

EUROPEAN
CURRICULUM VITAE
FORMAT



PERSONAL INFORMATION

Name **GENTILE, Paola**
Address [REDACTED]
Telephone [REDACTED]
E-mail **Paola.gentile@spin.cnr.it**
Nationality **ITALIAN**
Date of birth [REDACTED]
Place of birth [REDACTED]

RESEARCH INTERESTS

- Study and theoretical modeling of **quantum materials** with quantum ordered phases (like for instance conventional, unconventional and topological superconductivity and magnetism), with the aim to clarify the cooperative and competitive effects of these quantum phases in bulk and hybrid systems.
- Development and implementation of analytical and numerical many-body approaches for the study of **quantum transport, topological superconducting states, topological phases and quantum topological effects** in superconducting based hybrid devices and low-dimensional systems, in topological Josephson junctions, at oxide interfaces, and in heterostructures with different geometric configurations, even with non-trivial geometric curvature.
- Theoretical study of **the generation and manipulation of topological quantum states of matter**
 - in novel novel three-dimensional nanoarchitectures combining materials with different quantum properties, and also non-trivial geometric curvature.
*[topic also developed as Scientific Coordinator of the CNR-SPIN Research Unit within the EU Project "**CNTQC: Curved Nanomembranes for Topological Quantum Computation**" funded by the call "FET-ICT Young Explorers 2012"]*
 - in Weyl and Dirac semimetals [*core topic of the ongoing PRIN2022 project "**TOTEM -engineering TOPological quantum phases in hexagonal TERNary coMpounds (TOTEM)**", where Dr. Gentile is Substitute PI and scientific coordinator of the CNR-SPIN Research Unit].*
- Outreach activity on **Quantum Mechanics, Quantum materials and Quantum Technologies** for the general public as well as for students of primary, middle and high schools, also developed within the national project of the *Italian Quantum Weeks* and within the project

WORK EXPERIENCE

- Dates 31/12/2019 – today
- Name and address of employer CNR-SPIN, Salerno Research Unit - Fisciano (SA), Italy
- Occupation or position held **PERMANENT RESEARCHER (III LIV)**

- Dates 31/12/2013 - 30/12/2019
- Name and address of employer CNR-SPIN, Research Unit Salerno
- Occupation or position held **PERMANENT TECHNOLOGIST (III LIV)**

- Dates 03/11/2013-30/12/2013
- Name and address of employer CNR-SPIN, Naples Research Unit
- Occupation or position held **TEMPORARY RESEARCHER (III LEVEL)** within the Project FIRB 2012 “Hybrid superconductor-semiconductor nanostructures: nanoelectronic applications, topological properties, correlation and disorder (HybridNanoDev)”, cod. RBFR1236VV001, coordinated by Dr. Daniela Stornaiuolo (University of Napoli Federico II, Napoli, Italy).

- Dates 01/03/2011-30/12/2013
- Name and address of employer CNR-SPIN, Salerno Research Unit
- Occupation or position held **TEMPORARY RESEARCHER (III LEVEL)** within the EU Project, "MAMA: Unlocking Research Potential for Multifunctional Advanced Materials and Nanoscale Phenomena", Grant Agreement N.264098. Scientific Coordinator: Dr. Mario Cuoco.

- Dates 05/06/2008-28/02/2011
- Name and address of employer Dip. di Fisica “E. R. Caianiello”, Università degli Studi di Salerno, Italy
- Occupation or position held **RESEARCH FELLOW** - on the topic “Correlated electrons in transition metal oxides” in the group headed by Prof. Canio Noce

- Dates 31/05/2006-31/05/2008
- Name and address of employer S.I.S.S.A. Trieste, Italy
- Occupation or position held **POSTDOC FELLOWSHIP** on the topic “Strongly correlated electron systems, Kondo effect and disordered systems”, in the group headed by Prof. Erio Tosatti, in collaboration with Prof. Michele Fabrizio and Prof. Giuseppe Santoro.

