

CURRICULUM VITAE
EUROPEAN FORMAT

PERSONAL INFORMATION

Name, Surname Gianrico LAMURA
 Postal Address
 Telephone
 E-mail
 Website
 Nationality
 Place and Date of birth
 Position

ADDITIONAL INFORMATION

Bibliometric indices H-index: 23 (<https://www.scopus.com/authid/detail.uri?authorId=55887549700>)
 113 documents (articles/book chapters) as author; 1490 citations by 1131 documents.

Scientific Qualification for
Academic Staff

- 2020 Qualification N. 20128160780 as "Pr2" (second class Professorship); section 28 - "Milieux denses et matériaux" (Condensed Matter physics), *French Ministry of National Education*; from 07/02/2020 to 31/12/2024
- 2020 National Scientific qualification (ASN) for II class Professorship; section: 02/B1 "Experimental Condensed Matter physics"; Italian Ministry of Education; from 06/07/2020 to 06/07/2029.
- 2015 Qualification n° 15128160780 as "Pr2" (second class Professorship); section 28 - "Milieux denses et matériaux" (Condensed Matter physics), *French Ministry of National Education*; from 05/02/2015 to 31/12/2019.
- 2013 National Scientific qualification (ASN) for II class Professorship; section: 02/B1 "Experimental Condensed Matter physics", Italian Ministry of Education, from 11/12/2013 to 11/12/2019.

WORK EXPERIENCE,
TEACHING:

Teaching at University

years	Course - Faculty	CFU	Hours	Contract
2024 - 2018	Superconductivity , (co-teaching with Prof. M. Putti), Department of Physics (DP), University of Genoa (UG)	6	10	Contract Professor (CP), ART. 23 , comma 2, Legge n. 240/2010 (Art23Legge240-10)
2024 - 2023	General Physics , Electromagnetism (EM), Pleasure Craft Engineering (PCE), Università di Genova (UG), Campus di La Spezia	12	60	CP-ART23
2023 - 2018	GP-EM, PCE-UG	12	52	CP-ART23
2018 - 2017	GP-EM, PCE-UG	12	60	CP-ART23
2017 - 2016	GP-EM, PCE-UG	12	20	CP-ART23
2018 - 2016	Muon spectroscopy , PhD Course, DP-UG		20	
2018 - 2017	General Physics (GP) , Classical Mechanics and Electromagnetism. Assistant of Prof. M. Putti, Electrical Engineering (EE), UG	12	40	Teaching Support, Exercises, DR569 - 17/5/12
2017 - 2016	GP , Assistant of Prof. M. Putti/S. Siri,	12	20	Teaching Support, Exercises,

	EE- UG			DR569 - 17/5/12
2016 - 2015	GP, Assistant of Prof. M. Putti/S. Siri, EE- UG	12	40	Teaching Support, Exercises and Tutoring, DR569 - 17/5/12
2015 - 2014	GP-EM Assistant of Prof. S. Siri, CE and Informatics, UG	12	40	Teaching Support, Exercises and Tutoring, DR569 - 17/5/12
2014 - 2013	GP-EM, Assistant of Prof. S. Siri, EE- UG	12	20	Teaching Support, Exercises, DR569 - 17/5/12
2013 - 2012	GP-EM, Assistant of Prof. S. Siri, EE- UG	12	20	Teaching Support, Exercises and Tutoring, DR569 - 17/5/12
2008 - 2007	GP, Classical Mechanics and Thermodynamics (CMT), Naval Engineering, Università di Napoli "Federico II" (UNFII)	6	80	CP-DM.21-5-98.n.242
2006 - 2005	GP-CMT, Informatic Engineering, UNFII	6	80	CP-DM.21-5-98.n.242
2008 - 2003	GP, Assistant of Prof. A. Andreone, Informatics Engineering, UNFII			Expert (cultore della material)
1997 - 1998	"Laboratory of physics", Faculty of "Science et Technologie", former Université Paris XII-Val de Marne (Paris Est).		30	"Vacateur"

