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

## ROBERTO DI CANDIA Curriculum Vitae

### Part I – General Information

|                     |                           |
|---------------------|---------------------------|
| Full Name           | Roberto Di Candia         |
| Date of Birth       |                           |
| Place of Birth      |                           |
| Citizenship         | Italian                   |
| Permanent Address   |                           |
| Mobile Phone Number |                           |
| E-mail              |                           |
| Spoken Languages    | Italian, English, Spanish |

### Part II – Education

| Type            | Year | Institution             | Notes (Degree, Experience,...)     |
|-----------------|------|-------------------------|------------------------------------|
| Ph.D.           | 2015 | UPV/EHU (Bilbao, Spain) | Quantum Technology and Science     |
| Master degree   | 2011 | Università di Pisa      | Scienze Fisiche, indirizzo teorico |
| Bachelor degree | 2008 | Università di Pisa      | Fisica                             |

### Part III – Appointments

#### IIIA – Academic Appointments

| Start   | End     | Institution                        | Position                           |
|---------|---------|------------------------------------|------------------------------------|
| 08.2022 | ---     | Aalto University (Finland)         | Academy of Finland Research Fellow |
| 03.2022 | 07.2022 | Chalmers University (Sweden)       | Researcher                         |
| 03.2020 | 02.2022 | Aalto University (Finland)         | Marie Curie Individual Fellow      |
| 07.2019 | 02.2020 | Aalto University (Finland)         | Postdoctoral Researcher            |
| 05.2017 | 04.2019 | Freie Universität Berlin (Germany) | Humboldt Postdoctoral Fellow       |
| 05.2016 | 04.2017 | Freie Universität Berlin (Germany) | Postdoctoral Fellow                |
| 09.2014 | 08.2015 | UPV/EHU (Spain)                    | Ph.D. Researcher                   |
| 08.2011 | 08.2014 | UPV/EHU (Spain)                    | Marie Curie ESR Fellow             |

#### IIIB – Other Appointments (Visiting and secondments)

| Start   | End     | Institution                         | Position                       |
|---------|---------|-------------------------------------|--------------------------------|
| 01.2023 | 12.2024 | Università di Pavia                 | Visiting Researcher            |
| 09.2021 | 11.2021 | Walther Meißner Institute (Germany) | Humboldt Fellow (Renewal Stay) |

|         |         |                                     |                           |
|---------|---------|-------------------------------------|---------------------------|
| 05.2021 | 07.2021 | IFN-CNR (Rome)                      | MSCA secondment           |
| 10.2015 | 12.2015 | Walther Meißner Institute (Germany) | Visiting Ph.D. Researcher |

## Part IV– Participation/Coordination of National and International Research groups

### Coordination of a research group:

Since August 2022, I have been managing a 5-years personal grant of approximately €850k from the Academy of Finland (see Funding Information), which includes the recruitment of a Ph.D. student.

### Participation to the activity of the following international research groups:

- *QUiT Research group*, Università di Pavia, 2023-2024, Visiting Researcher, Host: Prof. Lorenzo Maccone
- *Göran Johansson group*, Chalmers University (Sweden), Researcher, 03.2022-07.2022
- *Riku Jäntti group*, Aalto University (Finland), Marie-Curie Fellow, 07.2019-02.2022
- *Jens Eisert group*, Freie Universität Berlin (Germany), Postdoctoral Researcher, 05.2016-04.2019
- *Enrique Solano group*, UPV/EHU (Spain), Marie Curie Ph.D. Researcher 08.2011-09.2015

