and others)

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2025	“Understanding phases of matter with entanglement theory”. Role: Principal Investigator (PI)	Ramón y Cajal (Spanish Ministry of science, innovation and universities MICIU	~350000 euros

2022	“Non-equilibrium quantum working fluids: dynamics and usage (NEQFLUYDIM)” P 36633-N, DOI:10.55776/P36633 . Role: Principal Investigator (PI)	FWF Stand-alone project (Austrian science fund)	~410000 euros
2022	“Spatio-temporal correlations in many-body quantum systems (MANYSTRCORR)”, P 35810-N DOI: 10.55776/P35810 . Role: Principal Investigator (PI)	FWF Stand-alone project (Austrian science fund)	~400000 euros
2018	Macroscopic Quantum Coherence: detection and quantification (MAQUACOH) M 2462-N27 , DOI: 10.55776/M2462 Role: Principal Investigator (PI)	FWF Lise-Meitner fellowship (Austrian science fund)	~170000 euros
2018	“Emergence of causal order in quantum theory and beyond”, ZK 3, DOI: 10.55776/ZK3, PIs: Y. Guryanova, C. Budroni, Ä. Baumeler. Role: postdoctoral team member, co-leader of research line	FWF Yound Independent Research Group (Austrian science fund)	~1.8M euros
2017	“The role of quantum information in thermodynamics” (QUIT), Y879-N27, DOI: 10.55776/Y879, PI: Marcus Huber. Role: Postdoctoral team member	FWF Start prize (Austrian Science Fund)	~1.2M euros
2012	“Quantum States: Analysis and Realizations (QUASAR)”, PI: H. Weinfurter, G. Tóth, R. Demkowicz-Dobrzanski, O. Gühne, P. Mataloni, S. Pitassi, A. Zeilinger, M. Zukowski. Role: PhD student/postdoctoral team member	European Union CHIST-ERA project	~1.2M euros
2010	“Generation and detection of entanglement in quantum optical systems (GEDENTQOPT)”, PI: Géza Tóth. Role: PhD student/postdoctoral team member	European Research Council Starting grant	

Part VII – Research Activities

Keywords

Foundations of Quantum Physics, Entanglement theory, Quantum Optics, Quantum Information, Quantum metrology, Quantum many-body physics, Quantum thermodynamics, Cold-atom physics, temporal quantum correlations

Brief Description

My contribution to research started with my masters' thesis, in the group of Josè Ignacio Latorre in Barcelona. The topic was entanglement theory applied to many-body physics, supervised also by Pasquale Calabrese in Pisa, resulting in a high-impact publication (New J. Phys. 12 113049 (2010), currently with > 100 citations).

I did my PhD in the group of Géza Tóth in Bilbao, where I worked in generalizing the state-of-art on spin squeezing, extensively developing the tools currently employed to detect entanglement in cold-atom experiments (PRL 107, 240502 (2011), PRL 112, 155304 (2014), Science 360 416–418 (2018) among others). Furthermore, I developed novel witnesses of temporal quantum correlations applicable to experiments with atomic ensembles (PRL 115, 200403 (2015)).

Afterwards, I moved to the group of Marcus Huber at IQOQI-Vienna and I was awarded a Lise-Meitner grant, becoming a fully autonomous PI. I worked on entanglement theory connected with many-body physics, also contributing to a review on entanglement detection (Nat. Rev. Phys. 1, 72-87 (2019)). I also investigated the foundations of quantum thermodynamics, like the role of correlations (JPA: Math. Theo. 52 (46), 465303 (2019), Chapter 30 of Thermodynamics in the Quantum Regime (invited book chapter)) and the ultimate limits of refrigeration (PRX Quantum 4, 010332 (2023)). I also participated in a wide collaboration that aims at investigating thermodynamics in the quantum regime with an experimental perspective (PRX Quantum 2, 030310 (2021)).

In parallel, I contributed to ideate and write an interdisciplinary research proposal, that resulted in the creation of a ``Young Independent Research Group" led by Yelena Guryanova, Ämin Baumeler and Costantino Budroni. I was co-leading the research line on temporal quantum correlations, with Costantino Budroni and also contributed to the overall organization of the group. I fully joined the group after the end of my Lise-Meitner grant. In this time I widened my investigation on quantum foundations including questions related to causality, metrology and time measurement (e.g., PRR 3, 033051 (2021), Quantum 8, 1224 (2024)). I was also the leading author of an invited perspective article on temporal quantum correlations (PRA 107, 040101 (2023)).