Coordination activity at University Coordinator of the admission test at "Pleasure Craft Engineering" Bachelor degree course, University Campus La Spezia for two academic years: 2022/23 and 2023/24,

Supervisor (Thesis – Stages)

2021-2020	Supervisor of the Master stage en "Material Science" of Mr. Giuseppe. Sormani.
2016	Research stage tutor for Alice Bach. "MASTER-1" (Polytech Paris-UPMC).
2016	Co-Tutor for Silvia Vita's Master Thesis in Chemical Sciences. Chemistry Department, UG
2016-2013	Co-tutor for F. Cagliaris's PhD thesis work, Physics Department, UG.
2007-2008	Co-tutor for two masters in Information-Communication Engineering, UNFI
2006	Tutor. Project for student training, UNFII.
2003	Master in Electronic engineering, UNFII

Member of jury at University

01/07/2016	Jury for the "Habilitation à Diriger des Recherches" (HDR) en "Chimie" de l'Université de Lorraine. Candidate: S. Cahen
31/03/2011	Jury for HDR. Chemistry, University of Nancy, (France). Candidate: B. Vigolo.
18/03/2011	Jury for the PhD Degree in "Physique et Chimie de la Matière et des Matériaux" (PCMM). Chemistry, University of Nancy, (France). Candidate: H. Rida
25/09/07	Jury for the PhD Degree in PCMM, University of Nancy, (France). Candidate: N. Emery.

Invited Professor/Researcher

10 June - 12 July 2024	Invited Prof. at IJL, University of Lorraine, France. Equipe 205
5 June - 13 July 2023	Invited Prof. at IJL, University of Lorraine, France. Equipe 205
October 2021	CNR "Short Term Mobility-2020" (STM) grant. "superconductivity in ternary carbon based materials". IJL-Nancy, France. October 2021
January 2017	CNR STM. Faculty of Humanities and Natural Science, Prešov University, Prešov, Slovak Republic.
2016 - 2010	Invited Prof. at IJL, University of Lorraine, France. Duration: one month. Equipe 205 directed.
2009 - 2008	Invited Prof. at University of Nancy, France. Duration: one month per year. Equipe 205 directed.
2016 - 2010	Invited Prof. at IJL, University of Lorraine, France. Duration: one month per year. Equipe 205 directed.

WORK EXPERIENCE, RESEARCH

Main research interests and investigation techniques:**Superconductivity**

- **Topological/nematic superconductivity** by muons spectroscopy (μ SR) and dc magnetization. Compounds: $\text{Sm}(\text{Fe},\text{Co})\text{AsO}$, LiFeAs , V_2Ga_5 , 2M-WS_2 , LaNiGa_2 , SnNbSe_2 and $\text{Cu}_x\text{Bi}_2\text{Se}_3$ (all are working progress) and CaSn_3 (published-2022). *Particularly relevant is the case of the CaSn_3 topological semimetal* where we could put in evidence the breaking of the rotational symmetry of the underlying cubic lattice while the time reversal symmetry is preserved. These experimental evidences are indicative of a pairing state in a multidimensional representation indicating such compound as an important example of nematic superconductor. Besides that, this work suggests the possibility that unconventional or simply non-Abrikosov-like vortices could be realized in topological superconductors.
- **Superconductivity induced by hydrogen doping:**
Searching for high temperature superconductivity by using light atoms (H) for doping both the carrier density and the phonon frequencies responsible of the electron-phonon coupling in BCS-conventional superconductors.
 - ✓ Graphite intercalation compounds (GICs): H-doped $(\text{Sr},\text{Ca})\text{C}_6$ (ongoing). This study is the object of an **"invited professor"** position at the "Institut Jean Lamour" (Nancy, France) as temporary member of Dr. C. Hérold's research team during June-July 2024 and 2023. Experimental studies on superconducting and magnetic GICs were the object of a fruitful collaboration with the same French team since 2005 (see here below). Additional techniques: resonant cavity (in GHz range) and mutual inductance (RF).
 - ✓ "Superconductivity induced by gate-driven hydrogen intercalation in the charge-density-wave compound 1T-TiSe_2 ", Communications Physics (2023).
- **Nanostructured superconductors** by DC-Mag and μ SR:
 - ✓ Layered scandium borocarbide: $\text{Sc}_{20}\text{BC}_{27}$ by μ SR as a function of temperature and applied pressure (0-20 kbar) (work in progress).
 - ✓ Study of the magnetic properties of thin niobium/permalloy (S/F) heterostructures in view of *SFS Josephson junctions quantum devices*.
- **Inductive measurements** of the effective first penetration field (BC_1) by third harmonic analysis and of the London penetration depth.

Magnetism

- **Magnetic compounds**
 - ✓ Intra/inter-cluster magnetic exchange interactions in the metallic half-Heusler ferromagnet $\text{Cr}_4\text{PtGa}_{17}$.
 - ✓ Multiferroic magnetic materials as the Fe-doped $\text{Ca}_3\text{Ru}_2\text{O}_7$ where a novel skyrmion phase can be stabilized.
 - ✓ Heavy Fermions compound $\text{Yb}_2\text{Pd}_2(\text{In}_{1-x}\text{Sn}_x)$ near a **quantum criticality** by μ SR as a function of temperature, pressure and applied magnetic field, by DC-Mag and μ SR.
 - ✓ Magnetic graphite intercalation compounds (GIC) by DC-Mag and μ SR in collaboration with Dr. C. Hérold (IJL, France). Compound: EuC_6 ; frustrated antiferromagnet.
 - ✓ Pyrochlores by DC-Mag and μ SR in collaboration with Prof. S. Sanna (Università di Bologna), Joost van Duijn (University of Cordoba, Spain) and Carlo Castellano (Università degli Studi di Milano).
- **Nanostructured Magnetic/Superparamagnetic Materials**
 - ✓ Cyclodextrin-Polynitroxides by DC-Mag for MRI applications.
 - ✓ Optimization of NdFeB permanent magnet configurations to improve in-vivo drug delivery for cancer therapy.
 - ✓ Magnetic properties of rotaxanes and Fe(II) complexed rotaxanes for Magnetic Resonance Imaging (MRI).
 - ✓ Ferrites and Fe- or Mn- doped calcium apatite superparamagnetic nanoparticles by DC-Mag for hyperthermia.
 - ✓ Spectroscopic (Raman Effect) and magnetic (by DC-Mag) properties of carbon nanotubes (CNTs) synthesized by arc discharge, before and after purification in collaboration with Dr. C. Hérold (IJL, France).

POST-DOC EXPERIENCES 2004-2001

- Dec. 2004 – Jan. 2003 Pos-Doc at the University of Naples "Federico II".
- Dec. 2002 - June 2002 Research Associate: Imperial College, London (UK).
- May 2002 – Feb. 2001 Post-Doc: research grant "section d", INFN, Naples.