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

| Year | Title                                                                                   | Program                                                  | Grant value |
|------|-----------------------------------------------------------------------------------------|----------------------------------------------------------|-------------|
| 2025 | Critical quantum sensing for microwave IoT [PI, Selected for funding, offer declined]   | Young Researchers 2024 (MUR)                             | ~€300k      |
| 2025 | Quantum communication and sensing with low-powered devices in the microwave regime [PI] | Research costs of Academy of Finland Research Fellowship | ~€160k      |
| 2022 | Quantum communication and sensing with low-powered devices in the microwave regime [PI] | Research costs of Academy of Finland Research Fellowship | ~€240k      |
| 2022 | Quantum communication and sensing with low-powered devices in the microwave regime [PI] | Academy of Finland Research Fellowship                   | ~€450k      |
| 2021 | Research visit at Walther Meißner Institute [I]                                         | Humboldt Renewal Stay                                    | ~€13k       |
| 2020 | Low-powered microwave quantum-enhanced communication [PI]                               | Marie Curie Individual Fellowship                        | ~€190k      |
| 2017 | Robust Analogue Quantum Simulators [I]                                                  | Humboldt Postdoctoral Fellowship                         | ~€80K       |

## Part VI – Teaching and Supervision experience

### Courses

| Year      | Institution                        | Lecture/Course                                                                                                                 |
|-----------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 2022      | Aalto University                   | Lecture: <i>Quantum Teleportation and Superdense Coding</i> , in <i>Introduction to Quantum Technology</i> , 1st year Bachelor |
| 2017/2018 | Freie Universität Berlin (Germany) | <i>Advanced Quantum Mechanics</i> (Tutor)                                                                                      |
| 2017      | Freie Universität Berlin (Germany) | Lecture: <i>Scattering Theory</i> , in <i>Advanced Quantum Mechanics</i> , Master                                              |
| 2016/2017 | Freie Universität Berlin (Germany) | <i>Advanced Quantum Mechanics</i> (Tutor)                                                                                      |

### Supervised Students

- *Uesli Alushi*, Aalto University, Espoo (Finland), Ph.D. student (2022-ongoing) [see Publications 5,6,7,33,39]
- *Malik Saneaa*, Aalto University, Espoo (Finland), M.Sc. student, co-supervision with Prof. R. Jäntti (2021) [see Publication 40]
- *Philip Zienkiewicz*, Freie Universität Berlin (Germany), B.Sc. student, co-supervision with Prof. J. Eisert (2018)

**Note:** Publication numbers refer to the list provided in the Publications sections (part X and XI)

## Part VII - Society memberships, Awards and Honors

| Year | Title                                                                                          |
|------|------------------------------------------------------------------------------------------------|
| 2025 | Senior ordinary member of Società Italiana di Scienze e Tecnologie Quantistiche (SISTEQ),      |
| 2024 | Member of the Editorial Board of Communications Physics (Springer Nature), 3 years appointment |
| 2022 | Academy of Finland Fellow, 5 years appointment                                                 |
| 2021 | Abilitazione Scientifica Nazionale, II Fascia, Fisica Teorica della Materia, Italy             |
| 2020 | Marie Curie Fellow, 2 years appointment                                                        |
| 2017 | Humboldt Fellow, lifetime membership award                                                     |

## Part VIII – Research Activities

### Microwave quantum communication

I have been a key contributor to the development of continuous-variable (CV) quantum protocols based on superconducting microwave circuits. I introduced interferometric techniques for the quantum tomography of CV microwave signals [26], and designed a quantum teleportation protocol specifically tailored to this platform [22]. These methods have enabled several milestone experiments at the Walther Meißner Institute (Garching, Germany), including: (i) the first observation of path-entanglement with microwave signals [30], (ii) the characterization of the squeezing properties of Josephson parametric amplifiers, (iii) the first implementation of a controlled displacement operation [20], (iv) the measurement of two-time correlation functions [15], and (v) the first proof-of-principle demonstration of microwave quantum teleportation [11]. More recently, I have carried out an in-depth study of analog quantum teleportation protocols [39], which are particularly well-suited for implementation in superconducting microwave platforms. I have also explored how two-photon interactions can enhance waveguide QED, showing how to overcome known no-go theorems and designing a deterministic controlled-phase gate [7].