At the same time, I was developing my totally independent research line, connecting entanglement, thermodynamics and quantum metrology, which led me to write two research projects, both eventually funded by FWF Stand-alone grants. During this period I started co-supervising MSc and PhD students, (Shuheng Liu and Julia Mathé among others), as well as younger researchers. In particular, Julia Mathé has now joined my group at Atominstitut in Vienna and Shuheng Liu, who is now a very successful postdoctoral researcher in Beijing, has joined our research area as a visiting postdoc with his own funds. (some publications that resulted from this supervision work are PRX Quantum 4, 020324 (2023), Quantum 8, 1236 (2024), PRL 134, 210202 (2025) plus various preprints currently under revision).

Part VIII – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [peer reviewed]	23	Scopus	2010	2025
Papers [pre-prints, under revision]	5	Scopus	2024	2025

Total Impact factor	203

Total Citations	1138 (Scopus)
Average Citations per Product	1138/23 = 49.5
Hirsch (H) index	14
Normalized H index*	1

*H index divided by the academic seniority.

Part IX– Selected Publications (IF from WoS and citations from Scopus)

Preprints

1. J. Mathé, A. Usui, O. Gühne, G. Vitagliano, Estimating entanglement monotones of non-pure spin-squeezed states, arXiv:2504.07814 (2025) (under revision in Quantum)
2. G. Vitagliano, O. Gühne, G. Tóth, su(d)-squeezing and many-body entanglement geometry in finite-dimensional systems, arXiv:2406.13338 (accepted in Quantum 2025 IF=5.4)

Peer-Reviewed

3. O. Lib, S. Liu, R. Shekel, Q. He, M. Huber, Y. Bromberg, G. Vitagliano, Experimental certification of high-dimensional entanglement with randomized measurements, Phys. Rev. Lett. 134, 210202 (2025) DOI:10.1103/PhysRevLett.134.210202 (IF=9)
4. S. Liu, M. Fadel, Q. He, M. Huber, G. Vitagliano, Bounding entanglement dimensionality from the covariance matrix, Quantum 8, 1236 (2024), DOI:10.22331/q-2024-01-30-1236 (IF =5.4, 6 citations)
5. L. B. Vieira, S. Milz, G. Vitagliano and C. Budroni, Witnessing environment dimension through temporal correlations, Quantum 8, 1224 (2024), DOI:10.22331/q-2024-01-10-1224 (IF=5.4, 1 citation)
6. G. Vitagliano, C. Budroni, Leggett-Garg Macrorealism and temporal correlations, Phys. Rev. A 107, 040101 (2023), DOI:10.1103/physreva.107.040101 (invited perspective article, IF = 2.9, 14 citations)
7. S. Liu, Q. He, M. Huber, O. Gühne, G. Vitagliano, Characterizing entanglement dimensionality from randomized measurements, PRX Quantum 4, 020324 (2023) DOI:10.1103/prxquantum.4.020324 (IF=11, 15 citations)
8. P. Taranto, F. Bakhshinezhad, A. Bluhm, R. Silva, N. Friis, M. P. E. Lock, G. Vitagliano, F. C. Binder, T. Debarba, E. Schwarzhans, F. Clivaz, M. Huber, Landauer vs. Nernst: What is the True Cost of Cooling a Quantum System?, PRX Quantum 4, 010332 (2023) DOI:10.1103/PRXQuantum.4.010332 (IF =11, 41 citations)
9. G. Vitagliano, M. Fadel, I. Apellaniz, M. Kleinmann, B. Lücke, C. Klempt, G. Tóth, Number-phase uncertainty relations and bipartite entanglement detection in spin ensembles, Quantum 7, 914 (2023). DOI:10.22331/q-2023-02-09-914 (IF=5.4, 9 citations)
10. M. Gluza*, J. Sabino*, N. H. Y. Ng*, G. Vitagliano*, M. Pezzutto, Y. Omar, I. Mazets, M. Huber, J. Schmiedmayer, J. Eisert, Quantum field thermal machines, PRX Quantum 2, 030310 (2021) DOI:10.1103/PRXQuantum.2.030310 (IF=11, 38 citations)
11. C. Budroni*, G. Vitagliano*, M. P. Woods*, Ticking-clock performance enhanced by nonclassical temporal correlations, Phys. Rev. Research 3, 033051 (2021) DOI:10.1103/PhysRevResearch.3.033051 (IF=4.2, 10 citations)
12. M. Fadel, A. Usui, M. Huber, N. Friis, G. Vitagliano, Entanglement Quantification in Atomic Ensembles, Phys. Rev. Lett. 127, 010401 (2021) DOI:10.1103/PhysRevLett.127.010401 (IF=9, 23 citations)

VIENNA, 31/07/2025 FIRMA: