PERSONAL INFORMATION

Carla Cirillo

Sex | *Date of birth* | *Nationality*

Enterprise	University	EPR
☐ Management Level	☐ Full professor	☐ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☐ Associate Professor	☒ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

from 16/12/2009 to today

Permanent Level III Researcher

Istituto Superconduttori Materiali Innovativi e Dispositivi del CNR (CNR – SPIN), Salerno (Italy)

- The experimental research activity is carried out in the field of physics of superconducting materials, mainly thin films and heterostructures based on traditional materials, in order both to investigate their fundamental physical properties and design devices that exploit their properties.

Business or sector: Research

from 01/03/2007 to 01/12/2009

Senior Postdoc

Dipartimento di Fisica “E. R. Caianiello”, Università degli Studi di Salerno (Italy)

- Senior postdoc in the group of prof. Carmine Attanasio on the project “ Transport properties in hybrid S-N and S-F structures ”. My research activity regarded the investigation of the electrical properties of superconducting hybrids based on conventional superconductors deposited by sputtering. In particular, vortex dynamics in nanostructured films was studied by electrical transport measurements in dc regime.

Business or sector: Research

from 01/03/2006 to 28/02/2007

Junior Postdoc

Dipartimento di Fisica “E. R. Caianiello”, Università degli Studi di Salerno (Italy)

- Junior postdoc in the group of prof. Carmine Attanasio on the project “Coexistence of superconductivity and magnetism in thin films”. My research activity concerned the deposition and the electrical characterization at low temperatures and high magnetic fields of superconducting multilayers based on thin films.

Business or sector: Research

from 01/01/2005 to 31/12/2005

Research Fellowship

Stichting voor Fundamenteel Onderzoek der Materie (FOM), The Netherlands

- The research activity was performed at Kamerlingh Onnes Laboratory at the University of Leiden (The Netherlands) in the group “Magnetic and Superconducting Materials” leaded by Prof. P. H. Kes e J. Aarts and was focused on the investigation of the depairing current density in Superconducting/Ferromagnetic hybrids.

EDUCATION AND TRAINING

from 01/11/2002 to 31/10/2005

Ph.D. Degree in Physics

EQF level 8

Università degli Studi di Salerno

Thesis title: "Superconducting proximity effect in Nb/PdNi hybrids: probing the role of the ferromagnet", supervisors Prof. Carmine Attanasio, Prof. Jan Aarts.

During the PhD my experimental research activity focused on the interplay between superconductivity (S) and ferromagnetism (F) in thin films hybrids coupled by proximity effect. Physics of S/F systems is extremely rich due to the coexistence of two competing orderings, and to the numerous suggestions for the engineering applications of these heterostructures. In particular, in my thesis I investigated the behavior of the superconducting order parameter in Nb/PdNi bilayers. Expertise was gained in electronic lithography processes and plasma etching techniques; magnetic characterization of ferromagnetic thin films through measurements with SQUID magnetometer.
The last year of my PhD fellowship was carried out at the Kamerlingh Onnes Laboratory at the University of Leiden (The Netherlands) in the group “Magnetic and Superconducting Materials” leaded by Prof. P. H. Kes e J. Aarts.

2001

Master Degree in Physics (Vecchio ordinamento)

EQF level 7

Università degli Studi di Salerno (Italy)

Thesis title: "Superconducting properties of Nb/Pd multilayers", supervisor Prof. Carmine Attanasio, final mark 110/110 cum laude
The main skills gained during the thesis concern thin films fabrication by sputtering technique, low-temperature magnetotransport, optical lithographic processing; vacuum and cryogenic techniques.

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s) English, French (basic)

Job-related skills

The main part of my experimental research activity focuses on the study of superconducting materials mostly in thin film form. It comprises the deposition of thin films and heterostructures by sputtering technique and the investigation of their electrical transport properties in presence of magnetic fields up to 11 Tesla and at low temperatures down to 0.3 K. I was intensively involved in the study of superconductor/ferromagnetic hybrids and to the physical phenomena related to the inhomogeneous character of the superconducting order parameter in these systems. More recently, the research activity is devoted to the investigation of disordered superconductors for their possible application as Superconducting Single Photon Detectors. Experience was gained also in the electrical characterization on different class of materials as, for instance, magnetic films, graphene-based heterostructures, and Mott insulators in form of single crystals.
Significant expertise has been acquired in the following activities:

- thin films and superlattices deposition by sputtering technique and their electric characterization;
- optical and e-beam lithography;
- X-Ray reflectivity and high angle diffraction;
- vacuum and cryogenic skills; magnetic characterization by SQUID magnetometer.

I’m co-author of more than 100 articles on refereed international journals (more than 900 citations, Scopus h-index 20).

Digital skills

- Knowledge of the Mathematica programming suite, of the data analysis software Origin.
- Knowledge of the Latex environment for scientific written production and of the Microsoft Office

ADDITIONAL INFORMATION

Other experiences

- In 2022 I obtained the national scientific qualification as Associate Professor ASN2021 SSD 02/B1 (Experimental condensed matter physics)
- I coordinate the activity related to the Italian project PON ARS01_00734 “QUANCOM: Development of quantum systems and technologies for the security in communication networks” PON 12 Aree “R&I” 2014-2020 (Azione II – OS 1.b) within the CNR SPIN research unit of Salerno
- I supervised one Master Thesis in Physics titled: “Deposition and magnetic characterization of thin films of GdFe and GdNi amorphous alloys” and one PhD Thesis in Physics titled "Exploring the transport properties of quantum systems on different length scales" (both in conjunction with Prof. Attanasio).
- I was Work package leader in the framework of the EU-FP7 (Grant 264098) research project named MAMA “Unlocking research potential for multifunctional advanced materials and nanoscale phenomena” (WP4 Organization of Workshops and Conference).
- I was Chair of the International workshop "MAMA-Hybrids - Multifunctional Hybrids And Organics" (http://mama-hybrids.spin.cnr.it/)
- In the period November 2010 - December 2015 I was head of the research module “Superconducting and hybrids based materials and devices” in the framework of the research line named “Superconducting, hybrid and quantum devices and nanostructures” of the CNR-SPIN Institute.
- I received two grants for the Short Term Mobility Program of CNR: 2008 “Coexistence of superconductivity and ferromagnetism in hybrid S/F structures on nanometric scale: spatial distribution of the superconducting oder parameter and pi phase”, carried out in the group “Magnetic and Superconducting Materials”, leaded by Prof. J. Aarts, at the Kamerlingh Onnes Laboratory, Leiden; 2010 “Magnetic properties and exchange bias in Ni_0.8Fe_0.2(Py)/Cu_0.99Mn_0.01 hybrid systems” carried out in the in the group UBXLAB “Grup de Magnetismes, Baixes Temperatures i Microones” leaded by Prof. J. Tejada, University of Barcelona.
- I’m Referee of several international scientific journals such as, for example, Physical Review Letters, Physical Review B, Physical Review Materials, Physical Review Applied, Scientific Reports, Journal of Magnetism and Magnetic Materials.

Salerno, 09/11/2023