

Education

- **Institute for Quantum Optics and Quantum Information, Vienna** Vienna, Austria
Doctor of Science in Physics 2019-2023
 - Thesis: *New quantum effects in space and time: complex networks, projectiles, and time translations*
 - Supervisors: Časlav Brukner and Miguel Navascués.
- **Universidad Complutense de Madrid (UCM)** Madrid, Spain
Master in Advanced Mathematics 2017-2018
 - Average grade: 9.33 out of 10.00
 - Thesis: *C^* -algebras and applications to Quantum Information Theory.*
 - Supervisor: Carlos Palazuelos.
- **Universidad Complutense de Madrid (UCM)** Madrid, Spain
Degree in Mathematics 2012-2017
 - Average grade: 9.11 out of 10.00
 - Thesis: *Tensor products of Banach spaces and its applications to Quantum Information Theory.*
 - Supervisor: Carlos Palazuelos.
- **Universidad Complutense de Madrid (UCM)** Madrid, Spain
Degree in Physics 2012-2017
 - Average grade: 9.16 out of 10.00
 - Thesis: *Topological Quantum Computing: An Introduction.*
 - Supervisor: Miguel Ángel Martín-Delgado.

OTHER SCHOOLS

- **University of Copenhagen - QMATH** Copenhagen, Denmark
Entropy inequalities in Quantum Information Science Summer 2022
- **University of Copenhagen - QMATH** Copenhagen, Denmark
The mathematics of quantum entanglement via nonlocal games Summer 2022
- **Austrian Academy of Sciences** Ligist, Austria
ÖAW AI Summer school Summer 2019
- **University of Copenhagen - QMATH** Copenhagen, Denmark
Tensors: Geometry and Quantum Information Summer 2018
- **Gulbenkian Foundation** Lisbon, Portugal
Algebraic Geometry Summer School Summer 2014

Publications

- **Trillo, D.**, Thinh, P. Le., Navascués, M. *Quantum supremacy in mechanical tasks: projectiles, rockets and quantum backflow.* (arXiv: 2209.00725) - accepted in npj Quantum Information.
- **Trillo, D.**, Dive, B., Navascués, M. (2023) *Universal quantum rewinding protocol with an arbitrarily high probability of success.*, Physical Review Letters, 130(11) 110201, (featured as editor's suggestion).
- Schiansky, P., Strömberg, T., **Trillo, D.**, Saggio, V., Dive, B., Navascués, M., Walther, P. (2023). *Demonstration of universal time-reversal for quantum processes.* Optica, 2(10) 200-205.
- Li, Z. D., Mao, Y. L., Weilenmann, M., Tavakoli, A., Chen, H., Feng, L., Yang, S.J., Renou, M.O., **Trillo, D.**, Thinh, P. Le., Gisin, N., Acín, A., Navascués, M., Wang, Z., Fan, J. (2022). *Testing real quantum theory in an optical quantum network.* Physical Review Letters, 128(4), 040402.
- Renou, M. O., **Trillo, D.**, Weilenmann, M., Thinh, P. Le, Tavakoli, A., Acín, A., Gisin, N., Navascués, M. (2021). *Quantum theory based on real numbers can be experimentally falsified.* Nature, 600(7890), 625-629.
- **Trillo, D.**, Dive, B., Navascués, M. (2020). *Translating Uncontrolled Systems in Time.* Quantum, 4, 374.
- Weilenmann, M., Dive, B., **Trillo, D.**, Aguilar, E. A., Navascués, M. (2020). *Entanglement detection beyond measuring fidelities.* Physical Review Letters, 124(20), 200502.

Talks

An asterisk (*) denotes an invited talk.

Quantum supremacy in mechanical tasks [...]	ICE-8, Santiago de Compostela	May 2023
Time Translations on uncontrolled quantum systems	Q@TN, Trento	Dec 2021
Quantum theory needs complex numbers	ICMP 2021, Geneva	Aug 2021
Quantum physics needs complex numbers*	Scott Aaronson group seminar, online	Feb 2021
Entanglement detection beyond measuring fidelities*	Markus Huber group seminar, online	Jun 2020
Remote Time Manipulation	The Time Machine Factory, Torino	Sep 2019
Central polynomials to manipulate time	BYMAT, Madrid	May 2019
Central polynomials to manipulate time	Thematic Semester at ICMAT, Madrid	May 2019
Remote Time Manipulation	ISWQT, Shanghai	May 2019
Remote Time Manipulation	IQOQI theory breakfast, Vienna	Apr 2019

Grants and Awards

- 2023 Paul Ehrenfest best paper award for quantum foundations.
- 2020-2023 **PhD Scholarship:** DOC Fellowship.
- 2019 Third best student talk at ISWQT, Shanghai.
- 2017-2018 Severo Ochoa grant for master students.
- 2017 Captain of the winning team of PLANCKS 2017.
- 2016-2017 Severo Ochoa grant for undergraduate students.
- 2012-2017 Five times recipient of the **Excellence Scholarship** for undergraduates of Madrid.
- 2012 Honourable Mention at the International Physics Olympiad.
- 2012 Gold Medal at the Spanish National Physics Olympiad.

Other Scientific Activities

- Refereed for the journals **Foundations of Science**, **IEEE Transactions on Information Theory** and **Quantum**, and for the conferences **Tsirelson Memorial Workshop**, **TQC2023**, **QPL 2023** and **AQIS 2023**.
- Student representative for the PhD students of my doctoral school.
- Co-organized the **Vienna Summer School 2020 on Gravitational Quantum Physics**, which took place online and had an attendance of over 100 participants from all over the world.
- Presented the poster **Remote Time Manipulation** at the Central European Quantum Information Processing conference in Skalica, Slovakia; and at the Asian Quantum Information Science conference in Seoul, South Korea. (2019)
- Volunteer and participant of the first BYMAT (Bringing Young Mathematicians Together) conference, in which I informally chaired a session on functional analysis. (2018)
- Participated in PLANCKS (a university-level international physics olympiad by teams) every year from 2015 to 2018, achieving the overall ranks (5th, 7th, 1st, 4th). I was team captain the year we won.
- Attended the International Astronomy Youth Camp (IAYC), where I lead a team (three people) which modelled galaxy interactions. (2014)

Language Skills

- **Formal:** Fluent in \LaTeX , Mathematica and Matlab/Octave (including YALMIP). Basic knowledge of Lean and Python.
- **Natural:** Spanish (native), English (fluent), German (advanced), Japanese (beginner).