

CURRICULUM VITAE

EUROPEAN FORMAT



PERSONAL INFORMATION

Name, Surname	LORENZO CROCCO
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Website	www.irea.cnr.it
Nationality	ITA
Place and Date of birth	Napoli, 18/02/1971

WORK EXPERIENCE

Current position (2020 -) **Research Director – National Research Council of Italy (CNR)**
IREA - Institute for Electromagnetic Sensing of the Environment
via Diocleziano 328, 80124, Napoli, ITALY

Previous positions
Senior Researcher (2010-2020)
Researcher (2001-2010)
National Research Council of Italy (CNR) - IREA

ONGOING ACTIVITIES:

- 2021 - **European School of Antennas (ESOA) – Course Organizer**
Organizer of ESOA course on Diagnostic and Therapeutic Effects of Electromagnetic Fields, 13-17 June 2022
- 2021 - **Technical Panel Committee Member – 2022 IEEE International Microwave Biomedical Conference (IMBioC 2022), Suzhou, China**
- 2019 - **Member of the Scientific Board of DIITET-CNR** (Engineering, ICT e Technologies for Energies and Transportations Department of CNR) Elected member – representative of Researchers
- 2019 - **Principal Investigator - “Broadband Electromagnetic Sensing Technologies for Food quality and security assessment” - Research Project of National Interest (PRIN2017)**
- 2019 - **Member of CNR-URSI commission**
Substitute officer for Commission K – Electromagnetics in biology and medicine
- 2018 - **Management Committee Member (MC Member for Italy) - COST Action CA17115**
COST Action CA17115, MyWave "European network for advancing Electromagnetic hyperthermic medical technologies".
- 2018 - **Principal Investigator for the IREA research unit**

- Marie Slodowska-Curie Innovative Training Network "EMERALD - ElectroMagnetic imaging for a novel genERation of medicAL Devices."
- 2018 - **URSI GA2021 in Roma – Member of the Local Organizing Committee**
XXXIII General Assembly and Scientific Symposium (GASS) of the International Union of Radio Science (Union Radio Scientifique Internationale-URSI)
- 2018 - **Member of the IEEE MTT-28 Biological Effects and Medical Applications Committee**
- 2017 - **Member of the Directive Board (Consiglio Direttivo) of Italian Electromagnetic Society (SIEm)**
- 2017 - **Foreign Expert Resercher**
"Development of Magnetic Nanoparticle Based Microwave Imaging Technology for Breast Cancer Diagnosis (TUBITAK 216S415, 15/10/2017-14/10/2020)", principal investigator: *prof. Mehmet Cayoren, Istanbul Technical University, Turkey.*
- 2017 - **Member of the Editorial Board – Associate Editor**
Associate Editor IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology
- 2014 - **Board Member at ESOA – European School of Antennas**
- 2013 - **Lecturer – European School of Antennas (ESOA)**
Lecturer in ESOA courses on Diagnostic and Therapeutic Effects of Electromagnetic Fields (2013,2015,2017,2019) and on Microwave Imaging and diagnostics (2014,2016,2018)
- 2012 - **Member of the Editorial Board**
International Journal of Antennas and Propagation, Hindawi Publishing Ltd
- 2010 - **Member of the Board of the Ph.D. advisors**
Mediterranea University of Reggio Calabria
- 2009 - **Reviewer for National and International Scientific Projects**
Italian Ministry of Research (PRIN 2012, FIRB 2013, BANDO MONTALCINI 2016)
MITACS Canada (2009)
Cancer Care Manitoba (2010)
US Israel BiNational Science Foundation (2012-2013)
United Arab Emirates University (2015)
National Science Centre, Poland (2016)
BNSF Bulgarian National Science Foundation (2016)
ZNSERC Canada (2016)
FONDECYT Chilean National Science and Technology Commission (2017)
Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Romania, 2020
Kuwait Science Foundation (KSAF) 2020
- 2007 - **Guest Editor of Special Issue**
Guest Editor for Special Issues in several ISI, peer reviewed scientific journals (Near Surface Geophysics, Inverse Problems, IEEE JSTARS – Journal on Selected Topics in Advanced Remote Sensing, International Journal of Antennas and Propagation, Diagnostics)
- 2007 - **Session Convener/Organizer at International Conferences**
IGARSS – International Geoscience and Remote Sensing Symposium
EUCAP – European Conference on Antennas and Propagation
PIERS – Progress in Electromagnetic Research Symposium
URSI GASS – General Assembly and Scientific Symposium (GASS) of the International Union of Radio Science