- Dates 01/03/2006-30/05/2006
- Name and address of employer CNR-INFM, Laboratorio SUPERMAT, Baronissi (SA)
- Occupation or position held **RESEARCH FELLOW** on the topic the “Coexistence of superconductivity and magnetism” in the group of Prof. Canio Noce.

EDUCATION AND TRAINING

- 01/10/2002- 24/02/2006
- Dates
- Name and type of organisation Università degli Studi di Salerno, Salerno, Italy
- Principal subjects/occupational skills covered Thesis: “*Cooperative and Competing Effects Between Superconductivity and Ferromagnetism*”. Supervisors: Prof. Canio Noce (Università degli Studi di Salerno) and Prof. Manfred Sigrist (ETH-Hönggerberg, Zürich, Switzerland)

- Title of qualification awarded
- Level in national classification

- Dates

- Name and type of organisation
- Principal subjects/occupational skills covered

- Title of qualification awarded
- Level in national classification

- Dates

- Name and type of organisation
- Title of qualification awarded
- Level in national classification

PERSONAL SKILLS AND COMPETENCES

MOTHER TONGUE

OTHER LANGUAGES

- Reading skills
- Writing skills
- Verbal skills

SOCIAL SKILLS AND COMPETENCES

ORGANISATIONAL SKILLS AND COMPETENCES

Coordination and administration of people, projects and budgets; at work, in voluntary work (for example culture and sports) and at home, etc.

Ph.D in Physics

Final Mark: Excellent.

01/10/1998-14/11/2002

Università degli Studi di Salerno, Salerno, Italy

Thesis: *“Superconduttività e ferromagnetismo: meccanismi di interazione e coesistenza”*. Advisors: Prof. Canio Noce and Dr. Mario Cuoco, Università degli Studi di Salerno

Master Degree in Physics

Maximum marks and honours; 110/110 cum laude

1998

Liceo Scientifico “E. Medi”, Battipaglia (SA), Italy

Maturità scientifica

Maximum mark (60/60).

Self-motivation, sense of responsibility, willingness to learn, flexibility, resilience.

ITALIAN

ENGLISH

PROFICIENT USER
PROFICIENT USER
PROFICIENT USER

GERMAN

BASIC
BASIC
BASIC

Good ability to adapt and to collaborate in different kind of working environments. Frequently collaborating with co-workers on group projects, sharing ideas and offering constructive feedback to one another.

SINCE SEPT 2023 – CO-PI & SUBSTITUTE PI, LEADER OF THE CNR-SPIN UNIT AND WP LEADER WITHIN THE PRIN2022 PROJECT PROT.2022HTPC2B “ENGINEERING TOPOLOGICAL QUANTUM PHASES IN HEXAGONAL TERNARY COMPOUNDS (TOTEM)”

Budget managed: 39.668,00€

1 One year Postgraduate fellow recruited under Dr. Gentile’s supervision
01/10-2024-30/09/2025

2014-2017 WP Leader and Coordinator of the CNR-SPIN Unit within the EU FP7-ICT FET Young Explorers Grant “CNTQC: Curved nanomembranes for Topological Quantum Computation”, Grant Agreement N.618083, coordinated by Dr. Carmine Ortix, IFW Dresden (Germany). Budget managed: € 308.220,00.

3 International workshops organized within CNTQC.

3 Three PostDoc fellows recruited under Dr. Gentile’s supervision:
- 01/02/2018 - 01/02/2020 -PostDoc Fellow - Dr. Gianluca Francica
-13/03/2017- 15/12/2017 - PostDoc Fellow- Dr. Giorgios Livanas
-19/01/2015--18/01/2018 – Senior PostDoc fellow Dr. Zujian Ying

EXPERIENCE IN ORGANIZING AND PLANNING INTERNATIONAL EVENTS:

2026- Coorganizer of the Focus Session “Curvilinear magnetism: Magnetism with nanoscale curved geometries” for the SKM Spring Meeting, Dresden, 2026

2022- Organizing Committee Member at OSS2022 Workshop “Unconventional transport in superconducting & magnetic systems with spin-orbit coupling”, Vietri sul Mare, (Italy)

2021- Chair of the OSS Internat. School 2021 (OSS-IS 2021) Kyoto (Japan)