### Quantum metrology

I proposed quantum sensing protocols based on a single Kerr resonator operating near criticality for high-precision frequency estimation, with applications to quantum magnetometry [9] and qubit readout [41]. I analyzed the ultimate precision limits of this approach within a general theoretical framework [6], investigated its robustness to noise, and extended the protocol to networks of multiple resonators [5]. These ideas led to the first experimental demonstration of critical quantum sensing with superconducting devices, where the scaling of sensitivity with quantum resources can be directly observed [2], as well as to the first observation of a driven-dissipative second-order phase transition in such systems [4]. I also contributed to the rigorous generalization of these methods to arbitrary bosonic parameters [1]. Furthermore, I contributed to the development of a protocol for axion dark matter detection based on non-degenerate parametric resonators, by analyzing a realistic model of the axion field [3]. Finally, I contributed to identifying a connection between quantum metrology and quantum optics by using fundamental bounds on parameter estimation to derive limits on the characteristic decay time of the second-order coherence function  $g^{(2)}$  [38].

### Remote quantum sensing and communication

I identified the ultimate precision limits of quantum illumination in the presence of generic background noise [12,14,17,34]. I proposed novel, experimentally feasible, optimal receivers for quantum illumination and investigated the role of sequential strategies [8,16]. I also developed quantum-enhanced protocols for range and velocity estimation [10]. Furthermore, I contributed to the development of the concept of “quantum backscatter communication” [35,36] and analyzed aspects of its unconditional security in terms of covertness [12,13], supporting the possibility of low-power, secure communication and enhanced privacy in future quantum networks.

### Quantum simulations

I introduced the concept of “embedding quantum simulator” [37], a technique that enables the simulation of non-trivial quantities in a quantum simulator. I have developed methods for computing entanglement monotones [24,28], multi-time correlation functions [25], and for simulating both Markovian [23] and semi-Markovian [18] quantum dynamics in a quantum simulator. The principle underlying these approaches has been experimentally demonstrated [21].

Note: Publication numbers refer to the list provided in the Publications sections (part X and XI)



## Part IX – Summary of Scientific Achievements

| Product type                  | Number | Data Base | Start   | End     |
|-------------------------------|--------|-----------|---------|---------|
| Journal Articles              | 30     | SCOPUS    | 12.2012 | 07/2025 |
| Conference Proceedings        | 5      | SCOPUS    |         |         |
| Editorial Material (Comments) | 1      | SCOPUS    |         |         |

The following table considers only Journal Articles (30) as input

|                               |       |
|-------------------------------|-------|
| Total Impact factor           | 214.8 |
| Average Impact factor         | 7.1   |
| Total Citations               | 984   |
| Average Citations per Product | 32.8  |
| Hirsch (H) index              | 18    |
| Normalized H index*           | 1.42  |

\*H index divided by the academic seniority.

## Part X– Selected Publications

- 1- W. Gorecki, F. Albarelli, S. Felicetti, **R. Di Candia**, L. Maccone, Interplay between time and energy in bosonic noisy quantum metrology, *PRX Quantum* **6**, 020351 (2025).  
[IF = 11, Citations = 0]
- 2- G. Beaulieu, F. Minganti, S. Frasca, M. Scigliuzzo, S. Felicetti, **R. Di Candia**, P. Scarlino, Criticality-enhanced quantum sensing with a parametric superconducting resonator, *PRX Quantum* **6**, 020301 (2025).  
[IF = 11, Citations = 3]  
Press Release: [<https://actu.epfl.ch/news/a-new-level-of-precision-in-quantum-sensing-3/>]
- 3- H. Shi, A.J. Brady, W. Gorecki, L. Maccone, **R. Di Candia**, Q. Zhuang, Quantum-enhanced dark matter detection with in-cavity control: mitigating the Rayleigh curse, *npj Quantum Information* **11**, 48 (2025).  
[IF = 8.3, Citations = 1]
- 4- G. Beaulieu, F. Minganti, S. Frasca, V. Savona, S. Felicetti, **R. Di Candia**, P. Scarlino, Observation of first- and second-order dissipative phase transitions in a two-photon driven Kerr resonator, *Nature Communications* **16**, 1954 (2025).  
[IF = 15.7, Citations = 4]  
Press Release: [<https://www.isc.cnr.it/news/observation-of-dissipative-phase-transitions-on-nature-communications>],  
[<https://www.eurekalert.org/news-releases/1076284>],  
[<https://actu.epfl.ch/news/unlocking-the-secrets-of-phase-transitions-in-quantum>]
- 5- U. Alushi, A. Coppo, V. Brosco, **R. Di Candia\***, S. Felicetti, Collective quantum enhancement in critical quantum sensing, *Communications Physics* **8**, 74 (2025).  
[IF = 5.4, Citations = 4]