- 2006 - **Advisor / co-Advisor of PhD student & thesis**
 Sonia Zappia – Thz imaging for non invasive food inspection (2020 -); Federico II University of Napoli
 Alvaro Yago Ruiz – Microwave Imaging Methods for Medical Treatment monitoring (2019 -); Sapienza University of Roma
 Mengchu Wang – Microwave Imaging for Ablation Monitoring (2018 -); Sapienza University of Roma
 Marco Ricci – Microwave Imaging for Food Inspection (2018 -); Politecnico di Torino
 Gennari G. Bellizzi – Wave multiphysics for medical applications (2015-2019); Mediterranea University of Reggio Calabria
 Dr. Daniele Arturi – X-band radar tracking of targets moving on the sea surface (2013-2016); Mediterranea University of Reggio Calabria
 Dr. Rosa Scapaticci – New methodologies for microwave imaging in biomedical applications (2011-2014); Mediterranea University of Reggio Calabria
 Dr. Loreto Di Donato – New paradigms and simple methods for inverse scattering problems (2010-2013); Mediterranea University of Reggio Calabria
 Dr. Fabrizio Cuomo – An Effective Mesoscopic Approach for the Analysis of PBG-Based Structures and New Applications - (2006-2008); Mediterranea University of Reggio Calabria
- 2003 - **Member of the Scientific Council of Italian Electromagnetic Society (SIEm)**
 Board member as representative of CNR-IREA in the SIEm Scientific Council
- 1997 - **Advisor or Co-advisor of master thesis**
 Master thesis in Applied Electromagnetics for Laurea degree in Electrical, Telecommunication and Engineering (University Federico II of Naples, Mediterranea University of Reggio Calabria).
 More than 30 thesis

COMPLETED ACTIVITIES:

- 2020 - 2021 **European School of Antennas (ESOA) – Organizer of the ESOA course** on “Microwave Imaging and Diagnostics: Theory, Techniques, and Applications”, Napoli February 2021.
- 2018 - 2019 **European School of Antennas (ESOA) – Organizer of the ESOA course** on “Diagnostic and Therapeutic Effects of Electromagnetic Fields”, Napoli September 2019.
- 2018 - 2019 **Working Group Leader - COST Action CA17115**
 COST Action CA17115, MyWave "European network for advancing Electromagnetic hyperthermic medical technologies".
 Leader of Working Group 2: Better thermal-based EM therapeutics
- 2018 - 2019 **Technical Panel Committee Member – EuCAP 2019 - 13° European Conference of Antennas and Propagation**, Krakow, Poland
- 2017 - 2020 **Principal Investigator for the IREA research unit**
 “MIBRASCAN: Microwave Brain Scanner for Cerebrovascular Diseases Monitoring”
 Research Project of National Interest (PRIN2015)
- 2010 - 2018 **Technical Panel Committee Member, IEEE International Geoscience and Remote Sensing Symposium (IGARSS)**
 IGARSS 2011, Vancouver, BC; IGARSS 2012, Munich, Germany; IGARSS 2013, Melbourne, Australia; IGARSS 2014, Quebec City, Quebec; IGARSS 2015, Milan, Italy; IGARSS 2016, Beijing, China; IGARSS 2017, Fort Worth, TX, IGARSS 2018, Valencia, ES
- 2015 -2017 **Technical Panel Committee Member OSA Topical Meeting “Mathematics in Imaging”**, 2016 Heidelberg (GER), 2017 San Francisco (CA)
- 2013 - 2017 **Management Committee Member (MC Member for Italy) - COST Action TD1301**
 COST Action TD1301, MiMed "Development of a European-based Collaborative Network to Accelerate Technological, Clinical and Commercialisation Progress in the Area of Medical Microwave Imaging".

