

## Martina Esposito

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Date of birth:

E-mail:

website:

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### CURRENT POSITION

Oct 2021- **CNR permanent researcher** [SPIN institute](#), CNR (Italian National Research Council), Naples, Italy.

### PREVIOUS POSITIONS

2019-2021 **Marie Curie IF fellow** - Topic: *Traveling Wave Parametric Amplifiers*  
Nicolas Roch's research team, Neel Institute, CNRS, Grenoble, France.

2017-2019 **Postdoctoral Research Assistant** – Topic: *Resonant Parametric Amplifiers*  
Peter Leek's research team, Physics Department, University of Oxford, UK.

### EDUCATION

2016-04 **Ph.D. in Physics**, University of Trieste, Italy. Thesis Title: [A new spectroscopic approach to collective excitations in solids: pump-probe quantum state tomography](#).  
Supervisor: Prof. Daniele Fausti.

2012-09 **Master's degree in Condensed Matter Physics**, University of Trieste, Italy.  
Supervisors: Prof. Daniele Fausti, Dr. Stefano Olivares. Mark: 110/110 cum laude

2010-10 **Bachelor's degree in Physics**, University of Naples Federico II, Italy.  
Supervisors: Prof. Lorenzo Marrucci, Dr. Ebrahim Karimi. Mark: 110/110

### FELLOWSHIPS

2020 **PHC alliance fellowship (PI)**, France-UK collaboration program between CNRS and Oxford.  
Project: *TWPAs for multiplexed coaxmon qubits readout*. Budget: 5 k€ for travel costs.

2019 **Oxford Quantum Materials Platform fellowship**, Project topic: *Josephson Parametric Amplifiers*. Budget: 1-year salary as postdoctoral research assistant at Oxford University + 11 k GBP for research expenses.

### PUBLICATIONS:

[Researchgate](#) - [Google Scholar](#) - [Orcid](#) - [Scopus](#)

### FUNDINGS

Sett 2023 – Aug 2025: **PRIN program, Italian Ministry for University and Research**  
Title: Advanced Control and Readout of Scalable Superconducting NISQ Architectures (SuperNISQ)  
Role: PI of the CNR Unit  
Budget: 90 k€ for the CNR unit (300 k€ for the whole consortium)  
Consortium Coordinator: Davide Massarotti, (University of Naples, Italy).

Dec 2022 – Nov 25: **HORIZON Europe, RIA (Research and Innovation action) project**  
Role: PI of the Italian CNR unit  
Budget: 354 k € for the CNR unit (3 M € for the whole consortium)  
Title: *Truly Resilient Quantum Limited Traveling Wave Parametric Amplifiers (TruePA)*. Project Evaluation score (15/15)  
Consortium Coordinator: Anja Metelmann, (KIT, Karlsruhe, Germany).

- Dec 2022 – Nov 2025: **Italian National Quantum science and Technology Institute (NQSTI)**  
 Role: PI of the CNR SPIN Institute unit for the spoke 5 (“Electron based platform for quantum technologies”)  
 Budget: 520 k € for CNR SPIN unit (spoke 5)
- Apr 2022 – Mar 2025: **QuantERA Programme (2021 call).**  
 Role: Member of the CNR SPIN unit (CNR-SPIN PI: Giovanni Piero Pepe).  
 Budget: 250 k € for the CNR SPIN unit.  
 Title: *Superconducting quantum-classical linked computing systems* ([SuperLink](#)). Consortium Coordinator: Giovanni Piero Pepe CNR SPIN, Italy.
- Oct 2019 – Sept 2021: **Marie Curie Individual fellowship**, call H2020-MSCA-IF-2018.  
 Role: PI. Title: “Multimode Correlations in microwave photonics with Superconducting Quantum Circuits ([MOSAIC](#))”.  
 Budget: 185 k €.  
 Project evaluation score: 96.8/100 (in the best 3% of submitted proposals).

## TEACHING ACTIVITIES

- 2018-2019 **Stipendiary Lecturer in Physics.** Topics: *Electromagnetism and Optics* and *Condensed Matter Physics*. Lincoln College, Physics Department Oxford University, UK. 4-hours/week tutorial teaching, 12 students. Interviewer for Undergraduate’s Admissions Process.
- 2017-2018 **College Tutor.** Topic: *Electromagnetism and Optics*. Lincoln College, Physics Department Oxford University, UK. 2-hours/week tutorial teaching, 6 students.
- 2015-2016 **Responsible for the Exercises part** of the *Electrodynamics-Optics* course. Department of Physics, University of Trieste, Italy. 25 hours/year lessons, ~50 students.