2018 - Cochair at OSS Internat. School 2018 (OSS-IS 2018) Sapporo (Japan)

2018 - Organizing Committee Member at OSS2018 Workshop “Oxide Superconducting Spintronics Workshop 2018”, Amalfi (SA), Italy

2017 - Chair at the International Workshop “TOP-SPIN 3: Spin and Topological Phenomena in Nanostructures Towards: Topological Materials Science” Funded by the European Project FET-OPEN “CNTQC” in collaboration with the “Grant-in-Aid for Scientific Research on Innovative Areas”, MEXT, Japan, “Topological Material Science”, IFW Dresden, Germany

2016 - Chair at the International Workshop “TOP-SPIN 2: Spin and Topological phenomena in nanostructures”, Groningen, The Netherlands

2015 - Chair at the International Workshop “TOP-SPIN: Spin and Topological phenomena in nanostructures”, Salerno (SA), Italy

2013 - Organizing Committee member at the International Conference “MAMA-Trend: Trends, challenges and emergent new phenomena in multifunctional materials”, Sorrento (Naples), Italy

2012 - Organizing Committee Member at the International Workshop “MAMA-ProTheo: Multifunctional Advanced Materials: Probe and Theory”, Vietri sul Mare (Salerno), Italy

EXPERIENCE OF WORKING IN INTERNATIONAL PROJECTS

Since 2019 - Participation in PRIN TOPSPIN “Two-dimensional oxides Platform for SPIN-orbitronics nanotechnology” coordinated by Dr. Marco Salluzzo, CNR SPIN Naples, Italy

Since 2017- Member of the EPSRC-JSPS International Network OSS “Oxide Super-Spin”. <https://www.superspintronics.org/>

June 2014 - June 2017 WorkPackage Leader and Coordinator of the CNR-SPIN Unit within the EU FP7-ICT FET Young Explorers Grant “CNTQC: Curved nanomembranes for Topological Quantum Computation”, Grant Agreement N.618083, coordinated by Dr. Carmine Ortix, IFW Dresden (Germany).

Nov 2013 – May 2014 Participation as Recruited Temporary Research at CNR-SPIN in the Italian FIRB Project “Hybrid superconductor-semiconductor nanostructures: nanoelectronic applications, topological properties, correlation and disorder”, coordinated by Dr. Daniela Stornaiulo, CNR-SPIN Naples (Italy).

Mar 2011 - Oct 2013 Participation as Recruited Temporary Research at CNR-SPIN in the EU FP7 Project, “Multifunctional Advanced Materials and Nanoscale Phenomena (MAMA)”, coordinated by Dr. Mario Cuoco, CNR-SPIN Salerno, Italy.

Feb 2010 - Mar 2011 Participant in PRIN 2008 “Spin, non-equilibrium and

many body effects in atomic and molecular nanocontacts”, coordinated by Prof. Erio Tosatti, SISSA, Trieste, Italy

**TECHNICAL SKILLS
AND COMPETENCES**

*With computers, specific kinds of
equipment, machinery, etc.*

Extensive experience in dealing with Windows, Unix, Linux.
Extensive experience in using editors/utilities: Emacs, Latex, MS-Office, OpenOffice, Origin, Xmgrace, Vi, Gnuplot
Fluency in coding languages: Mathematica, Fortran 77/90/95, both on personal computer and on computer clusters.
Basic knowledge of parallel programming with MPI and OpenMP.

**OTHER SKILLS
AND COMPETENCES**

Competences not mentioned above.

HONORS

2004 “Italian Physical Society Prize” for outstanding results in Theoretical Solid State Physics, Italian Physical Society (SIF).