Measurements at International Large Scale Facilities	<p>Accepted proposals for μSR at Paul Scherrer Institute, Villigen, Switzerland (PSI):</p> <p>(i) Topological/nematic superconductivity in Sm(Fe,Co)AsO (20231263), LaNiGa₂ (20222814), LiFeAs (20222935), 2M-WS₂ (20222832), Cu_xBi₂Se₃ (20211394), SnNbSe₂ (20202496) and CaSn₃ (20190248);</p> <p>(ii) superconductivity versus applied pressure in the carbon based layered compound Sc₂₀BC₂₇ (20222830-31 and 20212507-09).</p> <p>(iii) superconductivity in hydrogen-doped 1T-TiSe₂ single crystals (20202502);</p> <p>(iv) Properties of the multiferroic magnetic materials Fe-doped Ca₃Ru₂O₇ (20192068);</p> <p>(v) Bi-based layered superconductors (20121675);</p> <p>(vi) Magnetic properties Dy₂Ru₂O₇ and Yb₂Ru₂O₇ pyrochlores (20161033) and of Yb₂Pd₂In_{1-x}Sn_x heavy fermion (20161632, 20152171, 20152102, 20150987, 20141777, 20141776);</p> <p>(vii) iron based superconductors (20141880, 20131761, 20130786, 20121709, 20120795, 20111569, 20101494, 20101439, 20100699, 20091439, 20091438, 20090625, 20081438, 20080683, 20080681). (viii) Irradiated HOPG: 20081413.</p> <p>(ix) GICs: EuC₆ and Li_xEuC₄ (magnetic) 20071252; CaC₆ and Li₃Ca₂C₆ (superconducting) 20071162.</p>
Seminars Talks and posters at International Conferences	<p>13 seminars presented in different universities. The last one: "Is the Abrikosov's vortex-model still valid in nematic superconductors?", Institut Jean Lamour, Nancy (France), 06/07/2023.</p> <p>18 talks (8 invited) and 57 posters presented at international meetings/conferences/workshops. The last four oral presentations:</p> <ol style="list-style-type: none"> G. Lamura et al., "High-pressure borocarbide superconductor effects on the layered scandium", 9th INTERNATIONAL CONFERENCE on SUPERCONDUCTIVITY and MAGNETISM (ICSM-9), 30/04/24 (27/04/24 - 04/05/24) Fethiye (Türkiye). Invited. G. Lamura et al., "Possible unconventional vortex lattice in LiFeAs single crystals by μSR", DPG Spring Meeting, Berlin, 17- 22. March. 2024. E. Piatti, ..., G. Lamura et al.; "Superconductivity in hydrogen-intercalated titanium diselenide". ISICXXI: 21st International Symposium on Intercalation Compounds, 11- 15 June 2023, Nancy (France). G. Lamura et al., titre: "Is the Abrikosov's vortex-model still valid in nematic superconductors?". 15th Int. Conference on Muon Spin Rotation, Relaxation, and Resonance, 28 Aug. - 2 Sep. 2022, Parme, Italy.
Reviewer for peer-reviewing journals	<ul style="list-style-type: none"> o Nature Communications o American Physical Society (APS): Physical Review Letters, Physical Review B. o Institute of Physics (IOP): Journal of Physics: condensed Matter, New Journal of Physics. o Elsevier: Journal of Alloys and Compounds.
Editorial/Conference Committees	<ul style="list-style-type: none"> • Member of the local Committee of μSR2020 conference (reported to 2021 because of Covid-19 pandemic emergency). • Local Organizing Committee, SuperFOx2020, Conference on Superconductivity and Functional Oxides, 10-12/02/2020, Santa Margherita Ligure, Italy. (http://www.superfox2020.eu/index.php/casa/committee) • International Advisory Committee member of "μSR2014" conference. https://indico.psi.ch/event/2039/page/230-committees. • Organizing Committee member and "Guest Editor" for the section "Electronics" of 11th European Conference on Applied Superconductivity (EUCAS2013).
Participation to/coordination of financed projects	<ul style="list-style-type: none"> ✓ Scientific responsible for CNR-SPIN within Spoke-2 of the project "Robotics and AI for Socio-economic Empowerment" (RAISE) in the framework of the "Piano Nazionale di Ripresa e Resilienza" (PNRR). Total amount for two research teams: 338 keuro. ✓ Subcontracting within EU project N. 720834 (H2020-NMBP-2016), CUPIDO (www.cupidoproject.eu). ✓ Coordinator of Work Package 2 (Advanced characterization) for FP7 project. n. 283204 (SUPER-IRON). Title: "Exploring the potential of Iron-based Superconductors" (NMP.2011.2.2-6 NMP). Coordinator: Prof. Marina Putti. ✓ PRIN 2008: "Alta Tc nei superconduttori a base di Fe: una nuova sfida per la ricerca". National coordinator: Prof. Marina Putti, UG. prot. 2008XWLWF9. ✓ PRIN 2004-2006: National coordinator: Prof. Marina Putti, University of Genoa.

