

PERSONAL INFORMATION

Giancarlo Panaccione



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Enterprise	University	EPR
<input type="checkbox"/> Management Level	<input type="checkbox"/> Full professor	<input type="checkbox"/> <input checked="" type="checkbox"/> Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
<input type="checkbox"/> Mid-Management Level	<input type="checkbox"/> Associate Professor	<input type="checkbox"/> Level III Researcher and Technologist
<input type="checkbox"/> Employee / worker level	<input type="checkbox"/> Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	<input type="checkbox"/> Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

from September 2023 to present

Director (ad interim)

Istituto Officina dei Materiali (IOM) - Consiglio Nazionale delle Ricerche (CNR),
www.iom.cnr.it

from October 2019 to present

Research Director (Level I, Dirigente di ricerca)

Istituto Officina dei Materiali (IOM) Consiglio Nazionale delle Ricerche (CNR), Trieste

My present research interests are focused on the electronic and magnetic properties of quantum materials and nano-materials, where emerging properties arise from strong interactions between constituent particles. In particular, the activity is focused on achieving control of these properties via external tuning parameters, growth and fabrication of digital heterostructures, possibly leading to new applications in quantum electronics, energy materials and spintronics. My research activity is mostly devoted to the exploitation of Synchrotron Radiation spectroscopies, following three main axes: (1) electronic and magnetic properties of low dimensional systems (2) electron confinement and topological properties, and (3) magnetism and phase transition in complex oxides and highly correlated systems.

-Scientific Coordinator of the (SPRINT) project "Spin Polarized Research Instrument in the Nanoscale and Time domain" at CNR-IOM (GAE P0000696), within the NFFA-Trieste activities. 2016 to present.

-Scientific responsible of the local CNR unit, EU-project SINFONIA FET OPEN H2020, April 2021-april 2024

- Unit Responsible of NFFA-DI PNRR research infrastructure (2023-2025). Member of the executive board of Directors NFFA-DI. WP leader

- Scientific Coordinator, CNR-unit, PRIN 2022, BestWIN

Business or sector: Research

from Oct 2001 to Oct 2019

Senior Researcher (Level II, Primo Ricercatore) at CNR

Istituto Officina dei Materiali (IOM) Consiglio Nazionale delle Ricerche (CNR), Trieste

Business or sector: Research

from 1998 to 2001 **Researcher (Level I - Permanent Position) at INFM**
Istituto Nazionale fisica per la Materia (INFM), lab. Nazionale TASC- Trieste

Beamline Scientist, Advanced Photoelectric Effect Experiment Beamline.

Business or sector: Research

from 1995 to 1998 **Scientific Collaborator / Postdoc**

Dep. Physics Univ. Neuchatel, Switzerland

Scientific collaborator of the Physics Dep. at the Univ. of Neuchâtel (Switzerland), Grant of the National Swiss Found, as beamline scientist on the French-Swiss SU3 beamline at LURE, and local responsible of the Swiss experiments and organization. (Group of Prof. Y. Baer)

Business or sector: Research

EDUCATION AND TRAINING

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|----------|--|-------------|
| Oct 1995 | Ph.D. Degree in Materials Science
Université P. M. Curie, Paris VI, , France
Magnetometrie de Surface avec Rayonnement Synchrotron (mention très honorable et felicitation du jury) | EQF level 8 |
| Nov 1991 | Master Degree in Physics
Università degli Studi di Roma la Sapienza (Italy)
Spettroscopia di sistemi a bassa funzione lavoro, 110/110. | EQF level 7 |