TUTORING

- Cosupervisor of 6 theses of Post-graduate magister’s degree in Physics and 1 Thesis of degree in Physics at Università degli Studi di Salerno, Italy

REFeree ACTIVITY FOR PROJECTS, MASTER THESES AND PHD THESES

-**2024**- Member of the International Evaluation Panel for a Project Proposal submitted to the funding Programme of the National Science Centre of Poland
-**2022** Member of the International Assessment Committees for PhD in Physics at Chalmers University of Technology, Göteborg, Sweden
-**Since 2017** - Opponent in International Assessment Committees for PhD in Physics, at Norwegian University of Science and Technology (NTNU), Trondheim, Norway
- **2018** External Evaluator at an International Assessment Committee for PhD in Physics at Università degli Studi di Salerno, Italy.
- **Since 2016** External Evaluator at Norwegian University of Science and Technology (NTNU), Trondheim, Norway, for Master Theses in Physics.
- **2014** -Member of the International Evaluation Panel for a Project Proposal submitted to the funding Programme of the “Office of Basic Energy Sciences (BES)” of the Department of Energy of USA.

OTHERS

Since 2023 - Outreach activity within the Italian Project Italian Quantum Weeks
Organizer and Chair of 3 conferences (2 online) for High School Students and general public between 2023 and 2024.

ADDITIONAL INFORMATION

PUBLICATIONS Co-author of 44 publications in peer-reviewed international journals, including: 1 Nature Electronics, 1 Nature Materials, 1 Nano Letters, 4 Physical Review Letters, 2 Physical Review Research, 16 Physical Review B, 2 EPL.
40 talks at international conferences (10 invited talks, 1 invited keynote talk).
15 invited seminars at International Institutions.

SELECTED PUBLICATIONS

Carmine Autieri, Giuseppe Cuono, Debmalya Chakraborty, Paola Gentile, Annica M. Black-Schaffer

Conditions for orbital-selective altermagnetism in Sr₂RuO₄: Tight-binding model, similarities with cuprates, and implications for superconductivity

Phys. Rev. B 112, 014412 (2025)

G. Lamura, D. Tay, R. Khasanov, P. Gentile, C. Q. Xu, X. Ke, I. J. Onuorah, P. Bonfà, Xiaofeng Xu, T. Shiroka

Anisotropic superconductivity in the quasi-one-dimensional superconductor V₂Ga₅

Scientific Reports 15, 14185 (2025)

Yuri Fukaya, Keiji Yada, Yukio Tanaka, Paola Gentile, and Mario Cuoco

Particle-hole spectral asymmetry at the edge of multiorbital noncentrosymmetric superconductors

Phys. Rev. B 108, L020502 (2023)

P. Gentile, M. Cuoco, O. M. Volkov, Z. J. Ying, I. J. Vera-Marun, D. Makarov, C. Ortix

Electronic materials with nanoscale curved geometries

Nature Electronics 5 (9), 551-563,1 (2022)

P. Gentile, M. Catapano, N. De Vivo, M. Cuoco, A. Romano, C. Noce

Spin and charge transport in ferromagnet-superconductor-ferromagnet heterostructures:

Stoner versus spin mass mismatch mechanism

Physical Review B 105 (21), 214501 (2022)

Y. Fukaya, Y. Tanaka, P. Gentile, K. Yada, M. Cuoco

Anomalous Josephson Coupling and High-Harmonics in Non-Centrosymmetric Superconductors with -wave Spin-Triplet Pairing

Npj Quantum Materials 7, 99 (2022).

H. Siddiquee, Riffat Munir, Charuni Dissanayake, Priyanka Vaidya, Cameron Nickle, Enrique Del

Barco, G. Lamura, C. Baines, S. Cahen, C. Hérold, P. Gentile, T. Shiroka, Y. Nakajima

Nematic superconductivity in the topological semimetal

Physical Review B 105 (9), 094508, 5 (2022)

O. Maistrenko, C. Autieri, G. Livanas, P. Gentile, A. Romano, C. Noce, D. Manske, M. Cuoco

Inverse proximity effects at spin-triplet superconductor-ferromagnet interface

Physical Review Research 3 (3), 033008, 1 (2021)

Y. Fukaya, K. Yada, Y. Tanaka, P. Gentile, M. Cuoco

Orbital tunable transitions in Josephson junctions with noncentrosymmetric topological superconductors

Physical Review B 102 (14), 144512 (2020)