- 6- U. Alushi, W. Gorecki, S. Felicetti, **R. Di Candia**\*, Optimality and noise resilience of critical quantum sensing, *Physical Review Letters* **133**, 040801 (2024).  
[IF = 9, Citations = 9]
- 7- U. Alushi, T. Ramos, J.J. Garcia-Ripoll, **R. Di Candia**\*, S. Felicetti, Waveguide QED with quadratic light-matter interaction, *PRX Quantum* **4**, 030326 (2023).  
[IF = 11, Citations = 14]
- 8- M. Reichert, Q. Zhuang, J.H. Shapiro, **R. Di Candia**\*, Quantum illumination with a hetero-homodyne receiver and sequential detection, *Physical Review Applied* **20**, 014030 (2023).  
[IF = 4.4, Citations = 16]
- 9- **R. Di Candia**\*, F. Minganti, K.V. Petrovnin, G.S. Paraoanu, S. Felicetti, Critical parametric quantum sensing, *npj Quantum Information* **9**, 23 (2023).  
[IF = 8.3, Citations = 55]
- 10- M. Reichert, **R. Di Candia**, M.Z. Win, M. Sanz, Quantum-enhanced Doppler lidar, *npj Quantum Information* **8**, 147 (2022).  
[IF = 8.3, Citations = 25]
- 11- K.G. Fedorov, M. Renger, S. Pogorzalek, **R. Di Candia**, Q. Chen, Y. Nojiri, K. Inomata, Y. Nakamura, M. Partanen, A. Marx, R. Gross, F. Deppe, Experimental quantum teleportation of propagating microwaves, *Science Advances* **7**, eabk0861 (2021).  
[IF = 12.5, Citations = 36]  
Press Release: [<https://phys.org/news/2022-01-experimental-quantum-teleportation-propagating-microwaves.html>]
- 12- **R. Di Candia**\*, H. Yigitler, G.S. Paraoanu, R. Jäntti, Two-way covert quantum communication in the microwave regime, *PRX Quantum* **2**, 020316 (2021).  
[IF = 11, Citations = 29]

**\*Corresponding Author**

**Total impact factor of Selected Publications: 115.9**

**Average Impact factor of Selected Publications: 9.7**

**Total Citations of Selected Publications: 196**

## **Part XI– Other Publications**

### **Journal Articles**

- 13- Y. Zhang, **R. Di Candia**, H. Yigitler, R. Jäntti, Z. Yan, Covert backscatter communication in the presence of multi-antenna eavesdropper, *IEEE Communications Letters* **28**, 1770-1774 (2024). [IF=4.4]
- 14- R. Jonsson, **R. Di Candia**, Gaussian quantum estimation of the loss parameter in a thermal environment, *Journal of Physics A: Mathematical and Theoretical* **55**, 385301 (2022).  
[IF=2.1]
- 15- K.G. Fedorov S. Pogorzalek, U. Las Heras, M. Sanz, P. Yard, P. Eder, M. Fischer, L. Goetz, E. Xie, K. Inomata, Y. Nakamura, **R. Di Candia**, E. Solano, A. Marx, F. Deppe, R. Gross,

