

## CV FRANCESCA APOLLONIO

Francesca Apollonio

Associate Professor at the Department of Information Engineering, Electronics and Telecommunication, University Sapienza of Rome

[https://phd.uniroma1.it/web/FRANCESCA-APOLLONIO\\_nC1435\\_IT.aspx](https://phd.uniroma1.it/web/FRANCESCA-APOLLONIO_nC1435_IT.aspx)

### POSITIONS

- 2019: Associate Professor, settore 09/F1 – Campi Elettromagnetici (ING-INF/02)
- 2018: ASN (Abilitazione Scientifica Nazionale) for Full Professor, settore 09/F1 – Campi Elettromagnetici (ING-INF/02)
- 2000: Assistant Professor at the University Sapienza of Rome
- 1994: Laurea in Electronic Engineering, University Sapienza of Rome

### WORK EXPERIENCE

- 2000-2019: Assistant Professor, DIET, University Sapienza of Rome
- 1998-2000: Technical Support, Telecom Italia, Marketing Department
- 1995-1996: Research Fellowship from AIRP

### BIBLIOMETRICS (from Scopus, july 2021)

Total Citations=	1886
Hirsch (H) index=	25
Journals & Books=	91
Conference papers=	89

### AWARDS AND ROLES IN INTERNATIONAL SOCIETIES

- 2020-today: MEMBER of the ICNIRP Scientific Expert Group (SEG), Project Group on LF Guidelines
- 2019-today: MEMBER of the LOC URSI GASS2021
- 2019-today: CHAIR of the National Commission CNR-URSI, Commission K “Electromagnetics in Biology and Medicine”.
- 2016-2021: NATIONAL REPRESENTATIVE, MIUR Action COST CA15211: “Atmospheric Electricity Network: coupling with the Earth System, climate and biological systems” (Electronet)
- 2011-2019: VICE-CHAIR National Commission CNR-URSI, Commission K “Electromagnetics in Biology and Medicine”.
- 2016-2017: MEMBER of the TPC for the BioEM2017 June 2017 Hangzhou, China.
- 2015-2016: CHAIR of the TPC for the BioEM2016, June 2016 Ghent, Belgium.
- 2014-2018: MEMBER of the WG3 “EMF dosimetry: in silico tools & measurements” in the Action COST BM1309, EMF-MED
- 2014-2015: MEMBER of the TPC for the BioEM2015, June 2015 Asilomar, USA.
- 2012-2016: ELECTED MEMBER of the Board of Directors of the Bioelectromagnetics Society

- 2011: MEMBER of the LOC of the 10th EBEA Conference Rome 2011
- 2008-2012: EXPERT MEMBER in the Action COST BM0704 “Emerging EMF Technologies Health Risk Management” in the WG2
- 2004-2008: EXPERT MEMBER of the Technical Working Groups of two WP, Laboratory Studies: ELF (WP2.1), Laboratory Studies: RF (WP2.2) in EMF-NET, EU 6th Framework Program.
- 2001-2004: EXPERT MEMBER in the Quality Assessment and Assurance Committee (QAAC) of RAMP2001, Key Action 4, Environment and Health, EU 5th Framework Program.

### **ACADEMIC ACTIVITY**

- 2012-today: Supervisor of 4 PhD students and 2 Post-Doc Fellowship at DIET
- 2008-today: Supervisor of more than 90 Master’s Degree Theses (Biomedical Engineering and Nanotechnology Engineering) and Bachelor (Clinical Engineering)
- 2013-2013: UIF (Università Italo-Francese), Member of Commission for the Evaluation of the Galileo Projects
- 2010-2014: Member of the Scientific Commission for the Framework Agreement Sapienza– ENEA (Cluster Biotechnology)
- 2008-2009: UIF (Università Italo-Francese), Member of Commission for the Evaluation of the Galileo Projects
- 2008-2008: MIUR, Member of the Commission for the Evaluation of the Integrated Actions Italy-Spain
- 2008-2008: Member of the Commission for the JOINT LAB “Micro/nano Technologies for industrial applications” at Sapienza University of Rome

### **TEACHING ACTIVITY**

- 2019-today: Therapeutic Applications of Low frequency Electromagnetic Fields– Clinical and Biomedical Engineering
- 2003-today: Electromagnetic Fields – Clinical and Biomedical Engineering
- 2009-today: Electromagnetic Fields and Nanosystems for biomedical applications – Nanotechnology Engineering

### **INVITED SPEAKERS**

2019: INVITED KEYNOTE at the BioEM2019 Montpellier France, June, 2019

2019: INVITED lecturer at the European Microwave Week 2019, Paris France, September 2019

2018: INVITED lecturer at the BioEM2018, June, 2018

2017: INVITED lecturer at the 11th European Conference on Antennas and Propagation (EUCAP), Paris (FR), March, 2017

2017: INVITED lecturer at the COST BM1309 EMF-MED WG2, held in Prague (CZ), April, 2017

2011: INVITED lecturer at the 41st European Microwave Conference (EuMC), Manchester in October 2011.