Z.-J. Ying, P. Gentile, J. P. Baltanás, D. Frustaglia, C. Ortix, and M. Cuoco

Geometric driving of two-level quantum systems

Physical Review Research 2, 023167 (2020)

G. Francica, M. Cuoco, and P. Gentile

Topological superconducting phases and Josephson effect in curved superconductors with time reversal invariance

Physical Review B 101, 094504 (2020)

A. Di Bernardo, S. Komori, G. Livanas, G. Divitini, P. Gentile, M. Cuoco and J. W. A. Robinson Nodal superconducting exchange coupling

Nature Materials (2019)

K. S. Das, D. Makarov, P. Gentile, M. Cuoco, B. J. van Wees, C. Ortix, I. J. Vera-Marun Independent geometrical control of spin and charge resistances in curved spintronics

Nano Letters 19, 6839 (2019)

Y. Fukaya, S. Tamura, K. Yada, Y. Tanaka, P. Gentile, M. Cuoco

Spin-Orbital Hallmarks of Unconventional Superconductors Without Inversion Symmetry

Physical Review B 100, 104524 (2019)

G. Francica, P. Gentile, M. Cuoco Effects of geometry on spin-orbit Kramers states in semiconducting nanorings

Europhysics Letters 127, 30001 (2019)

P. Gentile, V. Benvenuto, C. Ortix, C. Noce and M. Cuoco

Engineering Topological Nodal Line Semimetals in Rashba Spin-Orbit Coupled Atomic Chains

Condens. Matter 4 (1), 25 (2019)

Y. Fukaya, S. Tamura, K. Yada, Y. Tanaka, P. Gentile, M. Cuoco

Inter-orbital topological superconductivity in spin-orbit coupled superconductors with inversion symmetry breaking

Physical Review B 97, 174522 (2018)

S. Pandey, N. Scopigno, P. Gentile, M. Cuoco, C. Ortix

A topological quantum pump in serpentine-shaped semiconducting narrow channels

Physical Review B (Rapid Communication) 97, 241103(R) (2018)

Z. J Ying, M. Cuoco, C. Ortix, P. Gentile

Tuning Pairing Amplitude and Spin-Triplet Texture by Curving Superconducting Nanostructures

Physical Review B (Rapid Communication) 96, 100506(R) (2017)

Z. J. Ying, P. Gentile, C. Ortix, and M. Cuoco

Designing electron spin textures and spin interferometers by shape deformations

Physical Review B (Rapid Communication) 94, 081406(R) (2016)

P. Gentile, M. Cuoco, and C. Ortix

Edge States and Topological Insulating Phases Generated by Curving a Nanowire with Rashba Spin-Orbit Coupling

Physical Review Letters 115, 256801 (2015)

P. Gentile, M. Cuoco, A. Romano, C. Noce, D. Manske, P. M. R. Brydon.

Spin-orbital coupling in a triplet superconductor-ferromagnet junction

Physical Review Letters 111, 097003 (2013).

A. Romano, P. Gentile, C. Noce, I. Vekhter, M. Cuoco.

Magnetic Intragap States and Mixed Parity Pairing at the Edge of Spin-Triplet Superconductors
Physical Review Letters 110, 267002 (2013).

P. Gentile, M. Cuoco, C. Ortix
Curvature-induced Rashba spin-orbit interaction in strain-driven nanos tructures.
SPIN (World Scientific), Topical issue on Functional magnetic
nanomembranes Vol. 3, No. 2, 1340002 (2013)

P. Gentile, L. De Leo, M. Fabrizio, E. Tosatti.
Lack of kondo screening at nanocontacts of nearly magnetic metals
Europhysics Letters 87, 27014 (2009)

M. Cuoco, A. Romano, C. Noce, P. Gentile.
Proximity effect between an unconventional superconductor and a ferromagnet with spin
bandwidth asymmetry.
Physical Review B 78, 054503 (2008).

M. Cuoco, P. Gentile, C. Noce.
Coexistence of ferromagnetism and singlet superconductivity via kinetic exchange.
Physical Review Letters 91, 197003 (2003).

FISCIANO (SA), ITALY
10/01/2026