- Finite-time quantum entanglement in propagating squeezed microwaves, *Scientific Reports* **8**, 6416 (2018). [IF=3.9]
- 16- U. Las Heras, **R. Di Candia**, K.G. Fedorov, F. Deppe, M. Sanz, E. Solano, Quantum illumination reveals phase-shift inducing cloaking, *Scientific Reports* **7**, 9333 (2017). [IF=3.9]
  - 17- M. Sanz, U. Las Heras, J.J. Garcia-Ripoll, E. Solano, **R. Di Candia**, Quantum estimation methods for quantum illumination, *Physical Review Letters* **118**, 070803 (2017). [IF=9]
  - 18- U. Alvarez-Rodriguez, **R. Di Candia**, J. Casanova, M. Sanz, E. Solano, Algorithmic quantum simulation of memory effects, *Physical Review A* **95**, 020301(R) (2017). [IF=2.9]
  - 19- M. Sanz, I.L. Egusquiza, **R. Di Candia**, H. Saberli, L. Lamata, E. Solano, Entanglement classification with matrix product states, *Scientific Reports* **6**, 30188 (2016). [IF=3.9]
  - 20- K.G. Fedorov, L. Zhong, S. Pogorzalek, P. Eder, M. Fischer, J. Goetz, E. Xie, F. Wulschner, K. Inomata, T. Yamamoto, Y. Nakamura, **R. Di Candia**, U. Las Heras, M. Sanz, E. Solano, E.P. Menzel, F. Deppe, A. Marx, R. Gross, Displacement of propagating squeezed microwave states, *Physical Review Letters* **117**, 020502 (2016). [IF=9]
  - 21- J.C. Lored, M.P. Almeida, **R. Di Candia**, J.S. Pedernales, J. Casanova, E. Solano, A.G. White, Measuring entanglement in a photonic embedding quantum simulator, *Physical Review Letters* **116**, 070503 (2016). [IF=9]
  - 22- **R. Di Candia**, K.G. Fedorov, L. Zhong, S. Felicetti, E.P. Menzel, M. Sanz, F. Deppe, A. Marx, R. Gross, E. Solano, Quantum teleportation of propagating quantum microwaves, *EPJ Quantum Technology* **2**, 1-17 (2015). [IF=5.6]
  - 23- **R. Di Candia**, J.S. Pedernales, A. Del Campo, E. Solano, J. Casanova, Quantum simulation of dissipative processes without reservoir engineering, *Scientific Reports* **5**, 9981 (2015). [IF=3.9]
  - 24- J.S. Pedernales, **R. Di Candia**, P. Schindler, T. Monz, M. Hennrich, J. Casanova, E. Solano, Entanglement measures in ion-trap quantum simulators without full tomography, *Physical Review A* **90**, 012327 (2014). [IF=2.9]
  - 25- J.S. Pedernales, **R. Di Candia**, I.L. Egusquiza, J. Casanova, E. Solano, Efficient quantum algorithm for computing n-time correlation functions, *Physical Review Letters* **113**, 020505 (2014). [IF=9]
  - 26- **R. Di Candia**, E.P. Menzel, L. Zhong, F. Deppe, A. Marx, R. Gross, E. Solano, Dual-path methods for propagating quantum microwaves, *New Journal of Physics* **16**, 015001 (2014). [IF=2.8]
  - 27- L. Zhong, E.P. Menzel, **R. Di Candia**, P. Eder, M. Ihmig, A. Baust, M. Haeberlein, E. Hoffmann, K. Inomata, T. Yamamoto, Y. Nakamura, E. Solano, F. Deppe, A. Marx, R. Gross, Squeezing with a flux-driven Josephson parametric amplifier, *New Journal of Physics* **15**, 240502 (2013). [IF=2.8]

- 28- **R. Di Candia**, B. Mejia, H. Castillo, J.S. Pedernales, J. Casanova, E. Solano, Embedding quantum simulators for quantum computation of entanglement, *Physical Review Letters* **111**, 240502 (2013). [IF=9]
- 29- J.S. Pedernales, **R. Di Candia**, D. Ballester, E. Solano, Quantum simulations of relativistic quantum physics in circuit QED, *New Journal of Physics* **15**, 055008 (2013). [IF=2.8]
- 30- E.P. Menzel, **R. Di Candia**, F. Deppe, P. Eder, L. Zhong, M. Ihmig, M. Haeberlein, A. Baust, E. Hoffmann, D. Ballester, K. Inomata, T. Yamamoto, Y. Nakamura, E. Solano, A. Marx, E. Gross, Path entanglement of continuous-variable quantum microwaves, *Physical Review Letters* **109**, 250502 (2012). [IF=9]