- 2013 - 2017 **Working Group Leader - COST Action TD1301**
 COST Action TD1301, MiMed "Development of a European-based Collaborative Network to Accelerate Technological, Clinical and Commercialisation Progress in the Area of Medical Microwave Imaging".
 Leader of Working Group 2: New techniques and emerging applications for microwave imaging
- 2016 **Workshop Organizer & Chair – 46th European Microwave Week**
Microwave and mm-waves technologies for medical diagnostics and imaging
 The workshop co-organized with Dr. P. Kosmas (King's College London, UK)
<http://www.eumweek.com/docs/workshops.pdf>
- 2017 - 2017 **Lecturer** at International school for young researchers: Short-range radars and their applications in medicine, Bauman Moscow State Technical University, 16-28 October 2017
- 2016 - 2016 **Lecturer** at International school for young researchers: Registration of subsurface targets by short-range radar, Bauman Moscow State Technical University, 25-27 October 2016
- 2013 - 2016 **WorkPackage Leader**
 Se@ME - Sustainable e-maritime @ssistance for Maritime Employees, Passengers and Yachtsmen; Campania Region CAMPUS action for Industrial Research and Experimental Development Projects – FESR 2007-2013
 CUP B27112000170007
- 2014 - 2015 **Technical Panel Committee Member European Conference on Antennas and Propagation**
 9th European Conference on Antennas and Propagation, Lisbon Portugal
- 2014 - 2015 **Principal Investigator for CNR-IREA Research Unit**
 Progetto Premiale "e-SHS - ICT for Social Health and Solidarity".
- 2014 - 2015 **Principal Investigator for CNR-IREA Research Unit**
 Progetto Premiale "MATHTECH - Math for Society and Technological Innovation".
- 2011 - 2014 **WorkPackage Leader**
 AMISS - Active and Passive Microwaves for Security and Subsurface imaging
 Marie Curie Actions International Research Staff Exchange Scheme,
 Project No: 269157
- 2010 - 2010 **Visiting Scientist**
 Institut Fresnel, Marseille France
 CNR-Short Mobility Program 2010
- 2008 - 2010 **Technical chairman**
 10th International Conference on Ground Penetrating Radar (endorsed by IEEE), GPR2010, Lecce, 2010
- 2009 - 2012 **Adjunct Professor**
 Mediterranea University of Reggio Calabria,
 Electromagnetic waves propagation, (2009-2011), Electromagnetic diagnostics (2011-2012).
- 2008 - 2010 **Principal Investigator for the IREA research unit**
 "MANFIND: MAgnetic Nanoparticles and Fields for Nanotechnologies and Diagnostics"
 Research Project of National Interest (PRIN)
- 2008 - 2008 **Invited Visiting Scientist**
 Institut Fresnel, Marseille, France
 invited by the Ecole Centrale Marseille as "chercheur invite"

- 2007 - 2009 **Project Consultant**
IMAGINE: Inversion, modelling and analysis of GPR in near-surface environments funded by EPSRC Agency (UK) to Earth Science Group at Keele University (UK)
- 2005 - 2007 **Co-chairman**
IV International Workshop on Advanced Ground Penetrating Radar (endorsed by IEEE), IWAGPR2007, Napoli, 2007
- 2005 - 2006 **Principal Investigator and Scientific Coordinator**
“Effective inverse scattering approaches for shape reconstruction of unknown targets” joint project with University of Naples, funded by the Regione Campania.
- 2001 - 2001 **Principal Investigator**
Application of EM techniques to anti-personnel plastic landmines detection “young researchers” project – University of Naples, Federico II
- 2000 - 2001 **Post-doc Research Assistant (Assegno di ricerca)**
University of Naples, Federico II (2000-2001). Applied Electromagnetics research group