PERSONAL SKILLS

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|--------------------|---|
| Mother tongue(s) | Italian |
| Other language(s) | English, proficiency Level: C2; French, proficiency Level: C2 |
| Job-related skills | <ul style="list-style-type: none"> • Photoemission Spectroscopy (ARPES, spin resolved-ARPES, XPS, Hard x-ray Photoemission) • Mott scattering experiment for the analysis of the spin polarization of electrons. • Solid state physics and of strongly interacting systems, topological properties in solid systems, low-dimensional electronic properties, metal-insulator transitions, metal-molecular interfaces, surface magnetism, ferromagnetic and antiferromagnetic coupling, domain wall physics. • Experience in the design and realization of ultra-high vacuum setups, laser systems • Experience in design, realization and commissioning of beamline, electron analysers, electron optics • Time-resolved Spectroscopies with laser and Synchrotron Radiation • X-ray Absorption Spectroscopy, XMCD (X-rays Magnetic Circular Dichroism) |

ADDITIONAL INFORMATION

Role and responsibilities

- Operation Manager project CNR@Elettra 2.0 for the upgrade of the CNR activities at the National Synchrotron Facility Sincrotrone Trieste (2022-2027)
- Member of the Executive Board in the Nanoscience Foundries and Fine Analysis (NFFA.europe) H2020-RIA project (Grant agreement No 654360), coordinated by CNR-IOM. 2015-2019
- Manager of the Joint Research Activities in NFFA-Europe. Deputy Manager of JRA1. In-operando and high throughput methods 2015-2019
- Scientific Coordinator of the Commessa CNR MD.P04.006 (Progetto: MD.P04 / Materiali magnetici funzionali) "Studio della correlazione fra proprietà strutturali e morfologiche di film ultrasottili (pseudomorfismo, epitassia) e loro proprietà elettroniche e magnetiche", and of Modulo MD.P04.006.001, at Lab. TASC-IOM2005-2015
- Scientific Coordinator of the Ultraspın project, PIK National Project. 2012-2015
- Scientific Coordinator CNR-UNIT FP7-NMP-2009-LARGE-3, Contract n. CP-IP 246102-2 IFOX
- Scientific Coordinator CNR-UNIT PRIN Oxides (2012-2015)
- Beamline Manager at the Advanced Photoelectric Effect Beamline (APE beamline). (Lab. TASC - CNR) at Elettra Synchrotron Source. (2001- 2007)
- Scientific coordinator EU- HRPI-CT-2001-50032 , VOLPE (2001-2005)
- Scientific Coordinator of a bilateral Brazil-Italy project and bilateral Russia-Italy projects funded by MIUR (Italy- 2002-2005)
- Principal investigator of Long Term Project HE-1953 ESRF (2005-2009), Title: Study of strongly correlated systems by High-Energy Photoemission,Scientific

Professional Activities

- Member of Proposal Committee SOLEIL synchrotron (PRC2, electronic and magnetic properties) 2009-2012
- Member of referee panel 'magnetic and electronic properties' at Advanced Light Source ALS, US, from 2014 to present.
- Member of Peer Review Panel at Diamond Light Source. (Panel 3, Surface and Interfaces) April 2013 April 2014
- Chair of Peer Review Panel at Diamond Light Source. (Panel 3, Surface and Interfaces) April 2014-November 2015
- Member of Comitato Bilaterale dell'accordo Quadro Elettra-Sincrotrone Trieste e Consiglio Nazionale delle ricerche, from 2016.
- Member of Coordination Board of Nanoscience Foundries and Fine Analysis NFFA_design study FP7 Collaborative Project INFRA-2007-2.1.1. FP7-212348. (2008-2009)
- Member and expert Reviewer at European Commission / FP6-2004-Infrastructures-5 Research Infrastructures, May 2005

Awards

- Outstanding scientist award 2019, Società Italiana Luce di Sincrotrone
- Premio Radici del Negroamaro, Agosto 2018
- Award as European Visiting Researcher at Imperial College, London, on project 'Research on Quantum Materials', 2017
- June 2012- July 2013, Award as International Visiting Scholar of the Peter Wall Institute for Advanced Studies at the University of British Columbia, Quantum Matter Institute 'Spintronics with topological insulators'
- April 2014, Award for invited speaker at the International Research Colloquium at the Peter Wall Institute for Advanced Studies at the University of British Columbia.
- April -Nov 2007, visiting Professor at University of British Columbia UBC (Vancouver-Canada),

- January- February 2004, invited researcher at the European Synchrotron Radiation Facility ESRF, Grenoble, France.