## Editorial Material

- 31- **R. Di Candia**, M. Reichert, Q. Zhuang, J.H. Shapiro, Comment on J.N. Blakely, “Quantum illumination with a parametrically amplified idler” [Phys. Lett. A 400 (2021) 127319], *Physics Letters A* **487**, 129116 (2023)

## Conference Proceedings

- 32- **R. Di Candia**, Easing the experimental requirements of quantum illumination, SPIE Quantum Technologies for Defence and Security 13202, 42-46 (2024).
- 33- U. Alushi, W. Gorecki, S. Felicetti, **R. Di Candia**, Optimality and noise-resilience of critical quantum sensing, Optica Sensing Congress 2024 (AIS, LACSEA, Sensors, QSM), Technical Digest Series (Optica Publishing Group, 2024), paper QW3G.4.
- 34- R. Jonsson, **R. Di Candia**, M. Ankel, A. Ström, G. Johansson, A comparison between quantum and classical noise radar sources, 2020 IEEE Radar Conference (RadarConf20), 1-6.
- 35- **R. Di Candia**, R. Jäntti, R. Duan, J. Lietxen, H. Khalifa, K. Ruttik, Quantum backscatter communication: A new paradigm, 2018 15th International Symposium on Wireless Communication Systems (ISWCS), 1-6.
- 36- R. Jäntti, **R. Di Candia**, R. Duan, K. Ruttik, Multiantenna quantum backscatter communications, 2017 IEEE Globecom Workshop (GC Wkshps), 1-6.

## Ph.D. Thesis

- 37- **R. Di Candia**, Embedding Quantum Simulators, University of the Basque Country (UPV/EHU), 2015.

## Pre-prints

- 38- W. Gorecki, S. Felicetti, L. Maccone, **R. Di Candia**, Time correlations from steady-state expectation values, *arXiv:2507.08661* (2025).
- 39- U. Alushi, S. Felicetti, **R. Di Candia**, Analog quantum teleportation, *arXiv:2502.1053* (2025).
- 40- **R. Di Candia**, S. Malik, H. Yigitler, R. Jäntti, Covert backscatter communication with directional MIMO, *arXiv:2202.03899* (2022).

- 41- E. Rinaldi, **R. Di Candia**, S. Felicetti, F. Minganti, Dispersive qubit readout with machine learning, *arXiv:2112.05332*, Workshop at the 35<sup>th</sup> Conference of Neural Information and Processing Systems (NeurIPS): Machine Learning and the Physical Sciences, poster presentation

## Part XII– Main Conference Contributions

- 1- **FISMAT 2025**, Venice (Italy), *Analog quantum teleportation*, contributed talk (07.2025)
- 2- **CEWQO29**, Vilnius (Lithuania), *Critical quantum sensing with Kerr resonators*, contributed talk (06.2025)
- 3- **SPIE Remote Sensing Conference**, Edinburgh (Scotland), *Easing the experimental requirements of quantum illumination*, invited talk (09.2024)
- 4- **CEWQO27**, Milan (Italy), *Quantum illumination with a hetero-homodyne receiver and sequential detection*, contributed talk (07.2023)
- 5- **ICE-8**, Santiago de Compostela (Spain), *Quantum illumination with a hetero-homodyne receiver and sequential detection*, contributed talk (05.2023)
- 6- **QuantuMatter 2023**, Madrid (Spain), *Critical parametric quantum sensing*, contributed talk (05.2023)
- 7- **IQIS2022**, Palermo (Italy), *Remote quantum sensing, quantum illumination and quantum-enhanced doppler lidar*, contributed talk (09.2022)
- 8- **NeurIPS2021**, Online, *Dispersive qubit readout with machine learning*, poster presentation (12.2021)
- 9- **2020 IEEE Radar Conference**, *A comparison between quantum and classical noise radar sources*, expert discussion & proceeding (09.2020)
- 10- **DPG-Quantum optics**, Erlangen (Germany), *Quantum backscatter communication*, contributed talk (03.2018)
- 11- **IQIS2017**, Florence (Italy), *Quantum backscatter communication*, contributed talk (09.2017)
- 12- **CCQED Final Meeting**, Aarhus (Denmark), *Embedding quantum simulators*, contributed talk (10.2014)
- 13- **ICE-1, Zaragoza (Spain)**, *Embedding quantum simulators*, contributed talk (06.2014)
- 14- **CCQED YES Meeting**, Landeck (Austria), *Embedding quantum simulators*, invited talk (03.2014)
- 15- **APS March Meeting**, Denver (USA), *Embedding quantum simulators*, contributed talk (03.2014)

