

Alberto Ronzani

Curriculum vitae et studiorum

✉ alberto@aronza.com
🌐 aronza.com
🆔 0000-0001-9884-5498

Biographical Data

Born September 1st, 1984 Bergamo (Italy)
Gender Male
Citizenship Italian citizen

Career

2021 – curr. **Senior Scientist**, *VTT - Quantum Sensors*, Espoo, FI
2018 – 2021 **Research Scientist**, *VTT - Nanoelectronics*, Espoo, FI
2016 – 2018 **Research Associate**, *Aalto University School of Science*, Espoo, FI
2014 – 2016 **Research Associate**, *C.N.R. - Istituto Nanoscienze*, Pisa, IT

Education

2019 **Ph.D. in Physics**, *Scuola Normale Superiore*, Italy, *70/70 cum laude*
Corso di Perfezionamento in Fisica della Materia Condensata
2010 **M.Sc. in Physics**, *Università di Pisa*, Italy, *110/110 cum laude*
Laurea Specialistica in Scienze Fisiche - Curriculum di Fisica della Materia

Current Research Interests

Quantum Technology

- Hybrid superconductor/CMOS devices
- Qubits and Circuit Quantum Electrodynamics
- Superconducting interferometers
- Andreev-mediated transport phenomena in mesoscopic diffusive weak links

Terahertz Photonics

- Non-periodic photonic resonators for Quantum Cascade Laser sources
- Bolometric detectors with ultra-low Noise Equivalent Power

Languages

Italian	C2	Native
English	C2	Cambridge ESOL First Certificate in English (2003)
Finnish	A1	Aalto University: Finnish for beginners 1A,B (2017)

Selected Publications

- 2021 J Duan, JS Lehtinen, MA Fogarty, S Schaal, MML Lam, A Ronzani, A Shchepetov, P Koppinen, M Prunnila, F Gonzalez-Zalba, and JLL Morton, Dispersive readout of reconfigurable ambipolar quantum dots in a silicon-on-insulator nanowire, ***Applied Physics Letters***, 118(16):164002.
- 2018 A Ronzani, B Karimi, J Senior, YC Chang, JT Peltonen, CD Chen, and JP Pekola, Tunable photonic heat transport in a quantum heat valve, ***Nature Physics***, 14(10):991.
- 2017 A Ronzani, S D'Ambrosio, P Virtanen, F Giazotto, and C Altimiras, Phase-driven collapse of the Cooper condensate in a nanosized superconductor, ***Physical Review B***, 96(21):214517.
- 2014 MS Vitiello, M Nobile, A Ronzani, A Tredicucci, F Castellano, V Talora, L Li, EH Linfield, and AG Davies, Photonic quasi-crystal terahertz lasers, ***Nature Communications***, 5:5884.