Publications

Total > 240 published papers in leading international peer-reviewed journals. (h-) index of 45. [source: Google Scholar, February 2024]

Selected publications,

F. Mazzola et al. Signatures of a surface spin-orbital chiral metal, *Nature* , published online 7 Feb 2024.

A. De Vita et al. Evidence of temperature dependent interplay between spin and orbital moment in van der Waals Ferromagnet V_2I_3 , *Nanoletters* 24, 5, 1487 (2024)

C. Kalha et al. Revealing the bonding nature and electronic structure of early transition metal Dihydrides *PRX Energy* 3 (1), 01033 (2024)

D. Di Sante et al, Flat band separation and robust spin berry curvature in bilayer Kagome metals, *Nat. Phys.* 19 , 1135 (2023)

A. de Vita et al. Influence of orbital character on the ground state electronic properties in the van der Waals transition metal iodides V_2I_3 and CrI_3 , *Nanoletters* 22 (17) 7034 (2023)

G.M. Pierantozzi, *et al.*, Evidence of magnetism induced topological protection in the axion insulator candidate EuSn_2P_2 , *PNAS* 119, e2116575119 (2022)

C. Rinaldi et al., Ferroelectric Control of the spin texture in GeTe , *Nanoletters* 18, 2751 (2019).

D. Di Sante et al. Electronic properties of candidate type-II Weyl semimetal WTe_2 . A review perspective. *Electronic Structure* 1,1,014003 (2019), Review article.

T. Pincelli et al. , Transient quantum isolation and critical behavior in the magnetization dynamics of half-metallic manganites *Phys. Rev. B* 100, 045118 (2019),

G. M. Vinai et al. Proximity-induced ferromagnetism and chemical reactivity in few-layer VSe_2 heterostructures, *Phys. Rev. B* 101, 035404 (2020),

P.D.C. King *et al.*, Angle, Spin, and Depth Resolved Photoelectron Spectroscopy on Quantum Materials, *Chem. Rev.* 121, 5, 2816 (2021) review article.

Radaelli, G. *et al.* Electric control of magnetism at the Fe/BaTiO_3 interface. *Nat. Commun.* 5, (2014).

Das, P. K. *et al.* Layer-dependent quantum cooperation of electron and hole states in the anomalous semimetal WTe_2 . *Nat. Commun.* 7, (2016).

D. Di Sante *et al.* Three-Dimensional Electronic Structure of the Type-II Weyl Semimetal WTe_2 , *Phys. Rev. Lett.* 119, 026403 (2017)

T. Pincelli, *et al.*, Quantifying the critical thickness of electron hybridization in spintronics materials , *Nat. Commun.* 8, 16051 (2017).

Panaccione, G. *et al.* Coherent peaks and minimal probing depth in photoemission

spectroscopy of Mott-Hubbard systems. *Phys. Rev. Lett.* **97**, (2006).

Schattschneider, P. *et al.* Detection of magnetic circular dichroism using a transmission electron microscope. *Nature* **441**, 486–488 (2006).

Vobornik, I. *et al.* Magnetic Proximity Effect as a Pathway to Spintronic Applications of Topological Insulators. *NANO Lett.* **11**, 4079–4082 (2011).

Gray, A. X. *et al.* Bulk electronic structure of the dilute magnetic semiconductor Ga_{1-x}Mn_xAs through hard X-ray angle-resolved photoemission. *Nat. Mater.* **11**, 957–962 (2012).

Fujii, J. *et al.* Identifying the Electronic Character and Role of the Mn States in the Valence Band of (Ga,Mn)As. *Phys. Rev. Lett.* **111**, (2013)