## SUPERVISING AND MENTORING ACTIVITIES

- Naples 2021-present Supervisor of 1 PhD thesis (Isita Chatterjee, *Microwave Photonics with Traveling Wave Parametric Amplifiers*); Co-supervisor of 1 PhD’s thesis (Anna Levochkina, *Multi-chip-module quantum devices and multiplexed qubits readout with TWPAs*).
- Grenoble 2019-2021 Co-supervisor of 2 master’s theses (Anuj Aggarwal, *Josephson Traveling Wave Parametric Amplifier: Noise Characterization and Harmonics Generation* – Vincent Jouanny, *Quantum states generation in microwave photonics*) and 1 PhD’s thesis (Arpit Ranadive, *Nonlinear quantum optics with Josephson metamaterials*).
- Oxford 2017-2019 Co-supervisor of 3 master’s theses: (James Wills, *Superconducting Qubit Readout using a Josephson Parametric Amplifier* – Giulio Campanaro *Development of a Josephson parametric amplifier for superconducting qubits readout* – I. Wilkes *Noise characterization of a Josephson Parametric Amplifier*).
- Trieste 2015-2017 Co-supervisor of one master’s (Francesca Giusti, *Quantum state tomography applied to time resolved spectroscopy*) and one bachelor’s thesis (Francesco Borsoi, *Optical Pump and Probe experiment in YBCO in superconductive phase*).

## ORGANIZATION OF SCIENTIFIC MEETINGS

- 2022: **Organizer and Chair** of “Quantum Science and Technology @ Naples” [Seminar Series](#). ~30 attendees on average per seminar
- 2018: **Organizer and Chair** of the GRS, Gordon Research Seminar, “Ultrafast Phenomena in Cooperative Systems 2018”, Texas, Feb 3-4, 2018. Number of participants: ~60. Budget obtained from sponsorships: 7 k USD. Conference Website: [link](#).

## INVITED PRESENTATIONS TO INTERNATIONAL MEETINGS

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- Sept 2023      Invited talk @[SIF Annual Conference, Italian Physical Society annual meeting](#), Salerno, Italy.  
Title: *Entanglement generation with Josephson Metamaterials*
- Oct 2022      Invited talk @[Workshop Circuit QED: from Quantum Devices to Analogues on Superconducting Circuits](#) Trento, Italy. Title: *Development of TWPA Amplifier*.
- June 2022      Invited talk @[WOLTE15 Workshop on Low Temperature Electronics](#), Matera, Italy. Title: *Two-Mode Squeezing Generation in a TWPA Amplifier*.  
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Invited lecture @[ESAS school Superconductivity for Quantum Technologies](#). Title: *Superconducting parametric amplifiers for quantum technologies*.
- May 2021:      Invited seminar @[Workshop on Enabling Technology and Algorithms for Quantum Computing](#) – WACQT – Chalmers University - Sweden.  
Title: *A reversed Kerr travelling wave parametric amplifier*.

## AWARDS AND SCIENTIFIC RECOGNITIONS

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- Mar 2018:      My proposal H2020-MSCA-IF-2017 "Multimode correlations in microwave photonics" has been awarded the Marie Skłodowska-Curie Actions Seal of Excellence 2017 with a score of 88%. This quality label is awarded to proposals that scored 85% or more.
- Feb 2016:      Winner of oral presentation in the "Young Investigators - Section" at CRC, Gordon Research Conference, "Ultrafast Phenomena in Cooperative Systems 2016" (only 4 young researchers have been selected for oral presentations out of ~50 posters). Barga, Italy.
- Sep 2014:      Award for the 2nd best oral communication in the section "Condensed Matter Physics" at the National SIF (Italian Physics Society) Congress 2014 out of ~40 speakers. Trieste, Italy.

## REVIEWING ACTIVITIES

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### Examination committee member for PhD defense:

- Candidate: A. Greco. Supervisor: Dr. Emanuele Enrico, INRIM, Torino, Italy, Sept 2022.  
Candidate: I. Mastroserio. Supervisor: Dr. F. S. Cataliotti, Univ. of Naples, Italy, May 2022.  
Candidate: I. Takmakov. Supervisor: Prof. Ioan Pop, KIT, Germany, Jan 2022.

**Project Reviewer:** Quantum technology platforms proposals at Q@TN, Trento, Italy. Call budget: 50 k€.

**Since 2020:** Reviewer for *Nature Physics*, *Applied Physics Letter*, *IEEE applied superconductivity*, *Sensors*.

## MAJOR COLLABORATIONS

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- Nicolas Roch** (Neel Institute CNRS Grenoble France). Topic: Josephson TWPAs (see *TruePA* project).
- Giovanna Tancredi** (Chalmers University, Sweden). Topic: integration of single-flux quantum (SFQ) digital control logic with superconducting qubits (see *SuperLink* project).
- Peter Leek** (Oxford University, UK). Topic: multiplexed readout of *coaxmon* qubits (see *PHC alliance fellowship*).
- Anja Metelmann** (KIT, Karlsruhe Germany). Topic: squeezing generation in TWPAs (see *TruePA* project).
- Francesco Tafuri/ Davide Massarotti** (University of Naples, Federico II, Italy). Topic: unconventional ferromagnetic superconducting qubits (see project SuperNISQ).

Last update: Nov 2023