- 16- **Quantum simulations and quantum walks**, Pisa (Italy), *Embedding quantum simulators*, contributed talk (11.2013)
- 17- **International Conference on Resonator QED**, Munich (Germany), *Embedding quantum simulators*, contributed talk (09.2013)
- 18- **CEWQO19**, Sinaia (Romania), *Dual-path methods for quantum tomography*, contributed talk (07.2012)

### Part XIII– Invited Seminars

- 1- **University of Pavia (Italy)**, *Quantum sensing and communication in the microwave regime*, Host: Prof. Lorenzo Maccone (01.2023)
- 2- **Walther Meißner Institute**, Garching (Germany), *Quantum radar* (online seminar), Host: Dr. Frank Deppe (07.2021)
- 3- **Walther Meißner Institute**, Garching (Germany), *Fundamental limits of quantum illumination*, Host: Dr. Frank Deppe (09.2020)
- 4- **Chalmers University**, Göteborg (Sweden), *Fundamental limits of quantum illumination*, Host: Prof. Göran Johansson (02.2020)
- 5- **Aalto University**, Espoo (Finland), *Quantum estimation methods for quantum illumination*, Host: Prof. Riku Jäntti (02.2017)
- 6- **Princeton University (USA)**, *Embedding quantum simulators*, Host: Prof. Andrew Houck (03.2014)
- 7- **University of Tokyo (Japan)**, *Dual-path methods for propagating quantum microwaves and path-entanglement detection*, Host: Prof. Yasunobu Nakamura (03.2013)
- 8- **RIKEN**, Tokyo (Japan), *Dual-path methods for propagating quantum microwaves and path-entanglement detection*, Host: Prof. Franco Nori (03.2013)

### Part XIV– Other Academic Activities

- 1- **Member of Ph.D. commissions**
  - *Robert Schulz*, Freie Universität Berlin (Germany), 11.2018
  - *Federico Guerra*, Freie Universität Berlin (Germany), 03.2018
  - *Stefan Milenkovic*, Freie Universität Berlin (Germany), 11.2017
- 2- **Reviewer of Ph.D. Thesis**  
*Giovanni Di Fresco*, Università degli Studi di Palermo, 02.2025
- 3- **Member of Editorial Board of Communications Physics (Nature/Springer) [IF=5.4]**  
3 years appointment (04.2024-03.2027), **handled 18 manuscripts as Editor as of July 2025** [<https://www.nature.com/commsphys/editorial-board>]



4- **Conference Organization**

Criticality and Continuous Measurements in Quantum Sensing, From Theory to Experiments, Normale di Pisa (Italy), 04.2025, **Workshop organized together with Dr. Francesco Albarelli (Normale, Pisa) and Dr. Simone Felicetti (ISC-CNR, Rome)**  
[<https://indico.sns.it/event/81>]

5- **Innovation Expert for European Union**

Evaluation of medium/high TRL projects at the selection and reporting stages (2023-ongoing): **As of July 2025, assessed two consortia through mid- and final-term reports, and participated in two selection procedures in the HORIZON EUROPE Programme**

6- **Referee of International Journals**

IEEE J-SAC (IF=17.2), Nature Communications (IF=15.7), IEEE Transactions on Wireless Communications (IF=10.7), Physical Review Letters (IF=9), Quantum (IF=5.4), Quantum Science and Technology (IF=5), Physical Review Applied (IF=4.4), Physical Review Research (IF=4.2), Optics Express (IF=3.3), Physical Review A (IF=2.9), New Journal of Physics (IF=2.8), Journal of Physics A: Mathematical and Theoretical (IF=2.1), among others

Place and Date: Milano, 31.07.2025

Firma