

FEDERICA MANTEGAZZINI

Head of Research Unit
SQD - Superconducting Quantum Devices

Fondazione Bruno Kessler (FBK)
INFN TIFPA
University of Trento

✉ fmantegazzini@fbk.eu ✉ f.mantegazzini@unitn.it

☎ +39 0461 314 141

🌐 Scopus: 57194614143, ORCID: 0000-0002-5620-2897

RESEARCH INTERESTS

- Superconducting circuits & devices
- Quantum sensing & cryogenic detectors
- Circuit QED
- Microwave quantum optics
- Hybrid quantum systems

EXPERTISE

- Technical skills:** Design, Simulation & Modelling, Microfabrication, Cryogenic measurements, Data analysis
- Coordination:** Coordination of scientific projects, Coordination of Research Unit

CURRENT POSITIONS AND ROLES

2025-now	Head of Research Unit SQD - Superconducting Quantum Devices Research Unit, Centre for Sensors and Devices	FBK - Fondazione Bruno Kessler
2025-now	University Lecturer Master's Degree Program, Physics	University of Trento, Physics Department
2025-now	Research Fellow (Incarico di Ricerca) TIFPA - Trento Institute for Fundamental Physics and Applications	INFN - Istituto Nazionale di Fisica Nucleare
2026-now	Member of the Doctoral School Committee Physics Department	University of Trento

EDUCATION

10/2016 - 7/2021	PhD in Physics Doctoral dissertation: <i>Development and characterisation of high-resolution metallic magnetic calorimeter arrays for the ECHO neutrino mass experiment.</i> Final grade: Summa cum laude (with highest distinction)	Heidelberg University, Germany
10/2016 - 7/2021	PhD Scholarship & Fellowship HighRR - <i>High Resolution and High Rate Detectors in Nuclear and Particle Physics</i> Research Training Group	Heidelberg University, Germany
10/2009 - 11/2015	Bachelor & Master Degree in Physics Final grade: 110/110 cum laude	University of Milano-Bicocca, Italy

RESEARCH POSITIONS

5/2025 - now	Head of Research Unit • Head of the SQD - Superconducting Quantum Devices Research Unit • Responsible of cryogenic laboratory • Management and coordination of research projects	Fondazione Bruno Kessler, Trento, Italy
4/2024 - 4/2025	Research Scientist & Team Leader • Coordinator of research team for the development of superconducting devices, e.g. parametric amplifiers, qubits, superconducting detectors • Responsible of FBK Cryogenic Laboratory • Management and coordination of research projects	Fondazione Bruno Kessler, Trento, Italy
3/2022 - now	INFN Associated Researcher • Member and Local Responsible of several INFN experiments • Coordination of microfabrication and cryogenic measurements of superconducting devices	INFN TIFPA, Trento, Italy
3/2022 - 4/2024	Tenure Track Researcher • Development of superconducting devices (parametric amplifiers, qubits, cryogenic detectors) • Scientific and technical activities: design, microfabrication, cryogenic measurements • Management and coordination of research projects	Fondazione Bruno Kessler, Trento, Italy

7/2021 – 3/2022	Postdoctoral Researcher • Coordination of cryogenic measurements for the ECHo experiment • Supervision of PhD and Master students	Heidelberg University, Germany
10/2016 – 7/2021	Doctoral Researcher • Development of microcalorimeter arrays for neutrino mass measurements (ECHo experiment): - Design and microfabrication - Cryogenic measurements, characterisation and data analysis	Heidelberg University, Germany
4/2016 – 10/2016	Research Intern • Internship topic: Cryogenic testing of SQUID devices	Heidelberg University, Germany

COORDINATION & MANAGEMENT RESPONSIBILITIES

International Projects & Consortia

2026 – now	FBK PI of the SUPREME project (Quantum Pilot Line - Chips JU) SUPREME - Superconducting platform. Consortium: 23 partners (8 countries). Total budget: 50 M€, managing a budget of 500 k€	FBK, Trento
2023 – now	PI & Coordinator of the MiSS project (Horizon Europe) MiSS - <i>Microwave Squeezing with Superconducting (meta)materials</i> , Horizon-RIA project. Consortium: 7 partners (4 countries). Total budget: 2.6 M€.	FBK, Trento
2022 – now	Task leader & FBK Contact Person of the Qu-Pilot project (Horizon Europe) Qu-Pilot - Superconducting platform. Consortium: 21 partners (9 countries). Total budget: 19 M€.	FBK, Trento

National Projects & Consortia (selection)

2022 – now	Contact Person for PNRR NQSTI (National Quantum Science and Technology Institute) Italian National Initiative on Quantum Technologies. Consortium: 20 national partners. Total budget: 117 M€.	FBK, Trento
2025 – now	Local responsible for the QUARTET experiment QUARTET - <i>QUantum Architectures for Theory & Technology</i> (INFN CSN5 experiment). Collaboration: 12 national partners. Total budget: 500 M€.	TIFPA, Trento
2025 – now	Local responsible for the Holmes+ experiment HOLMES+ - <i>Neutrino Mass Experiment</i> (INFN CSN2 experiment). Collaboration: 3 national partners. Total budget: 450 M€.	TIFPA, Trento
2023 – 2024	Local responsible for the DARTWARS experiment DARTWARS - <i>Detector Array Readout with Traveling Wave Amplifiers</i> (INFN CSN5 experiment). Collaboration: 7 national partners. Total budget: 1 M€.	FBK, Trento