ACHIEVEMENTS & AWARDS

- 2021 **Invited Speaker** at the 2022 IEEE International Microwave Biomedical Conference (IMBioC 2022), Suzhou, China
- 2020 **U.R.S.I. Senior Member**
- 2018 **National Scientific Habilitation - Full Professor, Electromagnetic Fields (09/F1).**
- 2014 **National Scientific Habilitation - Associate Professor, Electromagnetic Fields (09/F1).**
- 2010 **IEEE Senior Member**
- 2010 **Invited Speaker** at the MMNS Workshop on Inverse Problems for Waves: Methods and Applications, Ecole Polytechnique, Paris, France
- 2009 **National Research Council Award** for the 100 best CNR young researchers (under 40), for the achievements obtained in 2005, (awarded in 2009).
- 2009 **Invited Speaker** at the V International Workshop on Advanced Ground Penetrating Radar, IWAGPR2009, Granada, Spain, May 2009
- 2007 **Fellow** of the ElectroMagnetics Academy (TEA),
- 2005 **U.R.S.I. Young Scientist Award** at XXVIII URSI General Assembly, New Delhi, India, 2005
- 2004 **“Giorgio Barzilai” award** for Young Researchers - Italian Electromagnetic Society (SIEm)

EDUCATION AND TRAINING

- 1996-2000 **PhD in applied electromagnetics**
University of Napoli, Federico II.
Advisors: prof. O.M.Bucci, prof. T.Isernia
Title of thesis: “Microwave subsurface sensing: retrievable information and novel inversion approaches”
degree at final exam: excellent
The research activity was devoted to the development of solution approaches for both the forward and inverse scattering problems for subsurface imaging applications.
- 1989-1995 **Laurea Degree in Electronic Engineering** University of Napoli Federico II
110/110 cum laude. achieved in March 1995

RESEARCH ACTIVITIES

Research sectors
Applied Electromagnetics
Microwaves
Diagnostic and Therapeutic Applications of Electromagnetic Fields
Non-invasive electromagnetic diagnostics
Ground Penetrating Radars

Recent Scientific Activities
Non-invasive electromagnetic diagnostics for environmental monitoring and biomedical imaging
Modeling and Imaging tools for ground penetrating radar, holographic radar, bioradars, THz imaging devices, microwave radar for security;
Methodologies for effective solution of forward and inverse electromagnetic scattering problems

Books and Articles
Lorenzo Crocco has authored more than 120 scientific publications on international peer review journals, as well as three book chapters. He has edited one book and special issues on scientific journals as well as conference proceedings. Currently, his h-index is 40 (google scholar)
He is listed in the August 2021 Updated science-wide author databases of standardized citation indicators (single year 2020, career 2020).
Updated lists of publications: <http://scholar.google.it/citations?user=C1zlsjMAAAAJ&hl=en>

- Selected Publications (2020-2022)**
- A. Yago, M. Cavagnaro, L. Crocco, A Physics Assisted Deep Learning Microwave Imaging Framework for Real-time Shape Reconstruction of Unknown Targets, *IEEE Transactions on Antennas and Propagation*, in print, **2022**
- M.C. Wang, L. Crocco and M. Cavagnaro, On the Design of a Microwave Imaging System to Monitor Thermal Ablation of Liver Tumors, *IEEE Journal of Electromagnetics RF and Microwaves in Medicine and Biology*, Vol. 5, pp. 231-237, **2021**
- M. T. Bevacqua, S. Di Meo, L. Crocco, T. Isernia and M. Pasian, Millimeter-Waves Breast Cancer Imaging via Inverse Scattering Techniques, *IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology*, vol. 5, no. 3, pp. 246-253, **2021**
- J. A. Tobon Vasquez *et al.*, Noninvasive Inline Food Inspection via Microwave Imaging Technology: An Application Example in the Food Industry, *IEEE Antennas and Propagation Magazine*, vol. 62, no. 5, pp. 18-32, **2020**
- J.A. Tobon Vasquez *et al.*, A Prototype Microwave System for 3D Brain Stroke Imaging. *Sensors* **2020**, 20, 2607.
- M. T. Bevacqua, T. Isernia, R. Palmeri, M. N. Akinci and L. Crocco, Physical Insight Unveils New Imaging Capabilities of Orthogonality Sampling Method, *IEEE Transactions on Antennas and Propagation*, vol. 68, no. 5, pp. 4014-4021, **2020**

LANGUAGES

	Understanding		Speaking		Writing
	Listening	Reading	Interaction	Production	
Italian			mothertongue		
English	C2	C2	C2	C2	C2
French	B1	B2	B2	B2	B1
Spanish	A2	B1	A2	B1	A2

NAPLES, MARCH 14, 2022