Other Recent Publications

- 2021 A Kemppinen, A Ronzani, E Mykkänen, J Hättinen, JS Lehtinen, and M Prunnila, Cascaded superconducting junction refrigerators: Optimization and performance limits, ***Applied Physics Letters***, 119(5):052603.
- 2021 F Tagliabue, D Schena, L Galassi, M Magni, G Guerrazzi, A Acerbis, C Rinallo, D Longhi, A Ronzani and P Mariani. Modified National Early Warning Score as Early Predictor of Outcome in COVID-19, ***Pandemic. SN Compr. Clin. Med.***, 3:1863.
- 2020 E Mykkänen, A Bera, JS Lehtinen, A Ronzani, K Kohopää, T Hönigl-Decrinis, R Shaikhaidarov, SE de Graaf, J Govenius, and M Prunnila, Enhancement of superconductivity by amorphizing molybdenum silicide films using a focused ion beam, ***Nanomaterials***, 10(5):950.
- 2019 Chang, B Karimi, J Senior, A Ronzani, JT Peltonen, HS Goan, CD Chen, and JP Pekola, Utilization of the superconducting transition for characterizing low-quality-factor superconducting resonators, ***Applied Physics Letters***, 115(2):022601.
- 2018 P Virtanen, A Ronzani, and F Giazotto, Josephson Photodetectors via Temperature-to-Phase Conversion, ***Physical Review Applied***, 9(5):054027.
- 2016 P Virtanen, A Ronzani, and F Giazotto, Spectral Characteristics of a Fully Superconducting SQUIPT, ***Physical Review Applied***, 6(5):054002.
- 2016 R Degl'Innocenti, YD Shah, L Masini, A Ronzani, A Pitanti, Y Ren, DS Jessop, A Tredicucci, HE Beere, and DA Ritchie, Hyperuniform disordered terahertz quantum cascade laser, ***Scientific Reports***, 6:19325.
- 2015 S D'Ambrosio, M Meissner, C Blanc, A Ronzani, and F Giazotto, Normal metal tunnel junction-based superconducting quantum interference proximity transistor, ***Applied Physics Letters***, 107(11):113110.
- 2014 A Ronzani, C Altimiras, and F Giazotto, Highly Sensitive Superconducting Quantum-Interference Proximity Transistor, ***Physical Review Applied***, 2(2):024005.
- 2014 A Ronzani, C Altimiras, and F Giazotto, Balanced double-loop mesoscopic interferometer based on Josephson proximity nanojunctions, ***Applied Physics Letters***, 104(3):032601.

Accrued Expertise

- Cleanroom fab techniques
 - Chemical hoods, solvents, acids and bases
 - Semiconductor etching, wet and ICP-RIE
 - UV Photolithography, including CAD photomask design
 - Scanning Electron Microscope (SEM) imaging
 - Electron Beam Lithography (EBL), suspended mask
 - Metallic thin film deposition via thermal and electron beam evaporation
 - Plasma ion milling
 - Process integration for complex mix&match wafer-level production runs
- Cryogenics and vacuum systems
 - $^3\text{He}/^4\text{He}$ dilution refrigerators
 - ^3He sorption refrigerators
 - Closed-cycle He coolers
 - Ultra-high vacuum systems ($< 10^{-9}$ Torr)
 - Leak detection
- Electronics and measurement
 - Electronic audio-band filtering for ultra-low temperature devices
 - Low-level/low-noise current or voltage measurements
 - RF probing of superconducting circuits and qubits
 - Digital acquisition and automation
- Computing techniques
 - Electromagnetic fields in antennas and photonic devices (F.E.M.)
 - Time-dependent response of photonic devices (FDTD method)
 - Applied mathematical methods for scientific computation
 - Unix system administration
 - Programming: C/C++, Python, LabVIEW, MATLAB, bash, GPU/multithread
 - Publishing: \LaTeX , Inkscape, GIMP, Microsoft Office
- Publishing
 - Peer review: referee for Applied Physics Letters
 - Typesetting: \LaTeX , Microsoft Office
 - Graphics: Inkscape, GIMP

Continued Education and Conferences

- Jun. 2022 **Speaker**, *Nanoscale and Microscale Heat Transfer VII*
- Dec. 2018 **Speaker**, *Nanoscale and Microscale Heat Transfer VI*
- Aug. 2017 **Poster**, *ULT 2017: Frontiers of Low Temperature Physics*
- Sept. 2016 **Speaker**, *Tunneling two-level systems and superconducting qubits workshop*
- Sept. 2014 **Speaker**, *Società Italiana di Fisica: 100th Congress*
- Sept. 2014 **Invited Speaker**, *International Quantum Cascade Lasers School and Workshop*
- Sept. 2013 **Attendee**, *International Conference on Infrared, Millimeter and Terahertz Waves*
- May 2013 **Attendee**, *MPNS COST Action Training School – MP1204
TERA-MIR Radiation: Materials, Generation, Detection and Applications*
- Sept. 2012 **Attendee**, *International School of Physics and Technology of the Matter*
- Sept. 2012 **Attendee**, *International Quantum Cascade Lasers School and Workshop*