2010: INVITED lecturer at the 5th COURSE on “Medical Applications of Electromagnetic Fields: Research and Therapy”, at the E. Majorana Foundation and Centre for Scientific Culture

2010: INVITED lecturer at the XXXth URSI General Assembly and Scientific Symposium Istanbul in August 2011

2006: INVITED lecturer at the International school of Bioelectromagnetics “Alessandro Chiabrera” at the Ettore Majorana Foundation and Centre for scientific culture

2005: INVITED lecturer at XXVIII General Assembly International Union of Radio Science, New Delhi, in the session "K01 -Interaction between EMF and Biosystems”

### **SOCIETY MEMBERSHIPS, AND SCIENTIFIC CONTRIBUTIONS**

2019: Chair of the Focus Session at the European Microwave Week 2019, Paris France, 20 September – 4 October 2019

2019: Session Chair at PIERS2019, Rome, June, 2019

2015: Session Chair at BioEM2015 Asilomar, USA

2014: Session Chair at the BioEM2014 Cape Town, South Africa

2013: Session Chair at the BioEM2013 Thessaloniki, Greece

2012: Session Chair at the EuCAP2012 Prague, Czech Republic

2011: Session Chair at the 10th International Congress of the European Bioelectromagnetics Association (EBEA2011).

2011: Session Chair at EuCAP2011 held in Rome in April 2011

2009: Session Chair at BioEm 2009, Davos, Switzerland

2008: Session Chair at the IEEE International Symposium on Antennas and propagation and USNC/URSI National Radio Science Meeting, San Diego, CA.

Member of the following Societies:

- European Bioelectromagnetics Association (EBEA)
- Bioelectromagnetic Society (BEMS)
- IEEE Microwave Theory and Technique Society – IEEE Engineering in Medicine and Biology Society
- Società Italiana di Elettromagnetismo (SIEM)
- ICEmB - Centro Interuniversitario di ricerca sulle Interazioni fra Campi Elettromagnetici e Biosistemi.

### **EDITORIAL SERVICES**

2015- today: Review Editor of Journal Frontiers in Public Health - Radiation and Health

2019-today: Editorial Board of Journal of Healthcare Engineering

2020-today: Editorial Board of Chemosensors

2005-today Reviewer of the following International Journals (<https://publons.com/a/1337430>):

- IEEE Journal of Electromagnetics, RF, and Microwaves in Medicine and Biology
- International IEEE/EMBS Conference on Neural Engineering (NER)
- International Conference of the IEEE Engineering in Medicine and Biology Society
- Bioelectromagnetics
- Frontiers in Public Health - Radiation and Health
- Journal of Healthcare Engineering
- Materials Science and Engineering: C

- Bioelectrochemistry
- Plos One
- Biochimica et Biophysica Acta (BBA) - Biomembranes
- Frontiers in Physiology
- Innovative Food Science & Emerging Technologies
- RSC Advances
- The Journal of Chemical Physics
- Journal of Membrane Biology
- Scientific Reports
- Biophysical Journal
- Physical Chemistry Chemical Physics
- LWT: Food Science and Technology

## **INTELLECTUAL PROPERTY**

Inventor in the European Patent: WO2017IB50236 20170117 FLEXIBLE ELECTRODE FOR APPLYING AN ELECTRIC FIELD TO THE HUMAN BODY;

## **FUNDING FROM PROJECTs**

- 2020 – ANSES, Programme national de recherche « Environnement Santé Travail »: Numerical Modelling of RF interaction with Thermal Receptors – Mechanisms and vivo/vitro experiments.
- 2020 – Sapienza University Project “Optimization of magnetic field remote controlled lipid vesicle nanocarriers”
- 2019 – Sapienza University Project “Liposome vesicles loading magnetic nanoparticles as optimal drug delivery nanosystems controlled by magnetic fields”
- 2018 – Sapienza University Project “Non-invasive stimuli-responsive nanocarriers activated by nanosecond pulsed electric field”
- 2016 – Sapienza University Project “Control of drug release from liposome vesicles using electromagnetic fields”
- 2015 – Sapienza University Project “The electromagnetic field as actuator of biocompatible nanosystems for drug delivery applications”
- 2014 – Contratto di Ricerca EMS (Electro Medical Systems) “Sviluppo di un software per la stima del campo elettrico indotto da bobine di TMS in modelli sferici cerebrali”
- 2011 – Joint Project “Life Nanoscience” Istituto Italiano Tecnologie (IIT) – Sapienza Università di Roma: A2-WP2-Task3: “Molecular Imaging of brain tumors”
- 2009 – Progetto di Ricerca e Innovazione (FARI) Sapienza
- 2009 – Progetto di Ricerca di Ateneo Federato di Scienza e della Tecnologia (AST)
- 2001 – MURST "Progetto Giovani Ricercatori", Interazione tra campi elettromagnetici e tessuto nervoso: dalla modellistica alla verifica sperimentale

## **RESEARCH ACTIVITY**

Mainly focused on the following lines:

Exposure Systems, biological experiments: The activity is focused on the design and implementation of electromagnetic systems suited to work as exposure systems for experiments in vitro, in vivo and in humans at the basis of a of a high quality bioelectromagnetic research producing reliable and repeatable results.

Molecular simulations of complex systems: computational techniques based on molecular dynamics (MD) simulations study the involvement of membrane proteins as target for electric/magnetic or electromagnetic.

Electroporation, nanopulses and poration mechanisms: through the use of pulses of intense electric field (kV/m and MV/m) and very short (microseconds and ns) it is possible to generate transient pores in cell membranes. These pores allow the entry into the cell of substances (e.g. chemotherapeutic) that would otherwise remain outside. The contribution to this area is in the design of applicators in vitro and in vivo and in the molecular modeling of the dynamics and formation of pore morphology.

Smart Drug Delivery, Electric and Magnetic fields: the activity focuses on the design of suitable biocompatible nanosystems able to transport molecules specific (drug or diagnostic molecule) in situ to the cell target and can be activated remotely by electric and / or magnetic fields.

Francesca Apellan's