Publications (last five years)

1. A. Martinelli, G. Lamura et al., *Journal of Alloys and Metallurgical Systems* 5, 100051 (2024).
2. C. Ritter, ..., G. Lamura et al., *Journal of Alloys and Compounds* 972, 172690 (2024).
3. C. Ritter, ... G. Lamura et al., *Journal of Alloys and Compounds* 980, 173573, (2024), *ibid* 983, 173774 (2024).
4. E. Piatti, G. Prando, M. Meinero, C. Tresca, M. Putti, S. Roddaro, G. Lamura, T. Shiroka, P. Carretta, G. Profeta, D. Daghero, and R. S. Gonnelli, *Communications Physics* 6, 202 (2023).
5. Siddiquee H, ..., Lamura G, *et al.*, "Nematic superconductivity in the topological semimetal CaSn_3 ", *Phys. Rev. B*, vol. 105, 094508 (2022).
6. Lamura G, *et al.*, " μSR investigation of the Fe-doped $\text{Ca}_3\text{Ru}_2\text{O}_7$ polar metal", *J. of Mag. and Magn. Mat.*, 551, 169138 (2022).
7. M. Meinero, ...and G. Lamura, "Mn-induced Fermi-surface reconstruction in the SmFeAsO parent compound" *Scientific Reports* 11, 14737 (2021).
8. R. Satariano, ..., G. Lamura, *et al.*, "Inverse magnetic hysteresis of the Josephson supercurrent: Study of the magnetic properties of thin niobium/permalloy ($\text{Fe}_{20}\text{Ni}_{80}$) interfaces" *Phy. Rev. B*, 103, 224521 (2021).
9. C. Castellano, ..., G. Lamura et al., *Journal of Alloys and Compounds*, 865, 158958 (2021).
10. A. Omelyanchik, G. Lamura, et. al., *Journal of Magnetism and Magnetic Materials*, 522, 167491 (2021).
11. S. Cahen, I. El-Hajji, ...G. Lamura, , C. Hérold, *New Journal of Chemistry*, 44, 100505 (2020).
12. L. Melone, A. Bach, G. Lamura et al., *ChemPlusChem*, 85, pp. 1171 (2020).
13. E. Villa, ..., G. Lamura, F. Canepa, *Journal of Materials Research and Technology*, 9, 2259 (2020).
14. G. Lamura, et al., "Pressure-induced antiferromagnetic dome in the heavy-fermion $\text{Yb}_2\text{Pd}_2\text{In}_{1-x}\text{Sn}_x$ system" *Phys. Rev. B* 101, 054410 (2020).
15. Adamiano, ..., G. Lamura et al., *Nanomedicine (Lond.)* 14, 1267 (2019).
16. M. Meinero, ..., G. Lamura, ..., *Journal of J. Phys.: Condens. Matter* 31, 214003 (2019).
17. M.Y. Hacısalihoglu, ... G. Lamura et al., 134, 319 (2019).
18. A. Martinelli, S. Sanna, G. Lamura et al., *J. Phys.: Condens. Matter* 31, 385802 (2019).

EDUCATION AND TRAINING

Dec. 2000 - Sep. 1997

PHD in solid-state physics at Ecole Supérieure de Physique et Chimie Industrielle de la Ville de Paris (ESPCI), Université Paris VI, Paris (France). Title: "Study of low energy excitations by means of magnetic penetration depth measurements in low and high critical temperature superconductors. Marks: "très honorable avec félicitations". Supervisors: Prof. J. Bok and Dr. A. Gauzzi

Sept. 1997 - April 1997

Training stage at ESPCI, Paris (France).

March 1997 - May 1996

Training stage at Department of Physics, University of Genoa. Research field: biophysics. Supervisor: Prof. A. Gliozzi.

July 1995

Degree in Physics at University of Genoa. Master Thesis (Laurea). Research field: biophysics. Supervisors: Prof. M. Bolognesi, Dr. P. Facci

PERSONAL SKILLS

Mother tongue(s)

Italian

Other language(s)

French: excellent. English: good

Job-related skills

Cryogenics, instrumentations; interfacing.

Digital skills

OS: Debian-Linux and Windows. Programs/software: Labview, Matlab, Origin, Office, Latex, C.

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV.

Genoa, 21th June 2024

Gianrico Lamura