REVIEWING ACTIVITIES

2023 – now	Reviewer for scientific journals Springer, IOP, and others. IOP Certified Trusted Reviewer	
2023 – now	External reviewer of Doctoral Thesis & Member of Grading Committees Chalmers University, University of Milano-Bicocca	
2022 – now	Scientific Referee for INFN Reviewer and referee of national scientific project within INFN Commission V	
2021	Scientific Reviewer for Q@Tn - Quantum Science and Technology in Trento Selection and review of projects	

ORGANISATION OF SCIENTIFIC MEETINGS

06/2026	Doctoral Training Program: Emerging Superconducting Technologies for Quantum Sensing and Computing Role: Organiser	Trento, Italy
10/2025	Workshop: Superconducting Devices for Quantum Optics and Quantum Simulations Role: Organiser	Trento, Italy
05/2025	Workshop: Quantum Science Generation Role: Member of Organisational Committee	Trento, Italy
2/2024	INFN Scientific Meeting: Quantum Architectures for Analogues and Theory Applications Role: Member of Scientific Committee	Trento, Italy
9/2023	Workshop: Quantum Technologies for Fundamental Physics Role: Chairman	Erice, Italy
6/2023	Workshop: Quantum Technologies Role: Member of Scientific Committee	Torino, Italy
10/2022	Workshop: cQED@Tn <i>Circuit QED: From Quantum Devices to Analogues on Superconducting Circuits</i> , Role: Member of Scientific Committee	Trento, Italy

TEACHING ACTIVITIES

2025-26	Lectures - Master Degree, Physics Superconducting Quantum Nanosystems, Circuits and Devices	University of Trento, Italy
2023	Course at Doctoral School PQIP2023 Superconducting single photon detectors	Monte Bondone, Italy
2016-2019	Laboratory course Cryogenic measurements and techniques	Heidelberg University, Germany

INVITED TALKS (SELECTION)

Scientific talks, seminars, lectures (selection)

8-9/4/2026	Invited cycle of seminars <i>Superconducting Quantum Devices for Fundamental Physics and New Technologies</i>	University of Palermo, Palermo
4/3/2025	Invited seminar <i>Non-linear superconducting circuits: a Swiss Army knife for quantum applications</i>	Chalmers University, Gothenburg, Sweden
5/2/2025	Invited Plenary Talk Second NQSTI - National Quantum Science and Technology Institute - Congress, Plenary Talk: <i>Spoke 6-7: From Integration to Complete Quantum Systems - Activities on the Superconducting Platform</i>	NQSTI Congresso, Rome, Italy
2/2/2024	Invited talk <i>Development of superconducting circuits in Italy</i>	DESY (COST Action CA21106), Hamburg, Germany
24/11/2023	Invited seminar <i>Development and microfabrication of superconducting quantum devices at FBK</i>	CNR-SPIN, Naples, Italy
6/7/2023	Invited talk International workshop COLMO (Quantum Collapse Models investigated with Particle, Nuclear, Atomic and Macro systems), Invited talk: <i>Superconducting devices for quantum sensing</i>	ECT*, Trento, Italy
8/6/2022	Invited talk International workshop NuMass, Invited talk: <i>Optimisation of the high-resolution metallic magnetic calorimeters with embedded Ho-163 for the ECHO-100k experiment</i>	University of Milano-Bicocca, Italy
1/10/2019	Invited talk International workshop Vistas on Detector Physics, Heidelberg, 2019, Invited talk: <i>The ECHO experiment</i>	Heidelberg University, Germany

Outreach activities (selection)

19/5/2025	Invited talk - Pint of Science Festival <i>Tecnologie quantistiche: Roba da fantascienza?</i>	Trento, Italy
24/11/2024	Invited talk - DEVO Lab Annual Event <i>Quantum computing e tecnologie quantistiche: una rivoluzione?</i>	Bocconi University - SDA, Milano, Italy
29/9/2024	Invited speaker - WIRED Next Fest <i>Quanto manca al quantum</i>	Rovereto, Italy

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2023 – now	DRD5 Protocollaboration Quantum Technologies for Future Colliders	CERN, Switzerland
2022 – now	Q@TN (Quantum Science and Technology in Trento) Joint quantum laboratory in Trento	Trento, Italy
2022 – now	INFN Associate Researcher INFN Commission V, TIFPA	Trento, Italy
2016 – 2021	DPG Associated Researcher Deutsche Physikalische Gesellschaft - German Physical Society	Heidelberg, Germany

LANGUAGES

English - Professional proficiency, **Italian** - native, **German** - basic